MINUTES

PROCEEDINGS OF THE SITTING

IN THE CHAIR: Josep BORRELL FONTELLES
President

1. Opening of sitting

The sitting opened at 9.05.

2. Presentation of the programme of the Finnish Presidency (debate)

Council statement: Programme of the Finnish Presidency
Matti Vanhanen (President-in-Office of the Council) made the statement.
José Manuel Barroso (President of the Commission) spoke.

IN THE CHAIR: Antonios TRAKATELLIS
Vice-President


IN THE CHAIR: Josep BORRELL FONTELLES
President

The following spoke: Francisco José Millán Mon, Alexander Stubb, Matti Vanhanen and José Manuel Barroso.

The debate closed.

IN THE CHAIR: Pierre MOSCOVICI
Vice-President

3. Situation in Palestine (debate)

Council and Commission statements: Situation in Palestine
Paula Lehtomäki (President-in-Office of the Council) and Benita Ferrero-Waldner (Member of the Commission) made the statements.
The following spoke: Elmar Brok, on behalf of the PPE-DE Group, Pasqualina Napoletano, on behalf of the PSE Group, Anemie Neyts-Uyttebroeck, on behalf of the ALDE Group, Caroline Lucas, on behalf of the Verts/ALE Group, Francis Wurtz, on behalf of the GUE/NGL Group, Roberta Angelilli, on behalf of the UEN Group, Bastiaan Belder, on behalf of the IND/DEM Group, Marek Aleksander Czarnecki, Non-attached Member, Ioannis Kasoulides, Véronique De Keyser, Chris Davies, Roger Knapman, Mario Borghezio, Charles Tannock, Marek Siwiec, Frédérique Ries, Zbigniew Zaleski, Pierre Schapira, Paula Lehtomäki and Benita Ferrero-Waldner.

The debate closed.

**IN THE CHAIR: Edward McMillan-Scott**

Vice-President

The following spoke: Robert Atkins, who asked that the vote should begin at the appointed time.

**4. Voting time**

Details of voting (amendments, separate and split votes, etc.) appear in the ‘Results of votes’ annex to the Minutes.

**4.1. Strengthening cross-border police cooperation** *(Rule 131) (vote)*

Report on the initiative by the Kingdom of the Netherlands with a view to the adoption of a Council decision on strengthening cross-border police cooperation with regard to meetings attended by large numbers of people from more than one Member State, at which policing is primarily aimed at maintaining law and order and security and preventing and combating criminal offences [06930/2005 — C6-0117/2005 — 2005/0804(CNS)] — Committee on Civil Liberties, Justice and Home Affairs Rapporteur: Frieda Brepoels (A6-0222/2006).

*(Simple majority)*

*(Voting record: ‘Results of votes’, Item 1)*

INITIATIVE, AMENDMENTS and DRAFT LEGISLATIVE RESOLUTION

Adopted by single vote *(P6_TA(2006)0297)*

**4.2. Technical requirements for inland waterway vessels** *(vote)*


*(Qualified majority)*

*(Voting record: ‘Results of votes’, Item 2)*

COMMON POSITION OF THE COUNCIL

Declared approved as amended *(P6_TA(2006)0298)*
4.3. Harmonisation of technical requirements and administrative procedures in air transport (vote)


(Qualified majority)
(Voting record: ‘Results of votes’, Item 3)

COMMON POSITION OF THE COUNCIL
Declared approved as amended (P6_TA(2006)0299)

The following spoke on the vote:

— Ulrich Stockmann (rapporteur), who pointed out that the English version of amendments 20, 22 and 24 was the authentic text;
— Gilles Savary, who recommended that the House vote against amendments 17 and 18 if the compromise block was adopted.

4.4. Shipments of radioactive waste and nuclear spent fuel (vote)


(Simple majority)
(Voting record: ‘Results of votes’, Item 4)

COMMISSION PROPOSAL
Approved as amended (P6_TA(2006)0300)

DRAFT LEGISLATIVE RESOLUTION
Adopted (P6_TA(2006)0300)

The following spoke on the vote:

— Carl Schlyter, on behalf of the Verts/ALE Group, who requested that amendment 23 be subject to a roll-call vote (the President agreed);
— Bruno Gollnisch, on the voting procedure;
— Rebecca Harms, who expressed her disappointment that the Commission had not given its position on the amendments adopted by Parliament.

4.5. Investing for growth and employment (vote)


(Simple majority)
(Voting record: ‘Results of votes’, Item 5)

MOTION FOR A RESOLUTION
Adopted (P6_TA(2006)0301)
4.6. Towards a more integrated approach for industrial policy (vote)

Report on a policy framework to strengthen EU manufacturing — towards a more integrated approach for industrial policy [2006/2003(INI)] — Committee on Industry, Research and Energy


(Simple majority)
(Voting record: ‘Results of votes’, Item 6)

MOTION FOR A RESOLUTION
Adopted (P6_TA(2006)0302)

5. Welcome

On behalf of Parliament, the President welcomed Emma Bonino, the Italian minister for European policy and external trade, who had taken her seat in the distinguished visitors’ gallery.

6. Explanations of vote

Written explanations of vote:


Oral explanations of vote:

— Oldřich Vlasák

7. Corrections to votes and voting intentions

Corrections to votes:

Corrections to votes appear on the ‘Séance en direct’ website under ‘Votes’/‘Results of votes’/‘Roll-call votes’. They are published in hard copy in the ‘Result of roll-call votes’ annex.

The electronic version on Europarl will be regularly updated for a maximum of two weeks after the day of the vote concerned.

After the two-week deadline has passed, the list of corrections to votes will be finalised so that it can be translated and published in the Official Journal.

Voting intentions:

The Presidency had been notified of the following voting intentions (in respect of votes that had not been cast):

— amendment 11
— against: Manuel Medina Ortega, Hubert Pirker

Manuel Medina Ortega had informed the Presidency that his voting machine had not worked during the vote on that amendment.
8. Approval of Minutes of previous sitting

The Minutes of the previous sitting were approved.

9. Protection preservation of the religious heritage in the northern part of Cyprus (written declaration)

By 03.07.2006, written declaration No 21/2006, by Iles Braghetto and Panayiotis Demetriou on the protection and preservation of the religious heritage in the northern part of Cyprus, had been signed by the majority of Parliament’s component Members and would therefore, under Rule 116(4), be forwarded to the institutions named therein and published, together with the names of the signatories, in the Texts Adopted of the sitting of 05.09.2006.

Panayiotis Demetriou spoke.

10. International adoption in Romania (written declaration)

By 03.07.2006, written declaration No 23/2006, by Claire Gibault, Jean-Marie Cavada, Antoine Duquesne, Charles Tannock and Enrique Barón Crespo on international adoption in Romania, had been signed by the majority of Parliament’s component Members and would therefore, under Rule 116(4), be forwarded to the institutions named therein and published, together with the names of the signatories, in the Texts Adopted of the sitting of 05.09.2006.

11. Extraordinary rendition (debate)

Interim report on the alleged use of European countries by the CIA for the transportation and illegal detention of prisoners [2006/2027(INI)] — Temporary Committee on the alleged use of European countries by the CIA for the transport and illegal detention of prisoners


Giovanni Claudio Fava introduced the report.

The following spoke: Paula Lehtomäki (President-in-Office of the Council) and Franco Frattini (Vice-President of the Commission).

The following spoke: Jas Gawronski, on behalf of the PPE-DE Group, Wolfgang Kreissl-Dörfler, on behalf of the PSE Group, Sarah Ludford, on behalf of the ALDE Group, Cem Özdemir, on behalf of the Verts/ALE Group, Giusto Catania, on behalf of the GUE/NGL Group, Konrad Szymański, on behalf of the UEN Group, Mirosław Mariusz Piotrowski, on behalf of the IND/DEM Group, Philip Claeys, Non-attached Member, Carlos Coelho, Józef Pińior, Ignasi Guardans Cambó, Raül Romeva i Rueda, Sylvia-Yvonne Kaufmann, Eoin Ryan, Bogusław Rogalski and Roger Helmer.
IN THE CHAIR: Alejo VIDAL-QUADRAS
Vice-President


IN THE CHAIR: Antonios TRAKATELLIS
Vice-President

The following spoke: Panayiotis Demetriou, Claude Moraes, Charles Tannock, Jean Spautz, Simon Coveney and Franco Frattini.

The debate closed.


12. Interception of bank transfer data from the SWIFT system by the US secret services (debate)

Council and Commission statements: Interception of bank transfer data from the SWIFT system by the US secret services

Paula Lehtomäki (President-in-Office of the Council) and Franco Frattini (Vice-President of the Commission) made the statements.

The following spoke: Ewa Klamt, on behalf of the PPE-DE Group, Martine Roure, on behalf of the PSE Group, Jean-Marie Cavada, on behalf of the ALDE Group, Giusto Catania, on behalf of the GUE/NGL Group, Carlos Coelho, Jan Marinus Wiersma, Sophia in ’t Veld, Mihael Brejc, Stavros Lambrinidis, Giovanni Claudio Fava, Paula Lehtomäki and Franco Frattini.

Motions for resolutions to wind up the debate tabled pursuant to Rule 103(2):

— Mihael Brejc, on behalf of the PPE-DE Group, Brian Crowley, Romano Maria La Russa and Roberta Angelilli, on behalf of the UEN Group, on the alleged interception of bank transfer data from the SWIFT system by the US secret services (B6-0385/2006),
— Martine Roure, on behalf of the PSE Group, on access to transferred bank data by the US secret services (B6-0386/2006),
— Monica Frassoni and Daniel Marc Cohn-Bendit, on behalf of the Verts/ALE Group, on the interception of bank transfer data from the SWIFT system by the US secret services (B6-0391/2006),
— Alexander Alvaro, Sophia in ’t Veld and Margarita Starkevičiūtė, on behalf of the ALDE Group, on the interception of bank transfer data from the SWIFT system by the US secret services (B6-0393/2006),
— Sahra Wagenknecht, Giusto Catania and Umberto Guidoni, on behalf of the GUE/NGL Group, on violation of data protection rules in the European countries by the use of SWIFT data by the US (B6-0395/2006).

The debate closed.

Vote: Minutes of 06.07.2006, Item 6.15.
13. **Question Time** (Council)

Parliament considered a number of questions to the Council (B6-0312/2006).

**Question 1** (Sarah Ludford): 'Passerelle' clause.

Paula Lehtomäki (President-in-Office of the Council) answered the question and a supplementary by Sarah Ludford.

**Question 2** (Richard Seeber): Framework Convention on Climate Change.

Paula Lehtomäki answered the question and supplementaries by Richard Seeber and Eija-Riitta Korhola.

**Question 3** (Bernd Posselt): Negotiations on the status of Kosovo.

Paula Lehtomäki answered the question and supplementaries by Bernd Posselt, Richard Seeber and Hubert Pirker.

**Question 4** (Nicholson of Winterbourne): Recognised operational guidelines when dealing with hostage-takers.

Paula Lehtomäki answered the question and supplementaries by Baroness Nicholson of Winterbourne, Agnes Schierhuber and Bernd Posselt.

**Question 5** (Manuel Medina Ortega): Need for an integrated immigration policy.

Paula Lehtomäki answered the question and supplementaries by Manuel Medina Ortega, Piia-Noora Kauppi and Hubert Pirker.

**Question 6** (Marie Panayotopoulos-Cassiotou): Measures to promote the acceptance and better integration of immigrants.

Paula Lehtomäki answered the question and supplementaries by Marie Panayotopoulos-Cassiotou and Bogusław Sonik.

**Question 7** (Eugenijus Gentvilas): Different taxation systems in EU Member States.

Paula Lehtomäki answered the question and supplementaries by Eugenijus Gentvilas, Josu Ortuondo Larrea and Reinhard Rack.

**Question 8** (Jacky Henin): Council measures to tackle the weak US dollar.

Paula Lehtomäki answered the question and supplementaries by Jacky Henin and Paul Rübig.

**Question 9** (John Bowis): Questions to the Council.

Paula Lehtomäki answered the question and supplementaries by John Bowis, Richard Corbett and Piia-Noora Kauppi.

Questions which had not been answered for lack of time would receive written answers *(see annex to the Verbatim Report of Proceedings)*.

Council Question Time closed.

*(The sitting was suspended at 19.00 and resumed at 21.00.)*
14. Visa policy with regard to western Balkan countries — Visa facilitation for the countries of the Western Balkans (debate)

Oral question (O-0063/2006) by Doris Pack, on behalf of the PPE-DE Group, Gisela Kallenbach, on behalf of the Verts/ALE Group, Hannes Swoboda, on behalf of the PSE Group, Erik Meijer, Ignasi Guardans Cambó, Jelko Kacin and Henrik Lax, to the Council: Visa policy towards the countries of the Western Balkans (B6-0315/2006)

Oral question (O-0077/2006) by Sarah Ludford, Jelko Kacin, Henrik Lax and Ignasi Guardans Cambó, on behalf of the ALDE Group, to the Council: Visa facilitation for the countries of the Western Balkans (B6-0320/2006)

Oral question (O-0078/2006) by Sarah Ludford, Jelko Kacin, Henrik Lax and Ignasi Guardans Cambó, on behalf of the ALDE Group, to the Commission: Visa facilitation for the countries of the Western Balkans (B6-0321/2006)

Doris Pack, Hannes Swoboda, Jelko Kacin and Gisela Kallenbach (authors) moved the oral questions.

The following spoke: Paula Lehtomäki (President-in-Office of the Council) and Franco Frattini (Vice-President of the Commission).

The following spoke: Panagiotis Beglitis, on behalf of the PSE Group, Henrik Lax, on behalf of the ALDE Group, and Paula Lehtomäki.

The debate closed.

15. Implementing powers conferred on the Commission (Interinstitutional agreement) — Implementing powers conferred on the Commission (procedures) (debate)


Margot Wallström (Vice-President of the Commission) spoke.

Richard Corbett introduced the reports.

The following spoke: Alexander Radwan, on behalf of the PPE-DE Group, Pervenche Berès, on behalf of the PSE Group, Andrew Duff, on behalf of the ALDE Group, Satu Hassi, on behalf of the Verts/ALE Group, Maria da Assunção Esteves, Friedrich-Wilhelm Graefe zu Baringdorf and Margot Wallström.

The debate closed.

Vote: Minutes of 06.07.2006, Item 6.7 and Minutes of 06.07.2006, Item 6.8.


Oral question (O-0061/2006) by Martin Schulz and Martine Roure, on behalf of the PSE Group, to the Commission: European Union immigration policy (B6-0311/2006)

Oral question (O-0064/2006) by Ewa Klamt, on behalf of the PPE-DE Group, to the Commission: EU policy on immigration (B6-0313/2006)

Oral question (O-0070/2006) by Jean Lambert, on behalf of the Verts/ALE Group, to the Commission: European Union immigration policy (B6-0318/2006)

Oral question (O-0073/2006) by Jeanine Hennis-Plasschaert, on behalf of the ALDE Group, to the Commission: European Union immigration policy (B6-0319/2006)

Oral question (O-0079/2006) by Roberta Angelilli and Romano Maria La Russa, on behalf of the UEN Group, to the Commission: EU policy on immigration (B6-0322/2006)

Patrick Gaubert introduced the report (A6-0186/2006).

Stavros Lambrinidis introduced the report (A6-0190/2006).

Ewa Klamt moved the oral question (B6-0313/2006).

Manuel Medina Ortega (deputising for the authors) moved the oral question (B6-0311/2006).

Jeanine Hennis-Plasschaert moved the oral question (B6-0319/2006).

Jean Lambert moved the oral question (B6-0318/2006).

Franco Frattini (Vice-President of the Commission) spoke.

IN THE CHAIR: Edward McMillan-Scott

Vice-President

The following spoke: Dimitrios Papadimoulis (draftsman of the opinion of the EMPL Committee), Barbara Kudrycka, on behalf of the PPE-DE Group, Claude Morais, on behalf of the PSE Group, Ona Juknevičienė, on behalf of the ALDE Group, Hélène Flautre, on behalf of the Verts/ALE Group, Giusto Catania, on behalf of the GUE/NGL Group, Sebastiano (Nello) Musumeci, on behalf of the UEN Group, Johannes Blokland, on behalf of the IND/DEM Group, Carlos Coelho, Józef Pinior, Tatjana Ždanoka, Kyriacos Triantaphyllides, Derek Roland Clark, Jan Tadeusz Masiel, Agustin Díaz de Mera García Consuegra, Louis Grech, Miguel Portas, Andrzej Tomasz Żapałowski, James Hugh Allister, Simon Busuttil, Stefano Zappalà, David Casa and Franco Frattini.

The debate closed.

Vote: Minutes of 06.07.2006, Item 6.11 and Minutes of 06.07.2006, Item 6.16.

17. AIDS — Time to deliver (debate)

Commission statement: AIDS — Time to deliver

Louis Michel (Member of the Commission) made the statement.

The following spoke: John Bowis, on behalf of the PPE-DE Group, Anne Van Lancker, on behalf of the PSE Group, Fiona Hall, on behalf of the ALDE Group, Karin Scheele and Louis Michel.
Motions for resolutions to wind up the debate tabled pursuant to Rule 103(2):

— Luisa Morgantini, Feleknas Uca, Vittorio Agnoletto, Eva-Britt Svensson and Adamos Adamou, on behalf of the GUE/NGL Group, on HIV/AIDS: Time to Deliver (B6-0375/2006),

— Eoin Ryan, on behalf of the UEN Group, on AIDS — Time to Deliver (B6-0376/2006),

— Miguel Angel Martínez Martínez, Anne Van Lancker and Pierre Schapira, on behalf of the PSE Group, on HIV/AIDS: Time to Deliver (B6-0377/2006),

— John Bowis and Maria Martens, on behalf of the PPE-DE Group, on AIDS — Time to Deliver (B6-0378/2006),

— Fiona Hall, Marios Matsakis and Elizabeth Lynne, on behalf of the ALDE Group, on AIDS — Time to Deliver (B6-0379/2006),

— Margrete Auken, on behalf of the Verts/ALE Group, on HIV/AIDS (B6-0380/2006).

The debate closed.

Vote: Minutes of 06.07.2006, Item 6.19.

18. Agenda for next sitting

The agenda for the next sitting had been established (Agenda PE 354.650/OJ/E).

19. Closure of sitting

The sitting closed at 0.05.

Julian Priestley  
Secretary-General

Gérard Onesta  
Vice-President
C 303 E/134

EN

Official Journal of the European Union

Wednesday, 5 July 2006

ATTENDANCE REGISTER

The following signed:
Adamou, Agnoletto, Aita, Albertini, Allister, Alvaro, Andersson, Andrejevs, Andria, Andrikienė, Angelilli,
Antoniozzi, Arif, Arnaoutakis, Ashworth, Assis, Atkins, Attard-Montalto, Attwooll, Aubert, Audy, Auken,
Ayala Sender, Aylward, Ayuso, Bachelot-Narquin, Baco, Badia I Cutchet, Barón Crespo, Barsi-Pataky, Batten,
Battilocchio, Batzeli, Bauer, Beaupuy, Beazley, Becsey, Beer, Beglitis, Belder, Belet, Belohorská, Bennahmias,
Beňová, Berend, Berès, van den Berg, Berger, Berlato, Berlinguer, Berman, Bielan, Birutis, Blokland, Bloom,
Bobošíková, Böge, Bösch, Bonde, Bono, Bonsignore, Booth, Borghezio, Borrell Fontelles, Bourlanges,
Bourzai, Bowis, Bowles, Bozkurt, Bradbourn, Braghetto, Brejc, Brepoels, Breyer, Březina, Brie, Brok, Brunetta,
Budreikaitė, van Buitenen, Bullmann, van den Burg, Bushill-Matthews, Busk, Busquin, Busuttil, Buzek,
Cabrnoch, Calabuig Rull, Callanan, Camre, Capoulas Santos, Cappato, Carlotti, Carnero González, Casa,
Casaca, Cashman, Casini, Caspary, Castex, Castiglione, del Castillo Vera, Catania, Cavada, Cederschiöld,
Cercas, Chatzimarkakis, Chichester, Chiesa, Chmielewski, Christensen, Chruszcz, Claeys, Clark, Cocilovo,
Coelho, Cohn-Bendit, Corbett, Corbey, Correia, Cottigny, Coûteaux, Coveney, Cramer, Crowley, Marek
Aleksander Czarnecki, Ryszard Czarnecki, Daul, Davies, de Brún, Degutis, Dehaene, De Keyser, Demetriou,
De Michelis, Deprez, De Rossa, Descamps, Désir, Deß, Deva, De Veyrac, De Vits, Díaz de Mera García
Consuegra, Dičkutė, Didžiokas, Díez González, Dillen, Dimitrakopoulos, Dobolyi, Dombrovskis, Doorn,
Douay, Dover, Doyle, Drčar Murko, Duchoň, Dührkop Dührkop, Duff, Duka-Zólyomi, Ebner, El Khadraoui,
Elles, Esteves, Estrela, Ettl, Eurlings, Jill Evans, Jonathan Evans, Robert Evans, Fajmon, Falbr, Farage, Fatuzzo,
Fava, Fazakas, Ferber, Fernandes, Fernández Martín, Anne Ferreira, Elisa Ferreira, Figueiredo, Fjellner,
Flasarová, Flautre, Florenz, Foglietta, Foltyn-Kubicka, Fontaine, Ford, Fourtou, Fraga Estévez, Freitas,
Friedrich, Fruteau, Gahler, Gál, Gaľa, Galeote, García-Margallo y Marfil, García Pérez, Gargani, Garriga
Polledo, Gaubert, Gauzès, Gawronski, Gebhardt, Gentvilas, Geremek, Geringer de Oedenberg, Gewalt,
Gibault, Gierek, Giertych, Gill, Gklavakis, Glattfelder, Goebbels, Goepel, Golik, Gomes, Gomolka, Gottardi,
Grabowska, Grabowski, Graça Moura, Graefe zu Baringdorf, Gräßle, Grech, Griesbeck, Gröner,
de Groen-Kouwenhoven, Groote, Grosch, Grossetête, Gruber, Guardans Cambó, Guellec, Guerreiro, Guidoni,
Gurmai, Gutiérrez-Cortines, Guy-Quint, Gyürk, Hänsch, Hall, Hammerstein Mintz, Hamon, Handzlik,
Hannan, Harangozó, Harbour, Harkin, Harms, Hasse Ferreira, Hassi, Hatzidakis, Haug, Hazan, Heaton-Harris,
Hedh, Hedkvist Petersen, Helmer, Henin, Hennicot-Schoepges, Hennis-Plasschaert, Herczog, Herranz García,
Herrero-Tejedor, Hieronymi, Higgins, Hökmark, Honeyball, Hoppenstedt, Horáček, Howitt, Hudacký,
Hudghton, Hughes, Hutchinson, Ibrisagic, Ilves, in 't Veld, Isler Béguin, Itälä, Jackson, Jäätteenmäki,
Jałowiecki, Janowski, Járóka, Jarzembowski, Jeggle, Jensen, Joan i Marí, Jöns, Jørgensen, Jonckheer, Jordan
Cizelj, Juknevičienė, Kacin, Kaczmarek, Kallenbach, Kamall, Kamiński, Karas, Karim, Kasoulides, Kaufmann,
Kauppi, Tunne Kelam, Kilroy-Silk, Kindermann, Kinnock, Kirkhope, Klamt, Klaß, Klich, Klinz, Knapman,
Koch, Koch-Mehrin, Kohlíček, Konrad, Korhola, Kósáné Kovács, Koterec, Kozlík, Krahmer, Krarup, Krasts,
Kratsa-Tsagaropoulou, Krehl, Kreissl-Dörfler, Kristensen, Kristovskis, Krupa, Kuc, Kudrycka, Kułakowski,
Kušķis, Kusstatscher, Kuźmiuk, Lagendijk, Laignel, Lamassoure, Lambert, Lambrinidis, Lambsdorff,
Landsbergis, Lang, Langen, Langendries, Laperrouze, La Russa, Lauk, Lax, Lechner, Le Foll, Lehideux, Lehne,
Lehtinen, Leichtfried, Leinen, Jean-Marie Le Pen, Marine Le Pen, Le Rachinel, Lewandowski, Liberadzki,
Libicki, Lichtenberger, Lienemann, Liotard, Lipietz, López-Istúriz White, Losco, Louis, Lucas, Ludford, Lulling,
Lynne, Maaten, McAvan, McGuinness, McMillan-Scott, Madeira, Maldeikis, Manders, Maňka, Erika Mann,
Thomas Mann, Manolakou, Mantovani, Markov, Marques, David Martin, Hans-Peter Martin, Martinez,
Martínez Martínez, Masiel, Masip Hidalgo, Maštálka, Mastenbroek, Mathieu, Matsakis, Matsouka, Mauro,
Mavrommatis, Mayer, Mayor Oreja, Medina Ortega, Meijer, Méndez de Vigo, Menéndez del Valle, Meyer
Pleite, Miguélez Ramos, Mikko, Mikolášik, Millán Mon, Mitchell, Mölzer, Mohácsi, Montoro Romero, Moraes,
Moreno Sánchez, Morgan, Morgantini, Morillon, Moscovici, Mote, Mulder, Musacchio, Muscardini, Muscat,
Musotto, Mussolini, Musumeci, Myller, Napoletano, Nassauer, Nattrass, Navarro, Newton Dunn, Annemie
Neyts-Uyttebroeck, Nicholson, Nicholson of Winterbourne, van Nistelrooij, Novak, Obiols i Germà, Achille
Occhetto, Öger, Özdemir, Olajos, Olbrycht, Ó Neachtain, Onesta, Onyszkiewicz, Oomen-Ruijten, Ortuondo
Larrea, Őry, Ouzký, Oviir, Paasilinna, Pack, Pafilis, Pahor, Paleckis, Panayotopoulos-Cassiotou, Pannella,
Panzeri, Papadimoulis, Papastamkos, Parish, Patriciello, Patrie, Peillon, Pęk, Pflüger, Piecyk, Pieper, Pīks,
Pinheiro, Pinior, Piotrowski, Pirilli, Pirker, Piskorski, Pistelli, Pittella, Pleguezuelos Aguilar, Pleštinská, Podestà,
Podkański, Poettering, Poignant, Polfer, Pomés Ruiz, Portas, Posdorf, Posselt, Prets, Prodi, Protasiewicz,
Purvis, Queiró, Quisthoudt-Rowohl, Rack, Radwan, Ransdorf, Rapkay, Rasmussen, Remek, Resetarits, Reul,
Reynaud, Ribeiro e Castro, Riera Madurell, Ries, Riis-Jørgensen, Rivera, Rizzo, Rocard, Rogalski, Roithová,
Romagnoli, Romeva i Rueda, Rosati, Roszkowski, Rothe, Rouček, Roure, Rudi Ubeda, Rübig, Rühle,
Rutowicz, Ryan, Sacconi, Saïfi, Sakalas, Salinas García, Salvini, Samaras, Samuelsen, Sánchez Presedo,
dos Santos, Sartori, Saryusz-Wolski, Savary, Savi, Schapira, Scheele, Schenardi, Schierhuber, Schlyter, Frithjof
Schmidt, Schmitt, Schnellhardt, Schöpflin, Schroedter, Schulz, Schwab, Seeber, Seeberg, Segelström,
Seppänen, Siekierski, Sifunakis, Silva Peneda, Sinnott, Siwiec, Sjöstedt, Skinner, Škottová, Smith, Sommer,
Sonik, Sornosa Martínez, Sousa Pinto, Spautz, Speroni, Staes, Staniszewska, Starkevičiūtė, Šťastný, Stauner,
Sterckx, Stevenson, Stihler, Stockmann, Strejček, Strož, Stubb, Sturdy, Sudre, Sumberg, Surján, Susta,
Svensson, Swoboda, Szájer, Szejna, Szent-Iványi, Szymański, Tabajdi, Takkula, Tannock, Tarabella, Tarand,

13.12.2006


Observers:

ANNEX I

RESULTS OF VOTES

Abbreviations and symbols

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
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<tr>
<td>+</td>
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<td>-</td>
<td>rejected</td>
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<td>↓</td>
<td>lapsed</td>
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<tr>
<td>W</td>
<td>withdrawn</td>
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<tr>
<td>RCV {..., ..., ...}</td>
<td>roll-call vote (for, against, abstentions)</td>
</tr>
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1. Strengthening cross-border police cooperation *


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2. Technical requirements for inland waterway vessels **II**

Recommendation for second reading: (qualified majority)

Renate SOMMER (A6-0208/2006)

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3. Harmonisation of technical requirements and administrative procedures in air transport **II**

Recommendation for second reading: (qualified majority)

Ulrich STOCKMANN (A6-0212/2006)

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The compromise block consisted of amendments 19/rev to 25/rev.

Requests for roll-call votes

GUE/NGL am 11
4. Shipments of radioactive waste and nuclear spent fuel


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vote: amended proposal | + | | | |
vote: legislative resolution | EV | + | 523, 86, 37 | |

Requests for roll-call votes
Verts/ALE: ams 23, 24, 25

Requests for separate votes
PSE: am 6
Verts/ALE: ams 2, 7, 15, 16, 17, 18
Requests for split votes

Verts/ALE

am 8
First part: text as a whole without the words ‘and protected against any misuse’
Second part: those words

IND/DEM

am 20
First part: text as a whole without the words ‘with the exception of reshipments’
Second part: those words

5. Investing for growth and employment


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vote: resolution (as a whole) +

Requests for separate votes
PPE-DE: §§ 36, 48, 54

Requests for split votes
PPE-DE

§ 8
First part: text as a whole without the words ‘proposal to draft a’
Second part: those words

§ 18
First part: ‘Takes note … advanced companies;’
Second part: ‘considers that … like GPL and PDL:’
6. Towards a more integrated approach for industrial policy

Report: Joan CALABUIG RULL (A6-0206/2006)

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Requests for roll-call votes

PPE-DE: final vote

Requests for separate votes

PPE-DE: §§ 16, 28
Verts/ALE: §§ 8, 23, 25, 30, 32

Requests for split votes

ALDE, PSE

am 1

First part: ‘Calls for the rights of workers … representative bodies,’
Second part: ‘especially European Works Councils … honour its commitments,’
§ 5
First part: text as a whole without the words ‘isolated national policies could hamper … industrial policy and that’
Second part: those words

§ 10
First part: ‘Recognises the need … sustainable development;’
Second part: ‘calls on the Commission … more and better jobs;’

§ 12
First part: ‘Is convinced that … facilitate structural change;’
Second part: ‘regrets the fact … learning and training;’
Third part: ‘urges the Member States … scientific studies;’

§ 22
First part: ‘Welcomes the concept … of the market;’
Second part: ‘believes, however … action in R&D;’
Third part: ‘encourages the Commission … in practical terms;’

§ 25
First part: ‘Considers that it might … sustainability and competitiveness;’
Second part: ‘points out that, … manufacturing industries;’

§ 26
First part: ‘Points out that … and social players;’
Second part: ‘to draw up … by each region;’
Third part: ‘calls on Member States … Structural Funds in this respect;’

§ 27
First part: ‘Points out that … territorial dimension;’
Second part: ‘notes that areas … specific needs;’
Third part: ‘calls on the Commission … intensified among regions;’
Fourth part: ‘facing similar problems … and economic policies;’

Verts/ALE

§ 38
First part: ‘Urges the Commission … intellectual property rights;’
Second part: ‘in this regard, considers … goods enter the EU;’
ANNEX II

RESULT OF ROLL-CALL VOTES


Amendment 11

For: 138

ALDE: Harkin


IND/DEM: Batten, Bonde, Booth, Clark, Cottéaux, Farage, Knapman, Louis, Nattrass, Titford, Tomczak, de Villiers, Whittaker, Wise

NI: Bobošiková, Chruszcz, Claeyts, Dillen, Gollnisch, Lang, Le Pen Jean-Marie, Le Pen Marine, Le Rachinel, Martin Hans-Peter, Martinez, Mölzer, Mussolini, Romagnoli, Schenardi, Vanhecke, Wojciechowski Bernard Piotr

PPE-DE: Ebner, Rübig


Against: 494


IND/DEM: Belder, Blokland, Sinnott, Železný

NI: Allister, Battilocchio, Belohorská, Czarnecki Ryszard, de Michelis, Helmer, Mote, Piskorski, Rivera, Rutowicz

Abstention: 15

For
Benoît Hamon, Katerina Batzeli, Panagiotis Beglitis

Abstention
Paul Rübig


Amendment 8/2

For: 558

Against: 79
Wednesday, 5 July 2006

PSE: Andersson, Bullmann, Christensen, Corbey, Gebhardt, Groote, Gruber, Haug, Hedh, Hedkvist Petersen, Jørgensen, Kreissl-Dörfler, Kristensen, Leinen, Piecyk, Rothe, Segelström, Thomsen, Van Lancker, Weiler, Westlund


Abstention: 17

ALDE: Samuelsen

GUE/NGL: Manolakou, Markov, Paflis, Toussas

IND/DEM: Rogalski

NI: Baco, Borghezio, Kilroy-Silk, Kozlík, Mote, Salvini, Speroni

PPE-DE: Coveney, Seeberg

UEN: Kamiński

Verts/ALE: van Buitenen

Corrections to votes

Against

Lissy Gröner, Poul Nyrup Rasmussen


Amendment 20/2

For: 626


IND/DEM: Belder, Blokland, Grabowski, Krupa, Pék, Piotrowski, Rogalski, Sinnott, Tomczak, Zapalowski

NI: Allister, Battilocchio, Belohorská, Bobošíková, Borghezio, Chruszcz, Czarnecki Ryszard, De Michelis, Giertych, Helmer, Martin Hans-Peter, Mussolini, Piskorski, Rivera, Rutowicz, Salvini, Speroni, Vanhecke, Wojciechowski Bernard Piotr


UEN: Angelilli, Aylward, Berlato, Bielen, Camre, Crowley, Didžiokas, Foglietta, Foltyn-Kubicka, Janowski, Kamiński, Krastins, Kučinskis, La Russa, Libicki, Maldeikis, Muscardini, Musumeci, Nechtáin, Pirilli, Podkasiński, Roszkowski, Ryan, Szymański, Tattera, Vaidere, Wojciechowski Janusz, Zile


**Against:** 23

ALDE: Lambsdorff

IND/DEM: Batten, Bonde, Booth, Clark, Farage, Nattrass, Tifftord, Whittaker, Wise, Železný

NI: Claey, Dille, Gottschall, Lang, Le Pen Jean-Marie, Le Pen Marine, Le Rachinet, Martinez, Möller, Romagnoli, Schenardi

**Abstention:** 10

IND/DEM: Coûteaux, Louis, de Villiers

NI: Baco, Kilroy-Silk, Kozlík, Mote

PPE-DE: Coveney

PSE: Castex

Verts/ALE: van Buitenen

Amendment 23

For: 137


GUE/NGL: Adamou, Agnoletto, Aita, Brie, Catania, de Brún, Guerreiro, Guidoni, Markov, Meijer, Morgantini, Musacchio, Papadimoulis, Pflüger, Triantaphyllides, Wagenerknecht

IND/DEM: Bonde, Grabowski, Krupa, Piotrowski, Sinnott, Tomczak, Zapalowski

NI: Chruszcz, Czarnecki Ryszard, Lynne, Matsakis, Newton Dunn, Onyszczewicz, Ortuondo Larrea, Resetarits, Samuelsen, Wallis, Watson

PPDE: Eurlings, Kasas, Pirker, Protasiewicz, Rack, Rübig, Schierhuber, Seeberg

PSE: Andersson, Berès, Berger, Bönisch Bozkurt, Bullmann, Christensen, Corbey, De Vits, Ettl, Gebhardt, Grech, Grüner, Groote, Gruber, Hedh, Hedkvist Petersen, Jönköping, Kostas Kavac, Kreissl-Dörfler, Kristensen, Leichtfried, Leinen, Muscat, Müller, Piecyk, Rapkay, Reynaud, Rothe, Scheele, Segelström, Swoboda, Van Lancker, Walter, Westlund

UEN: Camre, Kuźmiuk, Maldeikis

Verts/ALE: Aubert, Auken, Beer, Bennahmias, Breyer, van Buitenen, Cohn-Bendit, Cramer, Evans, Jilly, Flautre, Schlyter, Schmit, Schroedter, Smith, StAES, Trüpel, Voggenhuber, Ždanoka

Against: 511


GUE/NGL: Flasarová, Henin, Kaufmann, Kohlíček, Krarup, Manolakou, Maštálka, Meyer Pleite, Pafilis, Portas, Ransdorf, Remek, Seppănen, Takkula, Väyrynen, Van Hecke, Veld, Virginiki


NI: Allister, Battilocchio, Boboškova, Borghese, Claeys, De Michielis, Dillen, Gollnisch, Helmer, Lang, Van Den Maxme, Le Pen Marine, Martínez, Masiel, Mülzer, Mote, Mussolini, Piskorski, Rivera, Romagnoli, Salvini, Schenardi, Speroni, Vanhecke


Abstention: 12

ALDE: Alvaro, Savi, Toia

IND/DEM: Pčk

NI: Baco, Belohorská, Kilroy-Silk, Kozlík, Le Rachinel

PSE: Ferreira Anne, Gurmai

UEN: Vaidere

Corrections to votes

For

Said El Khadraoui, Eva-Britt Svensson, Jonas Sjöstedt, Poul Nyrup Rasmussen

Against

Jean-Louis Bourlanges


Amendment 24

For: 160


Against: 469

UEN: Angelilli, Aylward, Berlato, Crowley, Didžiokas, Foglietta, Krasts, Kristovskis, La Russa, Maldeikis, Muscardini, Musumeci, Ó Neachtain, Pirilli, Ryan, Tatarella, Vaidere, Zile

**Abstention:** 20

**ALDE:** Alvaro, Matsakis, Toia

**NI:** Baco, Belohorská, Borghezio, Kilroy-Silk, Kozlík, Salvini, Speroni

**PPE-DE:** Coveney, Eurlings

**PSE:** Ferreira Anne

**UEN:** Foltyn-Kubicka, Janowski, Kuźmiuk, Libicki, Podkański, Roszkowski, Szymański

**Corrections to votes**

**For**

John Attard-Montalto, Richard Seeber, Poul Nyrup Rasmussen


**Amendment 25**

**For:** 166

**ALDE:** Attwooll, Bowles, Davies, Duff, Hall, Harkin, Karim, Lambsdorff, Ludford, Lynne, Ortuondo Larrea, Resetarits, Samuelsen, Wallis, Watson

**GUE/NGL:** Adamou, Agnoletto, Aita, Brie, Catania, de Brún, Figueiredo, Hasarova, Guerriero, Guidoni, Kaufmann, Kohlíček, Krarup, Liotard, Manolakou, Markov, Maštálka, Meijer, Meyer Pleite, Morgantini, Musacchio, Paflis, Papadimoulis, Pflüger, Portas, Ransdorf, Seppänen, Sjöstedt, Sjöqvist, Svensson, Toussas, Triantaphyllides, Uca, Wagenknecht, Zimmer

**IND/DEM:** Batten, Belder, Blokland, Bonde, Booth, Clark, Farage, Grabowski, Knapman, Krupa, Nattrass, Pęk, Piotrowski, Rogalski, Sinnott, Tifford, Tomczak, Whittaker, Wise, Zapałowski

**NI:** Chruszczy, Czarnecki Ryszard, Giertych, Martin Hans-Peter, Rutowicz, Wojciechowski Bernard Piotr

**PPE-DE:** Dehaene, Karas, Pirker, Rack, Rübig, Schiederhuber, Seeberg

**PSE:** Andersson, Berger, Berman, Bösch, Böskurt, Bullmann, Christensen, Corbey, De Vits, El Khadraoui, Ettl, Gebhardt, Grech, Grüner, Groote, Gruber, Haug, Hed, Hedkvist Petersen, Jørgensen, Kreissl-Dörfler, Kristensen, Leichtfried, Leinen, Muscat, Pickey, Rapkay, Rasmussen, Reynaud, Rothe, Scheele, Segelström, Swoboda, Thomsen, Van Lancker, Walter, Weiler, Westlund

**UEN:** Bielan, Camre, Didžiokas, Kamiński, La Russa, Maldeikis, Wojciechowski Janusz
Wednesday, 5 July 2006


**Against:** 471


**GUE/NGL:** Henin

**IND/DEM:** Zelezný

**NI:** Allister, Battilocchio, Bobošková, Claes, De Michielis, Dillen, Gollnisch, Helmer, Lang, Le Pen Jean-Marie, Le Pen Marine, Le Racinhe, Masel, Möllzer, Møller, Mussolini, Piskorski, Rivera, Romagnoli, Schenardi, Speroni, Vanhecke


**UEN:** Angelilli, Aylward, Berlato, Crowley, Foglietta, Krasts, Kristovskis, Muscardini, Musumeci, Ö Neachtain, Pirilli, Ryan, Tatarella, Vaidere, Zile
Abstention: 23

ALDE: Alvaro, Matsakis

GUE/NGL: Remek

IND/DEM: Couœtaux, Louis, de Villiers

NI: Baco, Belohorská, Borghezio, Kliroy-Silk, Kozlík, Salvini

PPE-DE: Coveney, Eurlings

PSE: Schulz

UEN: Foltyn-Kubicka, Janowski, Kuźmiuk, Libicki, Podkársik, Roszkowski, Szymański

Verts/ALE: van Buitenen

Corrections to votes

For

John Attard-Montalto, Richard Seeber


Resolution

For: 484


IND/DEM: Bonde

NI: Battilocchio, Belohorská, Borghezio, Czarnecki Ryszard, De Michelis, Kozlík, Masiel, Piskorski, Rivera, Rutovicz, Salvini

Wednesday, 5 July 2006


UEN: Angell, Aylward, Didžiokas, Foglietta, Foltyn-Kubicka, Janowski, Kristovskis, Kuzmiuk, La Russa, Libicki, Maldeikis, Muscardini, Musumeci, Pirilli, Podkański, Roszkowski, Ryan, Tatarella, Vaidere, Wojciechowski Janusz, Žile

Against: 58

GUE/NGL: Manolakou, Pafilis, Pflüger, Toussas, Wagenknecht

IND/DEM: Batten, Belder, Blokland, Booth, Clark, Knapman, Nattrass, Sinnott, TifFord, Whitaker, Wise

NI: Allister, Chruszcz, Giertycz, Kilroy-Silk, Martin Hans-Peter, Mote, Wojciechowski Bernard Piotr


Abstention: 54

GUE/NGL: Adamou, Agnolletto, Aita, Brie, Catania, de Brún, Figueiredo, Flasarová, Guerreiro, Guidoni, Henin, Kaufmann, Kohlíček, Liotard, Markov, Maštálka, Meijer, Meyer Pleite, Morgantini, Musacchio, Papadimoulis, Ransdorf, Remek, Seppanen, Sjöstedt, Strož, Svensson, Triantaphyllides, Uca, Zimmer

IND/DEM: Grabowski, Krupa, Louis, Pčk, Piotrowski, Rogalski, de Villiers, Zapolowski, Železný

NI: Baco, Bobošíková, Claeys, Dillen, Gollnisch, Lang, Le Rachinel, Romagnoli, Schenardi, Vanhecke

PPE-DE: Koch, Sommer, Strejček

PSE: Kreissl-Dörfler

Verts/ALE: van Buitenen
P6_TA(2006)0297

Strengthening cross-border police cooperation *

European Parliament legislative resolution on the initiative by the Kingdom of the Netherlands with a view to the adoption of a Council Decision on strengthening cross-border police cooperation with regard to meetings attended by large numbers of people from more than one Member State, at which policing is primarily aimed at maintaining law and order and security and preventing and combating criminal offences (6930/2005 — C6-0117/2005 — 2005/0804(CNS))

(Consultation procedure)

The European Parliament,

— having regard to the initiative by the Kingdom of the Netherlands (6930/2005) (1),
— having regard to Article 34(2)(c) of the EU Treaty,
— having regard to Article 39(1) of the EU Treaty, pursuant to which the Council consulted Parliament (C6-0117/2005),
— having regard to Rules 93 and 51 of its Rules of Procedure,
— having regard to the report of the Committee on Civil Liberties, Justice and Home Affairs (A6-0222/2006);

1. Approves the initiative by the Kingdom of the Netherlands as amended;
2. Calls on the Council to amend the text accordingly;
3. Calls on the Council to notify Parliament if it intends to depart from the text approved by Parliament;
4. Calls on the Council to consult Parliament again if it intends to amend the initiative by the Kingdom of the Netherlands substantially;
5. Instructs its President to forward its position to the Council and Commission, and the government of the Kingdom of the Netherlands.

TEXT PROPOSED BY THE KINGDOM OF THE NETHERLANDS

AMENDMENTS BY PARLIAMENT

Amendment 1
Recital 3 a (new)

(3a) The basis for this Decision is the Council Conclusions of 13 July 2001 on security at European Council meetings and other comparable events.

(1) OJ C 101, 27.4.2005, p. 36.
Amendment 2
Recital 3b (new)

(3b) This Decision builds on the arrangements provided for in Joint Action 97/339/JHA of 26 May 1997 adopted by the Council on the basis of Article K.3 of the Treaty on European Union with regard to cooperation on law and order and security (1) and the Council Resolution of 29 April 2004 on security at European Council meetings and other comparable events (2).


Amendment 3
Recital 4

(4) In the light of that trend, and following on from earlier initiatives (3), it is necessary to step up international police cooperation in this area.


(4) In the light of that trend, and following on from earlier initiatives, it is necessary to step up international police cooperation in this area, in accordance with the principles of proportionality and subsidiarity and in compliance with European rules on the protection of privacy.

Amendment 4
Recital 5

(5) The possibilities afforded by the Schengen acquis are insufficient to ensure effective cross border assistance,

Amendment 5
Article 3, paragraph 1

1. In the last quarter of each calendar year the Presidency of the Council shall present an overview of the international assistance expected to be required in the following calendar year.

1. In the last quarter of each calendar year the Presidency of the Council shall present an overview of the international assistance expected to be required in the following calendar year. If, following the expiry of that period, a Member State requests assistance in connection with an unanticipated event, the Presidency shall immediately add that event to the overview and notify the Council thereof in confidence.

Amendment 6
Article 3, paragraph 4a (new)

4a. This mechanism shall be complementary to the one established in Joint Action 97/339/JHA.

Amendment 7
Article 4, paragraph 5

5. The Presidency shall send the review referred to in paragraph 1 to the Council for confidential perusal.

deleted
Amendment 8

Article 5

1. The General Secretariat of the Council shall assist the Member States by researching existing agreements on cross-border assistance.

2. Member States shall forward the texts of such agreements to the General Secretariat of the Council no later than six months after the entry into force of this Decision.

3. Within one year at the latest, the Council shall discuss, on the basis of the results of the research referred to in the first paragraph, whether the main difficulties observed can be resolved by adapting the relevant European legislation, and in particular the Schengen Convention.


P6_TA(2006)0298

Technical requirements for inland waterway vessels ***II

The European Parliament,

— having regard to the Council common position (13274/1/2005 — C 6-0091/2006),
— having regard to its position at first reading (1) on the Commission proposal to Parliament and the Council (COM(1997)0644) (1),
— having regard to the amended Commission proposal (COM(2000)0419) (2),
— having regard to Article 251(2) of the EC Treaty,
— having regard to Rule 62 of its Rules of Procedure,
— having regard to the recommendation for second reading of the Committee on Transport and Tourism (A6-0208/2006);

1. Approves the common position as amended;
2. Instructs its President to forward its position to the Council and the Commission.

(3) Not yet published in OJ.

THE EUROPEAN PARLIAMENT AND THE COUNCIL OF THE EUROPEAN UNION,

Having regard to the Treaty establishing the European Community, and in particular Article 71(1) thereof,

Having regard to the proposal from the Commission,

Having regard to the Opinion of the European Economic and Social Committee (1),

Following consultation of the Committee of the Regions,

Acting in accordance with the procedure laid down in Article 251 of the Treaty (2),

Whereas:

(1) Council Directive 82/714/EEC of 4 October 1982 laying down technical requirements for inland waterway vessels (3) introduced harmonised conditions for issuing technical certificates for inland waterway vessels in all Member States, albeit excluding operations on the Rhine. Nevertheless, at European level, various technical requirements for inland waterway vessels have remained in force. Up to now, the coexistence of various international and national regulations has obstructed efforts to ensure mutual recognition of national navigation certificates without the need for an additional inspection of foreign vessels. Furthermore, the standards contained in Directive 82/714/EEC, in part, no longer reflect current technological developments.

(2) Essentially, the technical requirements set out in the annexes to Directive 82/714/EEC incorporate the provisions laid down in the Rhine Vessel Inspection Regulation, in the version approved by the Central Commission for Navigation on the Rhine (CCNR) in 1982. The conditions and technical requirements for issuing inland navigation certificates under Article 22 of the Revised Convention for Rhine Navigation have been revised regularly since then and are recognised as reflecting current technological developments. For competition and safety reasons it is desirable, specifically in the interests of promoting harmonisation at European level, to adopt the scope and content of such technical requirements for the whole of the Community's inland waterway network. Account should be taken in this regard of the changes that have occurred in that network.

(3) Community inland navigation certificates attesting the full compliance of vessels with the aforementioned revised technical requirements should be valid on all Community inland waterways.

(4) It is desirable to ensure a greater degree of harmonisation between the conditions for the issuing of supplementary Community inland navigation certificates by Member States for operations on Zone 1 and 2 waterways (estuaries), as well as for operations on Zone 4 waterways.

(5) In the interests of passenger transport safety, it is desirable that the scope of Directive 82/714/EEC be extended to include passenger vessels designed to carry more than 12 passengers, along the lines of the Rhine Vessel Inspection Regulation.

(6) In the interests of safety, harmonisation of standards should be at a high level and should be achieved in such a way so as not to result in any reduction in safety standards on any Community inland waterway.

It is appropriate to provide for a transitional regime for vessels in service not yet carrying a Community inland navigation certificate when subjected to a first technical inspection under the revised technical requirements established by this Directive.

It is appropriate, within certain limits and according to the category of vessel concerned, to determine the period of validity of Community inland navigation certificates in each specific case.

The measures necessary for the implementation of this Directive should be adopted in accordance with Council Decision 1999/468/EC of 28 June 1999 laying down the procedures for the exercise of implementing powers conferred on the Commission (1).

It is necessary that the measures provided for in Council Directive 76/135/EEC of 20 January 1976 on reciprocal recognition of navigability licenses for inland waterway vessels (2) remain in force for those vessels not covered by this Directive.

Given that some vessels fall within the scope of Directive 94/25/EC of the European Parliament and of the Council of 16 June 1994 on the approximation of the laws, regulations and administrative provisions of the Member States relating to recreational craft (3) as well as of this directive, the annexes of the two directives should be adjusted by the relevant committee procedures as soon as possible if there are any contradictions or inconsistencies between the provisions of those directives.

In accordance with point 34 of the Interinstitutional Agreement on better law-making (4), Member States are encouraged to draw up, for themselves and in the interests of the Community, their own tables illustrating, as far as possible, the correlation between this Directive and the transposition measures, and to make them public.

Directive 82/714/EEC should be repealed.

H ave a d opted this Directive:

Article 1

Classification of waterways

1. For the purposes of this Directive, Community inland waterways shall be classified as follows:

(a) Zones 1, 2, 3 and 4:

(i) Zones 1 and 2: the waterways listed in Chapter 1 of Annex I;

(ii) Zone 3: the waterways listed in Chapter 2 of Annex I;

(iii) Zone 4: the waterways listed in Chapter 3 of Annex I.

(b) Zone R: those of the waterways referred to in point (a) for which certificates are to be issued in accordance with Article 22 of the Revised Convention for Rhine Navigation as that Article is worded when this Directive enters into force.

2. Any Member State may, after consulting the Commission, modify the classification of its waterways into the zones listed in Annex I. The Commission shall be notified of these modifications at least six months before their entry into force and shall inform the other Member States.

Article 2

Scope of application

1. This Directive shall, in accordance with Article 1.01 of Annex II, apply to the following craft:
   (a) vessels having a length (L) of 20 metres or more;
   (b) vessels for which the product of length (L), breadth (B) and draught (T) is a volume of 100 m³ or more.

2. This Directive shall also apply, in accordance with Article 1.01 of Annex II, to all of the following craft:
   (a) tugs and pushers intended for towing or pushing craft referred to in paragraph 1 or floating equipment or for moving such craft or floating equipment alongside;
   (b) vessels intended for passenger transport which carry more than 12 passengers in addition to the crew;
   (c) floating equipment.

3. The following craft shall be excluded from this Directive:
   (a) ferries;
   (b) naval vessels;
   (c) sea-going vessels, including sea-going tugs and pusher craft, which:
      (i) operate or are based on tidal waters;
      (ii) operate temporarily on inland waterways, provided that they carry:
          — a certificate proving conformity with the 1974 International Convention for the Safety of Life at Sea (SOLAS), or equivalent, a certificate proving conformity with the 1966 International Convention on Load Lines, or equivalent, and an international oil pollution prevention (IOPP) certificate proving conformity with the 1973 International Convention for the Prevention of Pollution from Ships (MARPOL); or
          — in the case of passenger vessels not covered by all of the Conventions referred to in the first indent, a certificate on safety rules and standards for passenger ships issued in conformity with Council Directive 98/18/EC of 17 March 1998 on safety rules and standards for passenger ships (1); or
          — in the case of recreational craft not covered by all of the Conventions referred to in the first indent, a certificate of the country of which it carries the flag.

Article 3

Obligation to carry a certificate

1. Craft operating on the Community inland waterways referred to in Article 1 shall carry:
   (a) when operating on a Zone R waterway:
       — either a certificate issued pursuant to Article 22 of the Revised Convention for Rhine Navigation;

or a Community inland navigation certificate issued or renewed after … (*) and attesting full compliance of the craft, without prejudice to the transitional provisions of Chapter 24 of Annex II, with technical requirements as defined in Annex II for which equivalency with the technical requirements laid down in application of the abovementioned Convention has been established according to the applicable rules and procedures;

(b) when operating on other waterways, a Community inland navigation certificate, including, where applicable, the specifications referred to in Article 5.

2. The Community inland navigation certificate shall be drawn up following the model set out in Part I of Annex V and shall be issued in accordance with this Directive.

Article 4

Supplementary Community inland navigation certificates

1. All craft carrying a valid certificate issued pursuant to Article 22 of the Revised Convention for Rhine Navigation may, subject to the provisions of Article 5(5) of this Directive, navigate on Community waterways carrying that certificate only.

2. However, all craft carrying the certificate referred to in paragraph 1 shall also be provided with a supplementary Community inland navigation certificate:

(a) when operating on Zone 3 and 4 waterways, if they wish to take advantage of the reduction in technical requirements on those waterways;

(b) when operating on Zone 1 and 2 waterways, or, in respect of passenger vessels, when operating on Zone 3 waterways that are not linked to the navigable inland waterways of another Member State, if the Member State concerned has adopted additional technical requirements for those waterways, in accordance with Article 5(1), (2) and (3).

3. The supplementary Community inland navigation certificate shall be drawn up following the model set out in Part II of Annex V and shall be issued by the competent authorities on production of the certificate referred to in paragraph 1 and under the conditions laid down by the authorities competent for the waterways concerned.

Article 5

Additional or reduced technical requirements for certain zones

1. Each Member State may, after consulting the Commission, and where applicable subject to the requirements of the Revised Convention for Rhine Navigation, adopt technical requirements additional to those in Annex II for craft operating on Zone 1 and 2 waterways within its territory.

2. In respect of passenger vessels operating on Zone 3 waterways within its territory that are not linked to the navigable inland waterways of another Member State, each Member State may maintain technical requirements additional to those in Annex II. Amendments to such technical requirements shall require the prior approval of the Commission.

3. The additional requirements shall be restricted to the subjects listed in Annex III. The Commission shall be notified of these additional requirements at least six months before their entry into force and shall inform the other Member States.

4. Compliance with the additional requirements shall be specified in the Community inland navigation certificate referred to in Article 3 or, where Article 4(2) applies, in the supplementary Community inland navigation certificate. Such proof of compliance shall be recognised on Community waterways of the corresponding zone.

(*) 2 years after the date of entry into force of this Directive.
5. (a) Where application of the transitional provisions set out in Chapter 24a of Annex II would result in a reduction in existing national safety standards, a Member State may disapply those transitional provisions in respect of inland waterway passenger vessels operating on its inland waterways that are not linked to the navigable inland waterways of another Member State. In such circumstances, the Member State may require that such vessels operating on its non-linked inland waterways comply fully with the technical requirements set out in Annex II from ... (*)

(b) A Member State exercising the provision in point (a) shall inform the Commission of its decision and provide the Commission with details of the relevant national standards applying to passenger vessels operating on its inland waterways. The Commission shall inform the Member States.

(c) Compliance with the requirements of a Member State for operating on its non-linked inland waterways shall be specified in the Community inland navigation certificate referred to in Article 3 or, where Article 4(2) applies, in the supplementary Community inland navigation certificate.

6. Craft operating only on Zone 4 waterways shall qualify for the reduced requirements as specified in Chapter 19b of Annex II on all waterways in that zone. Compliance with those reduced requirements shall be specified in the Community inland navigation certificate referred to in Article 3.

7. Each Member State may, after consulting the Commission, allow a reduction of the technical requirements of Annex II for craft operating exclusively on Zone 3 and 4 waterways within its territory.

Such a reduction shall be restricted to the subjects listed in Annex IV. Where the technical characteristics of a craft correspond to the reduced technical requirements, this shall be specified in the Community inland navigation certificate or, where Article 4(2) applies, in the supplementary Community inland navigation certificate.

The Commission shall be notified of the reductions of the technical requirements of Annex II at least six months before they come into force and shall inform the other Member States.

Article 6

Dangerous goods

Any craft carrying a certificate issued pursuant to the Regulation for the transport of dangerous substances on the Rhine (the 'ADNR') may carry dangerous goods throughout the territory of the Community under the conditions stated in that certificate.

Any Member State may require that craft which do not carry such a certificate shall only be authorised to carry dangerous goods within its territory if the craft comply with requirements additional to those set out in this Directive. The Commission shall be notified of such requirements and shall inform the other Member States.

Article 7

Derogations

1. Member States may authorise derogations from all or part of this Directive for:

(a) vessels, tugs, pushers and floating equipment operating on navigable waterways not linked by inland waterway to the waterways of other Member States;

(b) craft having a dead weight not exceeding 350 tonnes or craft not intended for the carriage of goods and having a water displacement of less than 100 m³, which were laid down before 1 January 1950 and operate exclusively on a national waterway.

(*) 2 years after the date of entry into force of this Directive.
2. Member States may authorise in respect of navigation on their national waterways derogations from one or more provisions of this Directive for limited journeys of local interest or in harbour areas. These derogations and the journeys or area for which they are valid shall be specified in the vessel’s certificate.

3. The Commission shall be notified of derogations authorised in accordance with paragraphs 1 and 2 and shall inform the other Member States.

4. Any Member State which, as a result of derogations authorised in accordance with paragraphs 1 and 2, has no craft subject to the provisions of this Directive operating on its waterways shall not be required to comply with Articles 9, 10 and 12.

Article 8

Issuance of Community inland navigation certificates

1. The Community inland navigation certificate shall be issued to craft laid down as from … (*) following a technical inspection carried out prior to the craft being put into service and intended to check whether the craft complies with the technical requirements laid down in Annex II.

2. The Community inland navigation certificate shall be issued to craft excluded from the scope of Directive 82/714/EEC, but covered by this Directive in accordance with Article 2(1) and (2), following a technical inspection which shall be carried out upon expiry of the craft’s current certificate, but in any case no later than … (**), to check whether the craft complies with the technical requirements laid down in Annex II. In Member States where the validity period of the craft’s current national certificate is shorter than five years, such certificate may be issued until five years after … (**).

Any failure to meet the technical requirements laid down in Annex II shall be specified in the Community inland navigation certificate. Provided that the competent authorities consider that these shortcomings do not constitute a manifest danger, the craft referred to in the first subparagraph may continue to operate until such time as those components or areas of the craft which have been certified as not meeting those requirements are replaced or altered, whereafter those components or areas shall meet the requirements of Annex II.

3. Manifest danger within the meaning of this Article shall be presumed in particular when requirements concerning the structural soundness of the shipbuilding, the navigation or manoeuvrability or special features of the craft in accordance with Annex II are affected. Derogations as allowed for in Annex II shall not be identified as shortcomings which constitute a manifest danger.

The replacement of existing parts with identical parts or parts of an equivalent technology and design during routine repairs and maintenance shall not be considered as a replacement within the meaning of this Article.

4. Compliance of a craft with the additional requirements referred to in Article 5(1), (2) and (3) shall, where appropriate, be checked during the technical inspections provided for in paragraphs 1 and 2 of this Article, or during a technical inspection carried out at the request of the vessel's owner.

Article 9

Competent authorities

1. Community inland navigation certificates may be issued by the competent authorities of any Member State.

(*) 2 years after the date of entry into force of this Directive.
(**) 12 years after the date of entry into force of this Directive.
2. Each Member State shall draw up a list indicating which of its authorities are competent for issuing the Community inland navigation certificates and shall notify the Commission thereof. The Commission shall inform the other Member States.


Article 10

Carrying out of technical inspections

1. The technical inspection referred to in Article 8 shall be carried out by the competent authorities which may refrain from subjecting the craft in whole or in part to technical inspection where it is evident from a valid attestation, issued by a recognised classification society in accordance with Article 1.01 of Annex II, that the craft satisfies in whole or in part the technical requirements of Annex II. Classification societies shall only be recognised if they fulfil the criteria listed in Part I of Annex VII.

2. Each Member State shall draw up a list indicating which of its authorities are competent for carrying out technical inspections and shall notify the Commission thereof. The Commission shall inform the other Member States.

Article 11

Validity of Community inland navigation certificates

1. The period of validity of Community inland navigation certificates shall be determined in each specific case by the authority competent for issuing such certificates in accordance with Annex II.

2. Each Member State may, in the cases specified in Articles 12 and 16 and in Annex II, issue provisional Community inland navigation certificates. Provisional Community inland navigation certificates shall be drawn up following the model set out in Part III of Annex V.

Article 12

Replacement of Community inland navigation certificates

Each Member State shall lay down the conditions under which a valid Community inland navigation certificate which has been lost or damaged may be replaced.

Article 13

Renewal of Community inland navigation certificates

1. The Community inland navigation certificate shall be renewed on expiry of its period of validity in accordance with the conditions laid down in Article 8.

2. For the renewal of Community inland navigation certificates issued before … (*), the transitional provisions of Annex II shall apply.

3. For the renewal of Community inland navigation certificates issued after … (*), the transitional provisions of Annex II which have come into force after the issuing of such certificates shall apply.

(*) 2 years after the date of entry into force of this Directive.
Article 14

Extension of validity of Community inland navigation certificates

The validity of a Community inland navigation certificate may exceptionally be extended without a technical inspection in accordance with Annex II by the authority which issued or renewed it. Such extension shall be indicated on that certificate.

Article 15

Issuance of new Community inland navigation certificates

In the event of major alterations or repairs which affect the structural soundness of the shipbuilding, the navigation or manoeuvrability or special features of the craft in accordance with Annex II, the latter shall again undergo, prior to any further voyage, the technical inspection provided for in Article 8. Following this inspection, a new Community inland navigation certificate stating the technical characteristics of the craft shall be issued or the existing certificate amended accordingly. If this certificate is issued in a Member State other than that which issued or renewed the initial certificate, the competent authority which issued or renewed the certificate shall be informed accordingly within one month.

Article 16

Refusal to issue or renew, and withdrawal of, Community inland navigation certificates

Any decision to refuse to issue or renew a Community inland navigation certificate shall state the grounds on which it is based. The person concerned shall be notified thereof and of the appeal procedure and its time limits in the Member State concerned.

Any valid Community inland navigation certificate may be withdrawn by the competent authority which issued or renewed it if the craft ceases to comply with the technical requirements specified in its certificate.

Article 17

Additional inspections

The competent authorities of a Member State may, in accordance with Annex VIII, check at any time whether a craft is carrying a certificate valid under the terms of this Directive and satisfies the requirements set out in such certificate or constitutes a manifest danger for the persons on board, the environment or the navigation. The competent authorities shall take the necessary measures in accordance with Annex VIII.

Article 18

Recognition of navigability certificates of craft from third countries

Pending the conclusion of agreements on the mutual recognition of navigability certificates between the Community and third countries, the competent authorities of a Member State may recognise the navigability certificates of craft from third countries for navigation on the waterways of that Member State.

The issuance of Community inland navigation certificates to craft from third countries shall be carried out in accordance with Article 8(1).
Article 19

Committee procedure

1. The Commission shall be assisted by the Committee established under Article 7 of Council Directive 91/672/EEC of 16 December 1991 on the reciprocal recognition of national boatmasters’ certificates for the carriage of goods and passengers by inland waterway (1) (hereinafter referred to as ‘the Committee’).

2. Where reference is made to this paragraph, Articles 3 and 7 of Decision 1999/468/EC shall apply, having regard to the provisions of Article 8 thereof.

Article 20

Adaptation of the annexes and recommendations on provisional certificates

1. Any amendments which are necessary to adapt the annexes to this Directive to technical progress or to developments in this area arising from the work of other international organisations, in particular that of the Central Commission for Navigation on the Rhine (CCNR), to ensure that the two certificates referred to in Article 3(1)(a) are issued on the basis of technical requirements which guarantee an equivalent level of safety, or to take account of the cases referred to in Article 5, shall be adopted by the Commission in accordance with the procedure referred to in Article 19(2).

Those amendments shall be made rapidly in order to ensure that the technical requirements necessary for the issuing of the Community inland navigation certificate recognised for navigation on the Rhine give a level of safety equivalent to that required for the issuing of the certificate referred to in Article 22 of the Revised Convention for Rhine Navigation.

2. The Commission shall decide on recommendations from the Committee on the issuance of provisional Community inland navigation certificates in accordance with Article 2.19 of Annex II.

Article 21

Continued applicability of Directive 76/135/EEC

For those craft outside the scope of Article 2(1) and (2) of this Directive, but falling within the scope of Article 1(a) of Directive 76/135/EEC, the provisions of that Directive shall apply.

Article 22

National additional or reduced requirements

Additional requirements which were in force in a Member State before … (*) for craft operating within its territory on Zone 1 and 2 waterways or reduced technical requirements for craft operating within its territory on Zone 3 and 4 waterways which were in force in a Member State before that date shall continue to be in force until additional requirements in accordance with Article 5(1) or reductions in accordance with Article 5(7) of the technical prescriptions of Annex II come into force, but only until … (**).

(**) 2 years after the date of entry into force of this Directive.
(**) 30 months after the date of entry into force of this Directive.
Article 23

Transposition

1. Member States which have inland waterways as referred to in Article 1(1) shall bring into force the laws, regulations and administrative provisions necessary to comply with this Directive with effect from … (*). They shall forthwith inform the Commission thereof.

When Member States adopt these measures, they shall contain a reference to this Directive or shall be accompanied by such reference on the occasion of their official publication. The methods of making such reference shall be laid down by Member States.

2. Member States shall immediately communicate to the Commission the text of the provisions of national law which they adopt in the field covered by this Directive. The Commission shall inform the other Member States thereof.

Article 24

Penalties

Member States shall lay down a system of penalties for breaches of the national provisions adopted pursuant to this Directive and shall take all the measures necessary to ensure that these penalties are applied. The penalties thus provided for shall be effective, proportionate and dissuasive.

Article 25

Repeal of Directive 82/714/EEC

Directive 82/714/EEC shall be repealed with effect from … (*).

Article 26

Entry into force

This Directive shall enter into force on the day of its publication in the Official Journal of the European Union.

Article 27

Addressees

This Directive is addressed to the Member States which have inland waterways as referred to in Article 1(1).

Done at …, on …

For the European Parliament
The President

For the Council
The President

(*) 2 years after the date of entry into force of this Directive.
ANNEX I

LIST OF COMMUNITY INLAND WATERWAYS DIVIDED GEOGRAPHICALLY INTO ZONES 1, 2, 3 AND 4

CHAPTER 1

Zone 1

**Federal Republic of Germany**

**Ems:** from a line linking the former Greetsiel lighthouse and the western pier of the port entrance at Eemshaven seawards as far as latitude 53°30′ N and longitude 6°45′ E, i.e. slightly seawards of the lightering area for dry-cargo carriers in the Alte Ems (*)

(*) In the case of vessels whose home port is elsewhere, account is to be taken of Article 32 of the Ems-Dollart Treaty of 8 April 1960 (BGBl. 1963 II p. 602).

**Republic of Poland**

The part of Pomorska Bay southward from the line linking NordPerd on Rugen Island and the lighthouse Niechorze.

The part of Gdańska Bay southward from the line linking the lighthouse Hel and the entrance buoy to the port of Baltijsk.

**United Kingdom of Great Britain and Northern Ireland**

**SCOTLAND**

- **Blue Mull Sound** Between Gutcher and Belmont.
- **Yell Sound** Between Tofts Voe and Ulsta.
- **Sullom Voe** Within a line from the north-east point of Gluss Island to the northern point of Calback Ness.
- **Dales Voe** In winter: within a line from the north point of Kebister Ness to the Coast of Breiwick at longitude 1°10.8′ W
- **Dales Voe** In summer: as for Lerwick
- **Lerwick** In winter: within the area bounded to the northward by a line from Scottie Holm to Scarfi Taing on Bressay and to the southward by a line from Twageos Point Lighthouse to Whalpa Taing on Bressay
- **Lerwick** In summer: within the area bounded to the northward by a line from Brim Ness to the north east corner of Inner Score and to the southward by a line from the south end of Ness of Sound to Kirkabister Ness
- **Kirkwall** Between Kirkwall and Rousay not east of a line between Point of Graand (Egilsay) and Galt Ness (Shapinsay) or between Head of Work (Mainland) through Helliar Holm light to the shore of Shapinsay; not north west of the south east tip of Eynhallow Island, not to seaward and a line between the shore on Rousay at 59°10.5′ N 002°57.1′ W and the shore on Egilsay at 59°10.0′ N 002°56.4′ W.
- **Stromness** To Scapa but not outside Scapa Flow
Scapa Flow  Within an area bounded by lines drawn from Point of Cletts on the island of Hoy to Thomson's Hill triangulation point on the island of Fara and thence to Gibraltar Pier on the island of Flotta; from St Vincent Pier on the island of Flotta to the westernmost point of Calf of Flotta; from the easternmost point of the Calf of Flotta to Needle Point on the island of South Ronaldsay and from the Ness on Mainland to Point of Oxan lighthouse on the island of Graemsay and thence to Bu Point on the island of Hoy; and seaward of Zone 2 waters.

Balmakiel Bay  Between Eilean Dubh and A'Chleit

Cromarty Firth  Within a line from North Sutor to Nairn Breakwater and seaward of Zone 2 waters.

Inverness  Within a line from North Sutor to Nairn Breakwater and seaward of Zone 2 waters.

River Tay — Dundee  Within a line from Broughty Castle to Tayport and seaward of Zone 2 waters.

Firth of Forth and River Forth  Within a line from Kirkcaldy to River Portobello and seaward of Zone 2 waters.

Solway Firth  Within a line from Southerness Point to Silloth

Loch Ryan  Within a line from Finnart's Point to Milleur Point and seaward of Zone 2 waters.

The Clyde  Outer limit:
   a line from Skipness to a position one mile south of Garroch Head thence to Farland Head

   Inner limit in winter:
   a line from Cloch Lighthouse to Dunoon Pier

   Inner limit in summer:
   a line from Bogany Point, Isle of Bute to Skelmorlie Castle and a line from Ardlamont Point to the southern extremity of Estrick Bay inside the Kyles of Bute

   Note: The above inner summer limit is extended between 5 June and 5 September (both dates inclusive) by a line from a point two miles off the Ayrshire coast at Skelmorlie Castle to Tomont End, Cumbrae, and a line from Portachur Point, Cumbrae to Inner Brigurd Point, Ayrshire

Oban  Within an area bounded on the north by a line from Dunollie Point Light to Ard na Chruidh and to the south by a line from Rudha Seanach to Ard na Cuile

Kyle of Lochalsh  Through Loch Alsh to the head of Loch Duich

Loch Gairloch  In winter:
   none

   In summer:
   South of a line running east from Rubha na Moine to Eilan Horrisdale and thence to Rubha nan Eanntag

NORTHERN IRELAND

Belfast Lough  In winter:
   none

   In summer:
   within a line from Carrickfergus to Bangor and seaward of Zone 2 waters.

Loch Neagh  At a greater distance than 2 miles from the shore
EAST COAST OF ENGLAND

River Humber
- In winter: within a line from New Holland to Paull
- In summer: within a line from Cleethorpes Pier to Patrington Church and seaward of Zone 2 waters.

WALES AND WEST COAST OF ENGLAND

River Severn
- In winter: within a line from Blacknore Point to Caldicot Pill, Portskewett
- In summer: within a line from Barry Dock Pier to Steepholm and thence to Brean Down and seaward of Zone 2 waters.

River Wye
- In winter: within a line from Blacknore Point to Caldicot Pill, Portskewett
- In summer: within a line from Barry Dock Pier to Steepholm and thence to Brean Down and seaward of Zone 2 waters.

Newport
- In winter: none
- In summer: within a line from Barry Dock Pier to Steepholm and thence to Brean Down and seaward of Zone 2 waters.

Cardiff
- In winter: none
- In summer: within a line from Barry Dock Pier to Steepholm and thence to Brean Down and seaward of Zone 2 waters.

Barry
- In winter: None
- In summer: within a line from Barry Dock Pier to Steepholm and thence to Brean Down and seaward of Zone 2 waters.

Swansea
- Within a line joining the seaward ends of the breakwaters

Menai Straits
- Within the Menai Straits from a line joining Llanddwyn Island Light to Dinas Dinlleu and lines joining the south end of Puffin Island to Trwyn DuPoint and Llanfairfechan Railway Station, and seaward of Zone 2 waters.
River Dee
In winter:
within a line from Hilbre Point to Point of Air
In summer:
within a line from Formby Point to Point of Air
and seaward of Zone 2 waters.

River Mersey
In winter:
None
In summer:
within a line from Formby Point to Point of Air
and seaward of Zone 2 waters.

Preston and Southport
Within a line from Southport to Blackpool inside the banks
and seaward of Zone 2 waters.

Fleetwood
In winter:
None
In summer:
within a line from Rossal Point to Humphrey Head
and seaward of Zone 2 waters.

River Lune
In winter:
None
In summer:
within a line from Rossal Point to Humphrey Head
and seaward of Zone 2 waters.

Heysham
In winter:
None
In summer:
within a line from Rossal Point to Humphrey Head

Morecambe
In winter:
None
In the summer:
from within a line from Rossal Point to Humphrey Head

Workington
Within a line from Southerness Point to Silloth
and seaward of Zone 2 waters.

SOUTH OF ENGLAND

River Colne, Colchester
In winter:
within a line from Colne Point to Whitstable
In summer:
within a line from Clacton Pier to Reculvers

River Blackwater
In winter:
within a line from Colne Point to Whitstable
In summer:
within a line from Clacton Pier to Reculvers
and seaward of Zone 2 waters.
Wednesday, 5 July 2006

River Crouch and River Roach
In winter:
within a line from Colne Point to Whitstable
In summer:
within a line from Clacton Pier to Reculvers
and seaward of Zone 2 waters.

River Thames and its tributaries
In winter:
within a line from Colne Point to Whitstable
In summer:
within a line from Clacton Pier to Reculvers
and seaward of Zone 2 waters.

River Medway and the Swale
In winter:
within a line from Colne Point to Whitstable
In summer:
within a line from Clacton Pier to Reculvers
and seaward of Zone 2 waters.

Chichester
Inside the Isle of Wight within an area bounded by lines drawn between the church spire, West Wittering, to Trinity Church, Bembridge, to the eastward, and the Needles and Hurst Point to the westward and seaward of Zone 2 waters.

Langstone Harbour
Inside the Isle of Wight within an area bounded by lines drawn between the church spire, West Wittering, to Trinity Church, Bembridge, to the eastward, and the Needles and Hurst Point to the westward and seaward of Zone 2 waters.

Portsmouth
Inside the Isle of Wight within an area bounded by lines drawn between the church spire, West Wittering, to Trinity Church, Bembridge, to the eastward, and the Needles and Hurst Point to the westward and seaward of Zone 2 waters.

Bembridge, Isle of Wight
Inside the Isle of Wight within an area bounded by lines drawn between the church spire, West Wittering, to Trinity Church, Bembridge, to the eastward, and the Needles and Hurst Point to the westward and seaward of Zone 2 waters.

Cowes, Isle of Wight
Inside the Isle of Wight within an area bounded by lines drawn between the church spire, West Wittering, to Trinity Church, Bembridge, to the eastward, and the Needles and Hurst Point to the westward and seaward of Zone 2 waters.

Southampton
Inside the Isle of Wight within an area bounded by lines drawn between the church spire, West Wittering, to Trinity Church, Bembridge, to the eastward, and the Needles and Hurst Point to the westward and seaward of Zone 2 waters.

Beaulieu River
Inside the Isle of Wight within an area bounded by lines drawn between the church spire, West Wittering, to Trinity Church, Bembridge, to the eastward, and the Needles and Hurst Point to the westward and seaward of Zone 2 waters.

Keyhaven Lake
Inside the Isle of Wight within an area bounded by lines drawn between the church spire, West Wittering, to Trinity Church, Bembridge, to the eastward, and the Needles and Hurst Point to the westward and seaward of Zone 2 waters.

Weymouth
Within Portland Harbour and between the River Wey and Portland Harbour
Plymouth  Within a line from Cawsand to Breakwater to Staddon and seaward of Zone 2 waters.

Falmouth  In winter: within a line from St. Anthony Head to Rosemullion In summer: within a line from St. Anthony Head to Nare Point and seaward of Zone 2 waters.

River Camel  Within a line from Stepper Point to Trebetherick Point and seaward of Zone 2 waters.

Bridgewater  Within the bar and seaward of Zone 2 waters.

River Avon (Avon)  In winter: within a line from Blacknore Point to Caldicot Pill, Portskewett In summer: within a line from Barry Pier to Steepholm and thence to Brean Down and seaward of Zone 2 waters.

Czech Republic

Dam Lake Lipno.

Federal Republic of Germany

Ems: from a line across the Ems near the entrance to the port of Papenburg between Diemen pumping station and the opening of the dyke at Halte as far as a line linking the former Greetsiel lighthouse and the western pier of the port entrance at Eemshaven.

Jade: inside a line linking the Schillig cross light and Langwarden church tower

Weser: from the north-western edge of the railway bridge in Bremen as far as a line linking Langwarden and Cappel church towers, including the Westergate, Rekumer Loch, Rechter Nebenarm and Schweiburg side branches

Elbe: from the lower limit of the port of Hamburg as far as a line linking the Döse beacon and the western edge of the Friedrichskoog dyke (Dieksand), including the Nebenelbe and the Este, Lühe, Schwinge, Oste, Pinnau, Krückau and Stör tributaries (in each case from the mouth to the barrage)

Meldorfer Bucht: inside a line linking the western edge of the Friedrichskoog dyke (Dieksand) and the western pier head at Büsum

Eider: From the Gieselau Canal to the Eider barrage

Flensburger Förde: inside a line linking Kegnäs lighthouse and Birknack

Schlei: inside a line between the Schlemünde pier heads

Eckernförder Bucht: inside a line linking Boknis-Eck and the north-eastern point of the mainland near Dänisch Nienhof

Kieler Förde: inside a line linking the Bülk lighthouse and the Laboe naval memorial
**Nord-Ostsee-Kanal (Kiel Canal):** from a line linking the pier heads at Brunsbüttel as far as a line linking the entry lights at Kiel-Holtenau, including Obereidersee and Enge, Audorfer See, Borgstedter See and Enge, Schirnauer See, Flemhuder See and the Achterwehrer Canal.

**Trave:** from the north-western edge of the railway lift bridge and the northern edge of the Holstenbrücke (Stadttrave) in Lübeck as far as a line linking the southern inner and northern outer pier heads at Travemünde, including the Pötenitzer Wiek, Dassower See and the Altarmen at Teerhof island.

**Leda:** From the entrance of the outer harbour of Leer sea lock to the mouth.

**Hunte:** from the port of Oldenburg and from 140 m downstream of the Amalienbrücke in Oldenburg to the mouth.

**Lesum:** From the Bremen-Burg railway bridge to the mouth.

**Este:** From the tail water of Buxtehude lock to the Este barrage.

**Lühe:** From the tail water of the Au-Mühle in Horneburg to the Lühe barrage.

**Schwinge:** From the Salztor lock in Stade to the Schwinge barrage.

**Oste:** from the north-eastern edge of the Bremervörde mill dam to the Oste barrage.

**Pinnau:** from the south-western edge of the railway bridge in Pinneberg to the Pinnau barrage.

**Krückau:** from the south-western edge of the bridge leading to/from the Wedenkamp in Elmshorn to the Krückau barrage.

**Stör:** From Rensing tide gauge to the Stör barrage.

**Freiburger Hafenpriel:** from the eastern edge of the sluice in Freiburg an der Elbe as far as the mouth.

**Wismarbucht, Kirchsee, Breitling, Salzhaff and Wismar port area:** seawards as far as a line between Hoher Wieschendorf Huk and Timmendorf light and a line linking Gollwitz light on the island of Poel and the southern point of the Wustrow peninsula.

**Warnow, including the Breitling and side branches:** downstream of the Mühlenbrücke in Rostock towards the sea as far as a line linking the northern points of the western and eastern piers in Warnemünde.

**Waters enclosed by the mainland and the Darß and Zingst peninsulas and the islands of Hiddensee and Rügen (including Stralsund port area):** extending seawards between
- the Zingst peninsula and the island of Bock: as far as latitude 54°26′42″N,
- the islands of Bock and Hiddensee: as far as a line linking the northern point of the island of Bock and the southern point of the island of Hiddensee,
- the island of Hiddensee and the island of Rügen (Bug): as far as a line linking the south-eastern point of Neubessin and Buger Haken.

**Greifswalder Bodden and Greifswald port area, including the Ryck:** seawards as far as a line from the eastern point of Thiessower Haken (Südperd) to the eastern point of the island of Ruden and continuing to the northern point of the island of Usedom (54°10′37″N, 13°47′51″E).

**Waters enclosed by the mainland and the island of Usedom (the Peenestrom, including Wolgast port area and Achterwasser, and the Stettiner Haff):** eastwards as far as the border with the Republic of Poland in the Stettiner Haff.

(*) In the case of vessels whose home port is in another State, account is to be taken of Article 32 of the Ems-Dollart Treaty of 8 April 1960 (BGBl. 1963 II, p. 602).
French Republic
Dordogne: downstream from the stone bridge at Libourne
Garonne: downstream from the stone bridge at Bordeaux
Gironde.
Loire: downstream from the Haudaudine bridge on the Madeleine arm and downstream from the Pirmil bridge on the Pirmil arm.
Rhône: downstream of the Trinquetaille bridge in Arles and beyond towards Marseille
Seine: downstream of the Jeanne-d’Arc bridge in Rouen.

Republic of Hungary
Lake Balaton.

Kingdom of the Netherlands
Dollard.
Eems.
Waddenzee: including the links with the North Sea.
IJsselmeer: including the Markermeer and IJmeer but excluding the Gouwzee.
Nieuwe Waterweg and the Scheur.
Calland Kanaal west from the Benelux harbour.
Hollands Diep.
Breeddiep, Beerkanaal and its connected harbours.
Haringvliet and Vuile Gat: including the waterways between Goeree-Overflakkee on the one hand and Voorne-Putten and Hoeksche Waard on the other.
Hellegat.
Volkerak.
Krammer.
Grevelingenmeer and Brouwerschavensche Gat: including all the waterways between Schouwen-Duiveland and Goeree-Overflakkee.
Keten, Mastgat, Zijpe, Krabbenkreek, Eastern Scheldt and Roompot: including the waterways between Walcheren, Noord-Beveland and Zuid-Beveland on the one hand and Schouwen-Duiveland and Tholen on the other hand, excluding the Scheldt-Rhine Canal.
Scheldt and Western Scheldt and its mouth on the sea: including the waterways between Zeeland Flanders, on the one hand, and Walcheren and Zuid-Beveland, on the other, excluding the Scheldt-Rhine Canal.

Republic of Poland
Lagoon of Szczecin.
Lagoon of Kamięń.
Lagoon of Wisla.
Bay of Puck.
Włocławski Reservoir.
Lake Śniardwy.
Lake Niegocin.
Lake Mamry.
United Kingdom of Great Britain and Northern Ireland

SCOTLAND

Scapa Flow
Within an area bounded by lines drawn from Wharth on the island of Flotta to the Martello Tower on South Walls, and from Point Cletts on the island of Hoy to Thomson's Hill triangulation point on the island of Far and thence to Gibraltar Pier on the island of Flotta

Kyle of Durness
South of Eilean Dubh

Cromarty Firth
Within a line between North Sutor and South Sutor

Inverness
Within a line from Fort George to Chanonry Point

Findhorn Bay
Within the spit

Aberdeen
Within a line from South Jetty to Abercromby Jetty

Montrose Basin
To the west of a line running north-south across the harbour entrance at Scurdie Ness Lighthouse

River Tay — Dundee
Within a line from the tidal basin (fish dock), Dundee to Craig Head, East Newport

Firth of Forth and River Forth
Within the Firth of Forth but not east of the Forth railway bridge

Dumfries
Within a line from Airds Point to Scar Point

Loch Ryan
Within a line from Cairn Point to Kircolm Point

Ayr Harbour
Inside the Bar

The Clyde
Above Zone 1 waters

Kyles of Bute
Between Colintraive and Rhubodach

Campbeltown Harbour
Within a line from Macringan’s Point to Ottercharach Point

Loch Etive
Within Loch Etive above the Falls of Lora

Loch Leven
Above the bridge at Ballachulish

Loch Linnhe
North of Corran Point light

Loch Eil
The whole loch

Caledonian Canal
Lochs Lochy, Oich and Ness

Kyle of Lochalsh
Within Kyle Akin not westward of Eilean Ban Light or eastward of Eileanan Dubha

Loch Carron
Between Stromemore and Strome Ferry

Loch Broom, Ullapool
Within a line from Ullapool Point Light to Aultmaharr

Kylesku
Across Loch Cairnhawn in the area between the easternmost point of Garbh Eilean and the westernmost point of Eileanan na Rainich

Stornoway Harbour
Within a line from Arnish Point to Sandwick Bay Lighthouse, north-west side

The Sound of Scalpay
Not east of Berry Cove (Scalpay) and not west of Croc a Loin (Harris)

North Harbour, Scalpay and Tarbert Harbour
Within one mile from the shore of the Island of Harris
Loch Awe The whole loch
Loch Katrine The whole loch
Loch Lomond The whole loch
Loch Tay The whole loch
Loch Loyal The whole loch
Loch Hope The whole loch
Loch Shin The whole loch
Loch Assynt The whole loch
Loch Gleastarnoch The whole loch
Loch Fannich The whole loch
Loch Maree The whole loch
Loch Gairloch The whole loch
Loch Monar The whole loch
Loch Mullardach The whole loch
Loch Cluanie The whole loch
Loch Loyne The whole loch
Loch Garry The whole loch
Loch Quoich The whole loch
Loch Arkaig The whole loch
Loch Morar The whole loch
Loch Shiel The whole loch
Loch Earn The whole loch
Loch Rannoch The whole loch
Loch Tummel The whole loch
Loch Erich The whole loch
Loch Fionn The whole loch
Loch Glass The whole loch
Loch Rimsdale/nan Clar The whole loch

NORTHERN IRELAND
Strangford Lough Within a line from Cloghy Point to Dogtail Point
Belfast Lough Within a line from Holywood to Macedon Point
Larne Within a line from Larne Pier to the ferry pier on Island Magee
River Bann From the seaward ends of the breakwaters to Toome Bridge
Lough Erne Upper and Lower Lough Erne
Lough Neagh Within two miles of the shore

EAST COAST OF ENGLAND
Berwick Within the breakwaters
Warkworth Within the breakwaters
Blyth Within the Outer Pier Heads
River Tyne          Dunston Staithes to Tyne Pier Heads
River Wear          Fatfield to Sunderland Pier Heads
Seaham              Within the breakwaters
Hartlepool          Within a line from Middleton Jetty to Old Pier Head
                      Within a line joining North Pier Head to South Pier Head
River Tees          Within a line extending due west from Government Jetty to Tees Barrage
Whitby              Within Whitby Pier Heads
River Humber        Within a line from North Ferriby to South Ferriby
Grimsby Dock        Within a line from the West Pier of the Tidal Basin to the East Pier of the
                      Fish Docks, North Quay
Boston              Inside the New Cut
Dutch River         The whole canal
River Hull          Beverley Beck to River Humber
Kielder Water       The whole lake
River Ouse          Below Naburn Lock
River Trent         Below Cromwell Lock
River Wharfe        From the junction with River Ouse to Tadcaster Bridge
Scarborough         Within Scarborough Pier Heads

WALES AND WEST COAST OF ENGLAND

River Severn        North of a line running due west from Sharpness Point (51°43,4’N) to
                      Llanthony and Maisemore Weirs and seaward of Zone 3 waters.
River Wye           At Chepstow, north of latitude (51°38,0’N) to Monmouth
Newport             North of the overhead power cables crossing at Fifoots Points
Cardiff             Within a line from South Jetty to Penarth Head
                      and the enclosed waters to the west of Cardiff Bay Barrage
Barry               Within a line joining the seaward ends of the breakwaters
Port Talbot         Within a line joining the seaward ends of the breakwaters on the River
                      Afran outside enclosed docks
Neath               Within a line running due North from the seaward end of Baglan Bay
                      Tanker Jetty (51°37,2’N, 3°50,5’W)
Llanelli and Burry Port Within an area bounded by a line drawn from Burry Port Western Pier to
                           Whiteford Point
Milford Haven       Within a line from South Hook Point to Thorn Point
Fishguard           Within a line joining the seaward ends of the north and east breakwaters
Cardigan            Within the Narrows at Pen-Yr-Ergyd
Aberystwyth         Within the seaward ends of the breakwaters
Aberdyfi            Within a line from Aberdyfi Railway Station to Twyni Bach Beacon
Barmouth Within a line from Barmouth Railway Station to Penrhyn Point
Portmadoc Within a line from Harlech Point to Graig Ddu
Holyhead Within an area bounded by the main breakwater and a line drawn from the head of the breakwater to Brynglas Point, Towyn Bay
Menai Straits Within the Menai Straits between a line joining Aber Menai Point to Belan Point and a line joining Beaumaris Pier to Pen-y-Coed Point
Conway Within a line from Mussel Hill to Tremlyd Point
Llandudno Within the breakwater
Rhyl Within the breakwater
River Dee Above Connah's Quay to Barrelwell Hill water extraction point
River Mersey Within a line between the Rock Lighthouse and the North West Seaforth Dock but excluding other docks
Preston and Southport Within a line from Lytham to Southport and within Preston Docks
Fleetwood Within a line from Low Light to Knott
River Lune Within a line from Sunderland Point to Chapel Hill up to and including Glasson Dock
Barrow Within a line joining Haws Point, Isle of Walney to Roa Island Slipway
Whitehaven Within the breakwater
Workington Within the breakwater
Maryport Within the breakwater
Carlisle Within a line joining Point Carlisle to Torduff
Coniston Water The whole lake
Derwentwater The whole lake
Ullswater The whole lake
Windermere The whole lake

SOUTH OF ENGLAND
Blakeney and Morston Harbour and approaches To the east of a line running south from Blakeney Point to the entrance of the Stiffkey River
River Orwell and River Stour River Orwell within a line from Blackmanshead breakwater to Landguard Point and seaward of Zone 3 waters.
River Blackwater All waterways within a line from the south-western extremity of Mersea Island to Sales Point
River Crouch and River Roach River Crouch within a line from Holliwell Point to Foulness Point, including the River Roach
River Thames and its tributaries River Thames above a line drawn north/south through the eastern extremity of Denton Wharf Pier, Gravesend to Teddington Lock
River Medway and the Swale River Medway from a line drawn from Garrison Point to the Grain Tower, to Allington Lock; and the Swale from Whitstable to the Medway
River Stour (Kent) River Stour above the mouth to the landing at Flagstaff Reach
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<th>Description</th>
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<tbody>
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<td>Dover Harbour</td>
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<tr>
<td>River Rother</td>
<td>River Rother above the Tidal Signal Station at Camber to Scots Float Sluice and to the entrance lock on the River Brede</td>
</tr>
<tr>
<td>River Adur and Southwick Canal</td>
<td>Within a line drawn across Shoreham Harbour entrance to Southwick Canal Lock and to the west end of Tarmac Wharf</td>
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<td>River Ouse (Sussex) Newhaven</td>
<td>River Ouse from a line drawn across Newhaven Harbour entrance piers to the north end of North Quay</td>
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<td>Brighton</td>
<td>Brighton Marina outer harbour within a line from the southern end of West Quay to the north end of South Quay</td>
</tr>
<tr>
<td>Chichester</td>
<td>Within a line drawn between Eastoke point and the church spire, West Wittering and seaward of Zone 3 waters.</td>
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<tr>
<td>Langstone Harbour</td>
<td>Within a line drawn between Eastney Point and Gunner Point</td>
</tr>
<tr>
<td>Portsmouth</td>
<td>Within a line drawn across the harbour entrance from Port Blockhouse to the Round Tower</td>
</tr>
<tr>
<td>Bembridge, Isle of Wight</td>
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<tr>
<td>Cowes, Isle of Wight</td>
<td>The River Medina within a line from the Breakwater Light on the east bank to the House Light on the west bank</td>
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<td>Southampton</td>
<td>Within a line from Calshot Castle to Hook Beacon</td>
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<tr>
<td>Beaulieu River</td>
<td>Within Beaulieu River not eastward of a north/south line through Inchmery House</td>
</tr>
<tr>
<td>Keyhaven Lake</td>
<td>Within a line drawn due north from Hurst Point Low Light to Keyhaven Marshes</td>
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<tr>
<td>Christchurch</td>
<td>The Run</td>
</tr>
<tr>
<td>Poole</td>
<td>Within the line of the Chain Ferry between Sandbanks and South Haven Point</td>
</tr>
<tr>
<td>Exeter</td>
<td>Within an east-west line from Warren Point to the Inshore Lifeboat Station opposite Checkstone Ledge</td>
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<td>Within a line from Mount Batten Pier to Raveness Point through Drake's Islands; the River Yealm within a line from Warren Point to Misery Point</td>
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<td>Rivers Taw and Torridge</td>
<td>Within a line bearing 200° from the lighthouse on Crow Point to the shore at Skern Point</td>
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<td>Bridgewater</td>
<td>South of a line running due East from Stert Point (51°13.0’N)</td>
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CHAPTER 2

Zone 3

Kingdom of Belgium

Maritime Scheldt (downstream of Antwerp open anchorage).

Czech Republic

Labe: from the lock Ústí nad Labem-Strěkov to the lock Lovosice.  
Dam Lakes: Baška, Brněnská (Kníničky), Horka (Stráž pod Ralskem), Hracholusky, Jesenice, Nechranice, Olesná, Orlik, Pastviny, Plumov, Rozkoš, Seč, Skalka, Slapy, Těřlicko, Žermanice.  
Lake Máchovo.  
Water Area Velké Žernoseky.  
Ponds: Oleksovice, Svět, Velké Dářko.  
Mining Gravel Lakes: Dolní Benešov, Ostrová Nová Ves a Tovačov.

Federal Republic of Germany

Danube: from Kelheim (km 2 414.72) to the German-Austrian border  
Rhine: from the German-Swiss border to the German-Netherlands border  
Elbe: from the mouth of the Elbe-Seiten canal to the lower limit of the port of Hamburg  
Müritz

French Republic

Rhine

Republic of Hungary

Danube: from rkm 1 812 to rkm 1 433  
Danube Moson: from rkm 14 to rkm 0.  
Danube Szentendre: from rkm 32 to rkm 0.  
Danube Ráckeve: from rkm 58 to rkm 0.  
River Tisza: from rkm 685 to rkm 160.  
River Dráva: from rkm 198 to rkm 70.  
River Bodrog: from rkm 51 to rkm 0.  
River Kettős-Körös: from rkm 23 to rkm 0.  
River Hármas-Körös: from rkm 91 to rkm 0.  
Channel Sió: from rkm 23 to rkm 0.  
Lake Velence.  
Lake Fertő.

Kingdom of the Netherlands

Rhine.  
Sneekermeer, Koevoordermeer, Heegermeer, Fluessen, Slotermeer, Tjeukemeer, Beulakkerwuide, Belterwuide, Ramsdiep, Ketelmeer, Zwarteveer, Veluwemeer, Eemmeer, Alkmaardermeer, Gouwzee, Buiten IJ afgesloten IJ Noordzeekanaal, port of IJmuiden, Rotterdam port area, Nieuwe Maas, Noord, Oude Maas, Beneden Merwede, Nieuwe Merwede, Dordse Kil, Boven Merwede, Waal, Bijlakersch Canal, Boven Rijn, Pannersdensch Canal, Geldersche IJssel, Neder Rijn, Lek, Amsterdam-Rhine-Canal, Veerse Meer, Schelde-Rhine-Canal as far as the mouth in the Volkerak, Amer, Bergsche Maas, the Meuse below Venlo, Gooimeer, Europort, Calandkanaal (east from the Benelux harbour), Hartelkanaal.
Republic of Austria

Danube: from the border with Germany to the border with Slovakia.
Inn: from the mouth to the Passau-Ingling Power Station.
Traun: from the mouth to km 1.80.
Enns: from the mouth to km 2.70.
March: to km 6.00.

Republic of Poland

River Biebrza from the estuary of the Augustowski Channel to the estuary of the river Narwia
River Brda from the link with the Bydgoski Channel in Bydgoszcz to the estuary of the river Wisła
River Bug from the estuary of the river Muchawiec to the estuary of the river Narwia
Lake Dąbie to the frontier with internal sea waters
The Augustowski Channel from the link with the river Biebrza to the state border, together with the lakes located along the route of this Channel
The Bartnicki Channel from Lake Ruda Woda to Lake Bartężek, together with Lake Bartężek
The Bydgoski Channel
The Elbląski Channel from Lake Drużno to Lake Jeziorak and Lake Szeląg Wielki, together with these lakes and the lakes on the route of the Channel, and a by-way in the direction of Zalewo from Lake Jeziorak to Lake Ewingi, inclusive
The Gliwicki Channel together with the Channel Kędzierzyński
The Jagielloński Channel from the link with the river Elblag to the river Nogat
The Łącznański Channel
The Ślesiński Channel with the lakes located along the route of this Channel and Lake Gopło
The Żerański Channel
River Martwa Wisła from the river Wisła in Przegalina to the frontier with internal sea waters
River Narew from the estuary of the river Biebrza to the estuary of the river Wisła, together with Lake Zegrzyński
River Nogat from the river Wisła to the estuary of the Lagoon of Wisła
River Noteć (upper) from Lake Gopło to the link with the Górnonotecki Channel and the Górnonotecki Channel and River Noteć (lower) from the link of the Bydgoski Channel to the estuary to River Warta
River Nysa Łużycka from Gubin to the estuary to River Odra
River Odra from the town of Racibórz to the link with River Eastern Odra which turns into River Regalica from the Klucz-Ustowo Piercing, together with that river and its side-branches to Lake Dąbie as well as a by-way of River Odra from the Opatowice lock to the lock in Wrocław city
River Western Odra from a weir in Widuchowa (704.1 km of River Odra) to a border with internal sea waters, together with side-branches as well as the Klucz-Ustowo Piercing linking River Eastern Odra with River Western Odra
River Parnica and the Parnicki Piercing from River Western Odra to a border with internal sea waters
River Pisa from Lake Roś to the estuary of River Narew
River Szkarpawa from River Wisła to the estuary of the Lagoon of Wisła
River Warta from the Ślesińskie Lake to the estuary of River Odra
System of Wielkie Jeziora Mazurskie encompassing the lakes linked by the rivers and channels constituting a main route from Lake Roś (inclusive) in Pisz to the Węgorzewski Channel (including that channel) in Węgorzewo, together with Lakes Seksty, Mikolajskie, Tańty, Taltowisko, Kotek, Szymon, Szymoneckie, Jagodne, Boczne, Taji, Ksajno, Dargin, Łabap, Kirsajty and Święcaty, together with the Giżycki Channel and the Niegocinński Channel and the Piękna Góra Channel, and a by-way of Lake Ryńskie (inclusive) in Ryn to Lake Nidzkie (up to 3 km, constituting a border with the 'Lake Nidzkie' nature reserve), together with lakes Beldany, Guzianka Mała and Guzianka Wielka.

River Wisła from the estuary of River Przemsza to the link with the Łączarski Channel as well as from the estuary of that Channel in Skawina to the estuary of River Wisła to the Bay of Gdańsk, excluding the Włocławski Reservoir.

Slovak Republic

Danube: from Devín (rkm 1 880.26) to the Slovak-Hungarian border.

United Kingdom of Great Britain and Northern Ireland

SCOTLAND

Leith (Edinburgh) Within the breakwaters
Glasgow Strathclyde Loch
Cranan Canal Crinan to Ardrishaig
Caledonian Canal The canal sections

NORTHERN IRELAND

River Lagan Lagan Weir to Stranmillis

EAST OF ENGLAND

River Wear (non-tidal) Old Railway Bridge; Durham to Prebends Bridge, Durham
River Tees Upriver from Tees Barrage
Grimsby Dock Inside of the locks
Immingham Dock Inside of the locks
Hull Docks Inside of the locks
Boston Dock Inside the lock gates
Aire and Calder Navigation Goole Docks to Leeds; junction with Leeds and Liverpool Canal; Bank Dole Junction to Selby (River Ouse Lock); Castleford Junction to Wakefield (Falling Lock)
River Ancholme Ferriby Sluice to Brigg
Calder and Hebble Canal Wakefield (Falling Lock) to Broadcut Top Lock
River Foss From (Blue Bridge) junction with River Ouse to Monk Bridge
Fossdyke Canal Junction with River Trent to Brayford Pool
Goole Dock Inside the lock gates
Hornsea Mere The whole canal
River Hull From Struncheon Hill Lock to Beverley Beck
Market Weighton Canal River Humber Lock to Sod Houses Lock
New Junction Canal The whole canal
Wednesday, 5 July 2006

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<td>River Witham</td>
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</tr>
</tbody>
</table>

**WALES AND WEST OF ENGLAND**

| River Severn                | Above Llanthony and Maisemore Weirs |
| River Wye                   | Above Monmouth                      |
| Cardiff                     | Roath Park Lake                    |
| Port Talbot                 | Within the enclosed docks          |
| Swansea                     | Within the enclosed docks          |
| River Dee                   | Above Barrelwell Hill water extraction point |
| River Mersey                | The docks (excluding Seaforth Dock) |
| River Lune                  | Above Glasson Dock                 |
| River Avon (Midland)        | Tewkesbury Lock to Evesham         |
| Gloucester                  | Gloucester City Docks Gloucester/Sharpness Canal |
| Hollingworth Lake           | The whole lake                     |
| Manchester Ship Canal       | The whole canal and Salford Docks including River Irwell |
| Pickmere Lake               | The whole lake                     |
| River Tawe                  | Between Sea Barrage/Marina and the Morfa Athletics Stadium |
| Rudyard Lake                | The whole lake                     |
| River Weaver                | Below Northwich                    |

**SOUTH OF ENGLAND**

| River Nene                  | Wisbech Cut and River Nene to Dog-in-a-Doublet Lock |
| River Great Ouse            | Kings Lynn Cut and River Great Ouse below West Lynn Road Bridge |
| Yarmouth                   | River Yare Estuary from a line drawn across the ends of the north and south entrance piers, including Breydon Water |
| Lowestoft                   | Lowestoft Harbour below Mutford Lock to a line drawn across the outer harbour entrance piers |
| Rivers Alde and Ore         | Above the entrance to the River Ore to Westrow Point |
| River Deben                 | Above the entrance of the River Deben to Felixstowe Ferry |
| River Orwell and River Stour| From a line drawn from Fagbury Point to Shotley Point on the River Orwell to Ipswich Dock; and from a line drawn north/south through Erwarton Ness on the River Stour to Manningtree |
| Chelmer & Blackwater Canal  | Eastward of Beeleigh Lock          |
River Thames and its tributaries
River Thames above Teddington Lock to Oxford

River Adur and Southwick Canal
River Adur above the west end of Tarmac Wharf, and within Southwick Canal

River Arun
River Arun above Littlehampton Marina

River Ouse (Sussex), Newhaven
River Ouse above the north end of North Quay

Bewl Water
The whole lake

Graffham Water
The whole lake

Rutland Water
The whole lake

Thorpe Park Lake
The whole lake

Chichester
East of a line joining Cobnor Point and Chalkdock Point

Christchurch
Within Christchurch Harbour excluding the Run

Exeter Canal
The whole canal

River Avon (Avon)
Bristol City Docks
Netham Dam to Pulteney Weir

CHAPTER 3

Zone 4

Kingdom of Belgium
The entire Belgian network except the waterways in Zone 3.

Czech Republic
All other waterways not listed in Zones 1, 2 and 3.

Federal Republic of Germany
All inland waterways other than those in Zones 1, 2 and 3

French Republic
The entire French network except the waterways in Zones 1, 2 and 3.

Italian Republic
River Po: from Piacenza to the mouth.
Milan-Cremona Canal, River Po: final stretch of 15 km to the Po.
River Mincio: from Mantua, Governolo to the Po.
Ferrara Waterway: from the Po (Pontelagoscuro), Ferrara to Porto Garibaldi.
Brondolo and Valle Canals: from the eastern Po to the Venice lagoon.
Fissero Canal — Tartaro — Canali Bianco: from Adria to the eastern Po.
Venetian coastline: from the Venice lagoon to Grado.
Republic of Lithuania

The entire Lithuanian network.

Grand Duchy of Luxembourg

Moselle.

Republic of Hungary

All other waterways not listed in Zones 2 and 3.

Kingdom of the Netherlands

All other rivers, canals and inland seas not listed in Zones 1, 2 and 3.

Republic of Austria

Thaya: up to Bernhardsthal.

March: above km 6.00.

Republic of Poland

All other waterways not listed in Zones 1, 2 and 3.

Slovak Republic

All other waterways not listed in Zone 3.

United Kingdom of Great Britain and Northern Ireland

SCOTLAND

Ratho and Linlithgow Union Canal

The whole canal

Glasgow

Forth and Clyde Canal

Monkland Canal, Faskine and Drumpellier sections

Hogganfield Loch

EAST OF ENGLAND

River Ancholme

Brigg to Harram Hill Lock

Calder and Hebble Canal

Broadcut Top Lock to Sowerby Bridge

Chesterfield Canal

West Stockwith to Worksop

Cromford Canal

The whole canal

River Derwent

From junction with River Ouse to Stamford Bridge

Driffield Navigation

From Struncheon Hill Lock to Great Driffield

Erewash Canal

Trent Lock to Langley Mill Lock
Huddersfield Canal
Junction with Calder and Hebble at Coopers Bridge to Huddersfield Narrow Canal at Huddersfield
Between Ashton-Under-Lyne and Huddersfield

Leeds and Liverpool Canal
From Leeds River Lock to Skipton Wharf

Light Water Valley Lake
The whole lake

The Mere, Scarborough
The whole lake

River Ouse
Above Nun Monkton Pool

Pocklington Canal
From the junction with River Derwent to Melbourne Basin

Sheffield and South Yorkshire Canal
Tinsley Lock to Sheffield

River Soar
Trent Junction to Loughborough

Trent and Mersey Canal
Shardlow to Dellow Lane Lock

River Ure and Ripon Canal
From Junction with River Ouse to Ripon Canal (Ripon Basin)

Ashton Canal
The whole canal

WALES AND WEST OF ENGLAND

River Avon (Midland)
Above Evesham

Birmingham Canal Navigation
The whole canal

Birmingham and Fazeley Canal
The whole canal

Coventry Canal
The whole canal

Grand Union Canal
The whole section of the canal
(from Napton Junction to Birmingham and Fazeley)

Kennet and Avon Canal
The whole section of the canal
(Bath to Newbury)

Lancaster Canal
The whole canal

Leeds and Liverpool Canal
The whole canal

Llangollen Canal
The whole canal

Caldon Canal
The whole canal

Peak Forest Canal
The whole canal

Macclesfield Canal
The whole canal

Monmouthshire and Brecon Canal
The whole canal

Montgomery Canal
The whole canal

Rochdale Canal
The whole canal

Swansea Canal
The whole canal

Neath & Tennant Canal
The whole canal

Shropshire Union Canal
The whole canal
Wednesday, 5 July 2006

Staffordshire and Worcester Canal
Stratford-upon-Avon Canal
River Trent
Trent and Mersey Canal
River Weaver
Worcester and Birmingham Canal

SOUTH OF ENGLAND
River Nene
River Great Ouse
The Norfolk and Suffolk Broads
River Blyth
Rivers Alde and Ore
River Deben
River Orwell and River Stour
Chelmer & Blackwater Canal
River Thames and its tributaries
River Medway and the Swale
River Stour (Kent)
Dover Harbour
River Rother
Brighton
Wickstead Park Lake
Kennet and Avon Canal
Grand Union Canal
River Avon (Avon)
Bridgewater Canal

River Great Ouse
Kings Lynn above West Lynn Road Bridge; River Great Ouse and all connected Fenland Waterways including the River Cam and Middle Level Navigation

The Norfolk and Suffolk Broads
All navigable tidal and non-tidal rivers, broads, canals and waterways within the Norfolk and Suffolk Broads including Oulton Broad, and Rivers Waveney, Yare, Bure, Ant and Thurne except as specified for Yarmouth and Lowestoft

River Blyth
River Blyth, entrance to Blythburgh

Rivers Alde and Ore
On the River Alde above Westrow Point

River Deben
River Deben above Felixstowe Ferry

River Orwell and River Stour
All waterways on the River Stour above Manningtree

Chelmer & Blackwater Canal
Westward of Beleigh Lock

River Thames and its tributaries
River Stort and River Lee above Bow Creek; Grand Union Canal above Brentford Lock and Regents Canal above Limehouse Basin and all canals connected therewith; River Wey above Thames Lock; Kennet and Avon Canal; River Thames above Oxford; Oxford Canal

River Medway and the Swale
River Medway above Allington Lock

River Stour (Kent)
River Stour above the landing at Flagstaff Reach

Dover Harbour
The whole harbour

River Rother
River Rother and the Royal Military Canal above Scots Float Sluice and River Brede above the entrance lock

Brighton
Brighton Marina inner harbour above the lock

Wickstead Park Lake
The whole lake

Kennet and Avon Canal
The whole canal

Grand Union Canal
The whole canal

River Avon (Avon)
Above Pulteney Weir

Bridgewater Canal
The whole canal
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MINIMUM TECHNICAL REQUIREMENTS APPLICABLE TO VESSELS ON INLAND WATERWAYS OF ZONES 1, 2, 3 AND 4

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The following definitions shall apply in this Directive:

**Types of craft**

1. ‘craft’: a vessel or item of floating equipment;
2. ‘vessel’: an inland waterway vessel or sea-going ship;
3. ‘inland waterway vessel’: a vessel intended solely or mainly for navigation on inland waterways;
4. ‘sea-going ship’: a vessel certificated for sea-going service;
5. ‘motor vessel’: a motor cargo vessel or a motor tanker;
6. ‘motor tanker’: a vessel intended for the carriage of goods in fixed tanks and built to navigate independently under its own motive power;
7. ‘motor cargo vessel’: a vessel, other than a motor tanker, intended for the carriage of goods and built to navigate independently under its own motive power;
8. ‘canal barge’: an inland waterway vessel not exceeding 38.5 m in length and 5.05 m in breadth and usually operating on the Rhine-Rhône-Canal;
9. ‘tug’: a vessel specially built to perform towing operations;
10. ‘pusher’: a vessel specially built to propel a pushed convoy;
11. ‘barge’: a dumb barge or tank barge;
12. ‘tank barge’: a vessel intended for the carriage of goods in fixed tanks and built to be towed, either having no motive power of its own or having only sufficient motive power to perform restricted manoeuvres;
13. ‘dumb barge’: a vessel, other than a tank barge, intended for the carriage of goods and built to be towed, either having no motive power of its own or having only sufficient motive power to perform restricted manoeuvres;

14. ‘lighter’: a tank lighter, cargo lighter or ship-borne lighter;

15. ‘tank lighter’: a vessel intended for the carriage of goods in fixed tanks, built or specially modified to be pushed, either having no motive power of its own or having only sufficient motive power to perform restricted manoeuvres when not part of a pushed convoy;

16. ‘cargo lighter’: a vessel, other than a tank lighter, intended for the carriage of goods and built or specially modified to be pushed, either having no motive power of its own or having only sufficient motive power to perform restricted manoeuvres when not part of a pushed convoy;

17. ‘ship-borne lighter’: a lighter built to be carried aboard sea-going ships and to navigate on inland waterways;

18. ‘passenger vessel’: a day trip or cabin vessel constructed and equipped to carry more than 12 passengers;

19. ‘passenger sailing vessel’: a passenger vessel built and fitted out also with a view to propulsion under sail;

20. ‘day-trip vessel’: a passenger vessel without overnight passenger cabins;

21. ‘cabin vessel’: a passenger vessel with overnight passenger cabins;

22. ‘high-speed vessel’: a motorised craft capable of reaching speeds over 40 km/h in relation to water;

23. ‘floating equipment’: a floating installation carrying working gear such as cranes, dredging equipment, pile drivers or elevators;

24. ‘worksite craft’: a vessel, appropriately built and equipped for use at worksites, such as a reclamation barge, hopper or pontoon barge, pontoon or stone-dumping vessel;

25. ‘recreational craft’: a vessel other than a passenger vessel, intended for sport or pleasure;

26. ‘ship’s boat’: a boat for use in transport, rescue, salvage and work duties;

27. ‘floating establishment’: any floating installation not normally intended to be moved, such as a swimming bath, dock, jetty or boathouse;

28. ‘floating object’: a raft or other structure, object or assembly capable of navigation, not being a vessel or floating equipment or establishment.

**Assemblies of craft**

29. ‘convoy’: a rigid or towed convoy of craft;

30. ‘formation’: the manner in which a convoy is assembled;

31. ‘rigid convoy’: a pushed convoy or side-by-side formation;

32. ‘pushed convoy’: a rigid assembly of craft of which at least one is positioned in front of the craft providing the power for propelling the convoy, known as the ‘pusher(s)’; a convoy composed of a pusher and a pushed craft coupled so as to permit guided articulation is also considered as rigid;

33. ‘side-by-side formation’: an assembly of craft coupled rigidly side by side, none of which is positioned in front of the craft propelling the assembly;

34. ‘towed convoy’: an assembly of one or more craft, floating establishments or floating objects towed by one or more self-propelled craft forming part of the convoy.
Particular areas on board

35. 'main engine room': space where the propulsion engines are installed;

36. 'engine room': space where combustion engines are installed;

37. 'boiler room': a space housing a fuel-operated installation designed to produce steam or heat a thermal fluid;

38. 'enclosed superstructure': a watertight, rigid, continuous structure with rigid walls joined to the deck in a permanent and watertight manner;

39. 'wheelhouse': the area which houses all the control and monitoring instruments necessary for manoeuvring the vessel;

40. 'accommodation': a space intended for the use of persons normally living on board, including galleys, storage space for provisions, toilets and washing facilities, laundry facilities, ante-rooms and passageways, but not the wheelhouse;

41. 'passenger area': areas on board intended for passengers and enclosed areas such as lounges, offices, shops, hairdressing salons, drying rooms, laundries, saunas, toilets, washrooms, passageways, connecting passages and stairs not encapsulated by walls;

42. 'control centre': a wheelhouse, an area which contains an emergency electrical power plant or parts thereof or an area with a centre permanently occupied by on-board personnel or crew members, such as for fire alarm equipment, remote controls of doors or fire dampers;

43. 'stairwell': the well of an internal staircase or of a lift;

44. 'lounge': a room of an accommodation or a passenger area. On board passenger vessels, galleys are not regarded as lounges;

45. 'galley': a room with a stove or a similar cooking appliance;

46. 'store room': a room for the storage of flammable liquids or a room with an area of over 4 m² for storing supplies;

47. 'hold': part of the vessel, bounded fore and aft by bulkheads, opened or closed by means of hatch covers, intended for the carriage of goods, whether packaged or in bulk, or for housing tanks not forming part of the hull;

48. 'fixed tank': a tank joined to the vessel, the walls of the tank consisting either of the hull itself or of a casing separate from the hull;

49. 'working station': an area where members of the crew carry out their duties, including gangway, derrick and ship’s boat;

50. 'passageway': an area intended for the normal movement of persons and goods;

51. 'safe area': the area which is externally bounded by a vertical surface running at a distance of 1/5 B_{WL} parallel to the course of the hull in the line of maximum draught;

52. 'muster areas': areas of the vessel which are specially protected and in which passengers muster in the event of danger;

53. 'evacuation areas': part of muster areas of the vessel from which evacuation of persons can be carried out.

Marine engineering terms

54. 'plane of maximum draught': the water plane corresponding to the maximum draught at which the craft is authorised to navigate;

55. 'safety clearance': the distance between the plane of maximum draught and the parallel plane passing through the lowest point above which the craft is no longer deemed to be watertight;

56. 'residual safety clearance': the vertical clearance available, in the event of the vessel heeling over, between the water level and the lowest point of the immersed side, beyond which the vessel is no longer regarded as watertight;
57. ‘freeboard (f)’; the distance between the plane of maximum draught and a parallel plane passing through the lowest point of the gunwale or, in the absence of a gunwale, the lowest point of the upper edge of the ship’s side;

58. ‘residual freeboard’: the vertical clearance available, in the event of the vessel heeling over, between the water level and the upper surface of the deck at the lowest point of the immersed side or, if there is no deck, the lowest point of the upper surface of the fixed ship’s side;

59. ‘margin line’: an imaginary line drawn on the side plating not less than 10 cm below the bulkhead deck and not less than 10 cm below the lowest non-watertight point of the side plating. If there is no bulkhead deck, a line drawn not less than 10 cm below the lowest line up to which the outer plating is watertight shall be used;

60. ‘water displacement (W)’: the immersed volume of the vessel, in m³;

61. ‘displacement (Δ)’: the total weight of the vessel, inclusive of cargo, in t;

62. ‘block coefficient (CB)’: the ratio between the water displacement and the product of length LWL, breadth BWL and draught T;

63. ‘lateral plane above water (A₀)’: lateral plane of the vessel above the waterline in m²;

64. ‘bulkhead deck’: the deck to which the required watertight bulkheads are taken and from which the freeboard is measured;

65. ‘bulkhead’: a wall of a given height, usually vertical, partitioning the vessel and bounded by the bottom of the vessel, the plating or other bulkheads;

66. ‘transverse bulkhead’: a bulkhead extending from one side of the vessel to the other;

67. ‘wall’: a dividing surface, usually vertical;

68. ‘partition wall’: a non-watertight wall;

69. ‘length (L)’: the maximum length of the hull in m, excluding rudder and bowsprit;

70. ‘length overall (LOA)’: the maximum length of the craft in m, including all fixed installations such as parts of the steering system or power plant, mechanical or similar devices;

71. ‘length of waterline (LWL)’: the length of the hull in m, measured at the maximum draught;

72. ‘breadth (B)’: the maximum breadth of the hull in m, measured to the outer edge of the shell plating (excluding paddle wheels, rub rails, and similar);

73. ‘breadth overall (BOA)’: the maximum breadth of the craft in m, including all fixed equipment such as paddle wheels, rub rails, mechanical devices and the like;

74. ‘breadth of waterline (BWL)’: breadth of the hull in m, measured from the outside of the side plating at the maximum draught line;

75. ‘height (H)’: the shortest vertical distance in m between the lowest point of the hull or the keel and the lowest point of the deck on the side of the vessel;

76. ‘draught (T)’: the vertical distance in m between the lowest point of the hull or the keel and the maximum draught line;

77. ‘forward perpendicular’: the vertical line at the forward point of the intersection of the hull with the maximum draught line;

78. ‘clear width of side deck’: the distance between the vertical line passing through the most prominent part of the hatch coaming on the side deck side and the vertical line passing through the inside edge of the slip guard (guard-rail, foot rail) on the outer side of the side deck.

**Steering system**

79. ‘steering system’: all the equipment necessary for steering the vessel, such as to ensure the manoeuvrability laid down in Chapter 5;

80. ‘rudder’: the rudder or rudders, with shaft, including the rudder quadrant and the components connecting with the steering apparatus;

81. ‘steering apparatus’: the part of the steering system which produces the movement of the rudder;
82. ‘drive unit’: the steering-apparatus drive, between the power source and the steering apparatus;

83. ‘power source’: the power supply to the steering drive unit and the steering apparatus produced by an on-board network, batteries or an internal combustion engine;

84. ‘steering control’: the component parts of and circuitry for the operation of a power-driven steering control;

85. ‘steering apparatus drive unit’: the control for the steering apparatus, its drive unit and its power source;

86. ‘manual drive’: a system whereby manual operation of the hand wheel moves the rudder by means of a mechanical transmission, without any additional power source;

87. ‘manually-operated hydraulic drive’: a manual control actuating a hydraulic transmission;

88. ‘rate-of-turn regulator’: equipment which automatically produces and maintains a given rate of turn of the vessel in accordance with preselected values;

89. ‘wheelhouse designed for radar navigation by one person’: a wheelhouse arranged in such a way that, during radar navigation, the vessel can be manoeuvred by one person.

**Properties of structural components and materials**

90. ‘watertight’: a structural component or device so fitted as to prevent any ingress of water;

91. ‘spray-proof and weathertight’: a structural component or device so fitted that in normal conditions it allows only a negligible quantity of water to penetrate;

92. ‘gastight’: a structural component or device so fitted as to prevent the ingress of gas and vapours;

93. ‘non-combustible’: a substance which neither burns nor produces flammable vapours in such quantities that they ignite spontaneously when heated to approximately 750 °C;

94. ‘flame-retardant’: material which does not readily catch fire, or whose surface at least restricts the spread of flames pursuant to the test procedure referred to in Article 15.11, section 1(c);

95. ‘fire-resistance’: the property of structural components or devices as certified by the test procedure referred to in Article 15.11, section 1(d);

96. ‘Code for Fire Test Procedures’: the International Code for the Application of Fire Test Procedures adopted under Resolution MSC.61(67) by the Maritime Safety Committee of the IMO.

**Other definitions**

97. ‘approved classification society’: a classification society which has been recognised in accordance with the criteria and the procedures of Annex VII;

98. ‘radar installation’: an electronic navigational aid for detecting and displaying the surroundings and traffic;

99. ‘Inland ECDIS’: a standardised system for displaying electronic navigational charts for inland waters and associated information, that displays selected information from proprietary electronic navigational charts for inland waters and optionally information from other sensors of the craft;

100. ‘Inland ECDIS installation’: an installation for displaying electronic navigational charts for inland waters that can be operated in two different modes: information mode and navigation mode;

101. ‘information mode’: use of Inland ECDIS for information purposes only without radar overlay;

102. ‘navigation mode’: use of Inland ECDIS with radar overlay for navigating a craft;

103. ‘shipboard personnel’: all employees on board a passenger vessel who are not members of the crew;
104. ‘persons with reduced mobility’: persons facing particular problems when using public transport, such as the elderly and the handicapped and persons with sensory disabilities, persons in wheelchairs, pregnant women and persons accompanying young children;

105. ‘Community certificate’: a certificate issued to an inland waterway vessel by the competent authority, signifying compliance with the technical requirements of this Directive.

Temporary requirements

Temporary requirements may be adopted, in accordance with the procedure referred to in Article 19(2) of this Directive, where it is found urgently necessary, for the purposes of adaptation to technical progress of inland waterway transport, to allow derogations from the provisions of this Directive before an expected amendment of this Directive itself or to allow tests. The requirements shall be published and shall be valid for a maximum of three years. They shall enter into force at the same time and shall be annulled under the same conditions in all Member States.

Administrative instructions

In order to make the implementation of this Directive easier and uniform, binding administrative instructions for the inspection may be adopted in accordance with the procedure referred to in Article 19(2) of this Directive.
3. The Chairman and the experts within each body shall be designated by the authorities in the State in which the body is set up. On taking up their duties, the Chairman and the experts shall submit a written declaration that they will perform them completely independently. No declaration shall be required from officials.

4. Inspection bodies may be assisted by specialist experts in accordance with the national provisions applying.

Article 2.02
Request for an inspection

1. The procedure for making a request for an inspection and establishing the place and time of that inspection fall within the powers of the authorities issuing the Community certificate. The competent authority shall determine which documents are to be submitted. The procedure shall take place in such a way as to ensure that the inspection may be conducted within a reasonable period following the lodging of the request.

2. The owner of a craft that is not subject to this Directive, or his representative, may request a Community certificate. His request shall be met if the vessel fulfils the requirements of this Directive.

Article 2.03
Presentation of the craft for inspection

1. The owner, or his representative, shall present the craft in an unladen, cleaned and equipped state. He shall provide any assistance needed for the inspection, such as providing an appropriate dinghy and staff, and uncovering any parts of the hull or fittings that are not directly accessible or visible.

2. The inspection body shall demand a dry inspection on the first occasion. That dry inspection may be dispensed with if a classification certificate or a certificate from an approved classification society to the effect that the construction meets its requirements can be produced or if a certificate is produced which shows that a competent authority has already carried out a dry inspection for other purposes. Where there is a periodical inspection or an inspection, as provided for in Article 15 of this Directive, the inspection body may require an inspection out of the water.

The inspection body shall conduct trial runs during an initial inspection of motor vessels or convoys or where major changes are made to the propulsion or steering equipment.

3. The inspection body may require further operational tests and other supporting documents. That provision shall also apply during the building of the craft.

Article 2.04
(Left void)

Article 2.05
Provisional Community certificate

1. The competent authority may issue a provisional Community certificate:

(a) to craft intended to travel to a certain place with the permission of the competent authority in order to obtain a Community certificate;

(b) to craft whose Community certificate has been temporarily withdrawn in one of the instances referred to in Article 2.07 or in Articles 12 and 16 of this Directive;

(c) to craft whose Community certificate is in preparation following a successful inspection;

(d) to craft where not all of the conditions required for obtaining a Community certificate as set out in Part I of Annex V have been met;
(e) to craft so damaged that their state no longer complies with the Community certificate;

(f) to floating installations or equipment where the authorities responsible for special transport operations make the authorisation to carry out a special transport operation, as provided for by the applicable navigational authority regulations of the Member States, subject to obtaining such a Community certificate.

(g) to craft deviating from the provisions of Part II, as provided for in Article 2.19, section 2.

2. The provisional Community certificate shall be drawn up using the model set out in Part III of Annex V where the navigability of the craft, floating establishment or floating object seems to have been adequately ensured.

This shall include the conditions considered necessary by the competent authority and shall be valid:

(a) in the cases referred to in section 1(a), (d) to (f), for a single specific trip to be made within a suitable period that shall not exceed one month;

(b) in the cases referred to in section 1(b) and (c), for an appropriate duration;

(c) in the cases referred to in section 1(g), for six months. The provisional Community certificate may be extended for six months at a time until the Committee has taken a decision.

Article 2.06
Validity of the Community certificate

1. The validity period of Community certificates issued to newly built vessels in accordance with the provisions of this Directive shall be determined by the competent authority up to a maximum of:

(a) five years in the case of passenger vessels;

(b) ten years in the case of all other craft.

The period of validity shall be entered on the Community certificate.

2. In the case of vessels already in operation before the inspection, the competent authority shall set the period of validity of the Community certificate case by case, in the light of the results of the inspection. However, the validity may not exceed the periods specified in section 1.

Article 2.07
Particulars in and amendments to the Community certificate

1. The owner of a craft, or his representative, shall bring to the notice of the competent authority any change in the name or ownership of a craft, any remeasurement, and any change in the official number, registration or home port, and shall send the Community certificate to that authority for amendment.

2. Any competent authority may add any information or change to the Community certificate.

3. Where a competent authority adds any alteration or information to a Community certificate it shall inform the competent authority which issued the Community certificate thereof.

Article 2.08
(Left void)

Article 2.09
Periodical inspection

1. Craft shall be subjected to a periodical inspection before expiry of their Community certificate.
2. Following a justified request by the owner or his representative, the competent authority may, by way of an exception, and without any further inspections, grant an extension of the validity of the Community certificate for not more than six months. That extension shall be granted in writing and shall be kept on board the craft.

3. The competent authority shall again lay down the period of validity of the Community certificate in accordance with the results of that inspection.

The period of validity shall be entered on the Community certificate and brought to the attention of the authority having issued that Community certificate.

4. If, rather than have its period of validity extended, a Community certificate is replaced by a new version, the earlier Community certificate shall be returned to the competent authority which issued it.

Article 2.10
Voluntary inspection

The owner of a craft, or his representative, may voluntarily request an inspection at any time.

That request for an inspection shall be acted upon.

Article 2.11
(Left void)

Article 2.12
(Left void)

Article 2.13
(Left void)

Article 2.14
(Left void)

Article 2.15
Expenses

The owner of a craft, or his representative, shall bear all of the costs arising from the inspection of the vessel and the issue of the Community certificate in accordance with a special set of charges drawn up by each of the Member States.

Article 2.16
Information

The competent authority may allow persons demonstrating a well-founded interest to be informed of the contents of a Community certificate and may issue those persons with extracts or copies of the Community certificates certified as true and designated as such.
Article 2.17

Register of Community certificates

1. Competent authorities shall assign an order number to the Community certificates they issue. They shall keep a register in accordance with the model set out in Annex VI of all the Community certificates they issue.

2. Competent authorities shall keep the original, or a copy of all the Community certificates they have issued, and shall enter on these any information and alterations, together with any Community certificate cancellations and replacements.

Article 2.18

Official number

1. The competent authority having issued a Community certificate shall enter on that Community certificate the official number assigned to that craft by the competent authority of the Member State in which the craft has been registered or has its home port.

As far as craft from non-Member States are concerned the official number to be entered on the Community certificate shall be assigned by the competent authority issuing that Community certificate.

These requirements shall not apply to recreational craft.

2. (Left void)

3. (Left void)

4. The owner of a craft, or his representative, shall apply to the competent authorities for assignment of the official number. The owner or his representative shall also be responsible for affixing the official number entered in the Community certificate and removing it as soon as it is no longer valid.

Article 2.19

Equivalences and derogations

1. Where the provisions of Part II require the use, or presence, on board a craft of certain materials, installations or items of equipment, or the adoption of certain design aspects or certain arrangements, the competent authority may permit the use, or presence, on board the said craft of other materials, installations or items of equipment, or the adoption of other design features or other arrangements where, in accordance with the procedure referred to in Article 19(2) of this Directive, these are recognised to be equivalent.

2. If, in accordance with the procedure referred to in Article 19(2) of this Directive, the Committee reaches no decision on equivalence, as provided for in section 1, the competent authority may issue a provisional Community certificate.

In accordance with the procedure referred to in Article 19(2) of this Directive, the competent authorities shall report to the Committee within one month of issue of the provisional Community certificate in accordance with Article 2.05, section 1(g), indicating the name and official number of the craft, the nature of the derogation and the State in which the craft is registered or has its home port.

3. In accordance with the procedure referred to in Article 19(2) of this Directive, the competent authority may, on the basis of a recommendation by the Committee, issue a Community certificate for trial purposes and for a limited period to a specific craft incorporating new technical specifications that derogate from the requirements of Part II, provided those specifications offer equivalent safety.

4. The equivalences and derogations referred to in sections 1 and 3 shall be entered in the Community certificate. The Commission shall be informed thereof.
PART II

CHAPTER 3

SHIPBUILDING REQUIREMENTS

Article 3.01
Basic requirement

Vessels shall be built in accordance with good shipbuilding practice.

Article 3.02
Strength and stability

1. The hull shall be sufficiently strong to withstand all of the stresses to which it is normally subjected.

(a) In the case of newly built vessels or major conversions affecting vessel strength, adequate strength shall be demonstrated by presenting design calculation proof. That proof is not required where a classification certificate or a declaration from an approved classification society is submitted.

(b) Where there is an inspection as referred to in Article 2.09 the minimum thicknesses of the bottom, bilge and side plates shall be checked in accordance with the following conditions:

For vessels made from steel minimum thickness $t_{\text{min}}$ is given by the highest of the values resulting from the following formulae:

1. for vessels that are longer than 40 m: $t_{\text{min}} = f \cdot b \cdot c \cdot (2.3 + 0.04 L) \text{ [mm]}$;

   for vessels not more than 40 m in length: $t_{\text{min}} = f \cdot b \cdot c \cdot (1.5 + 0.06 L) \text{ [mm]}$, however, not less than 3.00 mm

2. $t_{\text{min}} = 0.005 \cdot a \sqrt{T} \text{ [mm]}$

where:

$a$ = frame spacing [mm];

$f$ = frame spacing factor:

$f = 1$ for $a \leq 500 \text{ mm}$

$f = 1 + 0.0013 \cdot (a - 500)$ for $a > 500 \text{ mm}$

$b$ = factor for bottom, side or bilge plates

$b = 1.0$ for bottom plates and side plates

$b = 1.25$ for bilge plates.

$f = 1$ may be taken for the frame spacing when calculating the minimum thickness of the side plates. However, the minimum thickness of the bilge plates may in no case be less than that of the bottom plates and side plates.

$c$ = factor for the type of structure:

$c = 0.95$ for vessels with double bottom and wing void, where the partition between wing void and hold is located vertically in line with the coaming

$c = 1.0$ for all other types of structure.
(c) In longitudinally framed vessels with double bottom and wing voids, the minimum value calculated for the plate thickness in accordance with the formulae in paragraph (b) may be reduced to a calculated value certified by an approved classification society for sufficient hull strength (longitudinal, lateral and local strength).

Plates shall be renewed if bottom, bilge or side plates are below the permissible value laid down in this way.

The minimum values calculated in accordance with the method are limit values taking account of normal, uniform wear, and provided that shipbuilding steel is used and that the internal structural components such as frames, frame floor, main longitudinal and transverse structural members are in a good state and that the hull shows no indication of any overloading of the longitudinal strength.

As soon as these values are no longer achieved, the plates in question shall be repaired or replaced. However, lesser thicknesses, of not more than 10 % reduction from calculated values, are acceptable locally for small areas.

2. Where a material other than steel is used for the construction of the hull, it shall be proved by calculation that the hull strength (longitudinal, lateral and local strength) equals at least the strength that would result from the use of steel under the assumption of minimum thickness in accordance with section 1. If a certificate of class or a declaration issued by a recognised classification society is presented, a proof by calculation may be dispensed with.

3. The stability of vessels shall correspond to their intended use.

### Article 3.03

**Hull**

1. Bulkheads rising up to the deck or, where there is no deck, up to the gunwale, shall be installed at the following points:

   (a) A collision bulkhead at a suitable distance from the bow in such a way that the buoyancy of the laden vessel is ensured, with a residual safety clearance of 100 mm if water enters the watertight compartment ahead of the collision bulkhead.

   As a general rule, the requirement referred to in paragraph 1 shall be considered to have been met if the collision bulkhead has been installed at a distance of between 0,04 L and 0,04 L + 2 m measured from the forward perpendicular in the plane of maximum draught.

   If this distance exceeds 0,04 L + 2 m, the requirement set out in paragraph 1 shall be proved by calculation.

   The distance may be reduced to 0,03 L. In that case the requirement referred to in paragraph 1 shall be proved by calculation on the assumption that the compartment ahead of the collision bulkhead and those adjacent have all been filled with water.

   (b) An aft-peak bulkhead at a suitable distance from the stern where the vessel length L exceeds 25 m.

2. No accommodation or installations needed for vessel safety or operation may be located ahead of the plane of the collision bulkhead. This requirement shall not apply to anchor gear.

3. The accommodation, engine rooms and boiler rooms, and the workspaces forming part of these shall be separated from the holds by watertight transverse bulkheads that extend up to the deck.

4. The accommodation shall be separated from engine rooms, boiler rooms and holds in a gastight manner and shall be directly accessible from the deck. If no such access has been provided an emergency exit shall also lead directly to the deck.

5. The bulkheads specified in sections 1 and 3 and the separation of areas specified in section 4 shall not contain any openings.

   However, doors in the aft-peak bulkhead and penetrations, in particular for shafts and pipework, shall be permitted where they are so designed that the effectiveness of those bulkheads and of the separation of areas is not impaired. Doors in the aft-peak bulkhead shall be permitted only if it can be determined by remote monitoring in the wheelhouse whether they are open or closed and shall bear the following readily legible instruction on both sides:

   ‘Door to be closed immediately after use’.
6. The water inlets and discharges, and the pipework connected to these, shall be such that no unintentional ingress of water into the vessel is possible.

7. The foresections of vessels shall be built in such a way that the anchors neither wholly nor partly protrude beyond the side plating.

Article 3.04

Engine and boiler rooms, bunkers

1. Engine or boiler rooms shall be arranged in such a way that the equipment therein can be operated, serviced and maintained easily and safely.

2. The liquid-fuel or lubricant bunkers and passenger areas and accommodation may not have any common surfaces which are under the static pressure of the liquid when in normal service.

3. Engine room, boiler room and bunker bulk heads, ceilings and doors shall be made of steel or another equivalent non-combustible material.

Insulation material used in engine rooms shall be protected against the intrusion of fuel and fuel vapours.

All openings in walls, ceilings, and doors of engine rooms, boiler rooms, and bunker rooms shall be such that they can be closed from outside the room. The locking devices shall be made from steel or an equivalently non-combustible material.

4. Engine and boiler rooms and other premises in which flammable or toxic gases are likely to escape shall be capable of being adequately ventilated.

5. Companionways and ladders providing access to engine and boiler rooms and bunkers shall be firmly attached and be made of steel or another shock-resistant and non-combustible material.

6. Engine and boiler rooms shall have two exits of which one may be an emergency exit.

The second exit may be dispensed with if:

(a) the total floor area (average length × average width at the level of the floor plating) of the engine or boiler room does not exceed 35 m² and

(b) the path between each point where servicing or maintenance operations are to be carried out and the exit, or foot of the companionway near the exit providing access to the outside, is not longer than 5 m and

(c) a fire extinguisher is located at the servicing point that is furthest removed from the exit door and also, by way of derogation from Article 10.03, section 1(e), where the installed power of the engines does not exceed 100 kW.

7. The maximum permissible sound pressure level in the engine rooms shall be 110 dB(A). The measuring points shall be selected as a function of the maintenance work needed during normal operation of the plant located therein.

CHAPTER 4

SAFETY CLEARANCE, FREEBOARD AND DRAUGHT MARKS

Article 4.01

Safety clearance

1. The safety clearance shall be at least 300 mm.

2. The safety clearance in the case of vessels whose openings cannot be closed by spray-proof and weather-tight devices, and for vessels sailing with their holds uncovered, shall be increased in such a way that each of those openings shall be at least 500 mm from the plane of maximum draught.
Article 4.02

Freeboard

1. The freeboard of vessels with a continuous deck, without shear and superstructures, shall be 150 mm.

2. The freeboard of vessels with shear and superstructures shall be calculated using the following formula:

\[ F = 150 \cdot (1 - a) - \frac{\beta_v \cdot S_{e_v} + \beta_a \cdot S_{e_a}}{15} \text{ [mm]} \]

where:

- \( a \) is a correction coefficient that takes account of all of the superstructures involved;
- \( \beta_v \) is a coefficient for correcting the effect of the forward sheer resulting from the presence of superstructures in the forward quarter of length \( L \) of the vessel;
- \( \beta_a \) is a coefficient correcting the effect of the aft sheer resulting from the presence of superstructures in the aft quarter of length \( L \) of the vessel;
- \( S_{e_v} \) is the effective forward sheer in mm;
- \( S_{e_a} \) is the effective aft sheer in mm.

3. The coefficient \( a \) is calculated using the following formula:

\[ a = \sum \frac{le_e}{L} + \sum \frac{le_m}{L} + \sum le_e \]

where:

- \( le_m \) is the effective length, in m, of a superstructure located in the median part corresponding to half of length \( L \) of the vessel;
- \( le_e \) is the effective length, in m, of a superstructure in the forward quarter of vessel length \( L \);
- \( le_a \) is the effective length, in m, of a superstructure in the aft quarter of vessel length \( L \).

The effective length of a superstructure is calculated using the following formulae:

\[ le_m = l \left( 2.5 \cdot \frac{b}{B_1} - 1.5 \right) \cdot \frac{h}{0.36} \text{ [m]} \]

\[ le_e, le_a = l \left( 2.5 \cdot \frac{b}{B_1} - 1.5 \right) \cdot \frac{h}{0.36} \text{ [m]} \]

where:

- \( l \) is the effective length, in m, of the superstructure involved;
- \( b \) is the width, in m, of the superstructure involved;
- \( B_1 \) is the width of the vessel, in m, measured on the outside of the vertical sideplates at deck level halfway along the superstructure involved;
- \( h \) is the height, in m, of the superstructure involved. However, in the case of hatches, \( h \) is obtained by reducing the height of the coamings by half of the safety distance according to Article 4.01, sections 1 and 2. In no case will a value exceeding 0.36 m be taken for \( h \).

If \( \frac{b}{B} \) or \( \frac{b}{B_1} \) is less than 0.6 the effective length \( le \) of the superstructure will be zero.

4. Coefficients \( \beta_v \) and \( \beta_a \) are calculated using the following formulae:

\[ \beta_v = 1 - \frac{3 \cdot le_e}{L} \]

\[ \beta_a = 1 - \frac{3 \cdot le_a}{L} \]
5. The effective aft/forward sheers $S_{e}/S_{a}$ are calculated using the following formulae:

\[
S_{e} = S_{v} \cdot p \\
S_{a} = S_{a} \cdot p
\]

where:

- $S_{v}$ is the actual forward sheer, in mm; however $S_{v}$ shall not be taken to be more than 1 000 mm;
- $S_{a}$ is the actual aft sheer, in mm; however $S_{a}$ may not be taken to be more than 500 mm;
- $p$ is a coefficient calculated using the following formula:

\[
p = 4 \cdot \frac{x}{L}
\]

$x$ is the abscissa, measured from the extremity of the point where the sheer is 0,25 $S_{v}$ or 0,25 $S_{a}$ (see figure).

However, coefficient $p$ will not be taken to be more than 1.

6. If $\beta_{v} \cdot S_{v}$ is greater than $\beta_{a} \cdot S_{a}$ the value of $\beta_{v} \cdot S_{v}$ will be taken as being the value for $\beta_{a} \cdot S_{a}$.

**Article 4.03**

*Minimum freeboard*

In view of the reductions referred to in Article 4.02 the minimum freeboard shall be not less than 0 mm.

**Article 4.04**

*Draught marks*

1. The plane of maximum draught shall be determined in such a way that the specifications concerning minimum freeboard and minimum safety clearance are both met. However, for safety reasons, the inspection body may lay down a greater value for the safety clearance or freeboard. The plane of maximum draught shall be determined at least for Zone 3.

2. The plane of maximum draught shall be indicated by means of highly visible, indelible draught marks.
3. The draught marks for Zone 3 shall consist of a rectangle 300 mm long and 40 mm deep, the base of which is horizontal and coincides with the plane of the maximum authorised draught. Any differing draught marks shall include such a rectangle.

4. Vessels shall have at least three pairs of draught marks, of which one pair shall be centrally located and the two others located, respectively, at a distance from the bow and stern that is equal to roughly one-sixth of the length.

   However,

   (a) where a vessel is less than 40 m in length it will suffice to affix two pairs of marks at a distance from the bow and stern, respectively, that is equal to a quarter of the length;

   (b) where vessels are not intended for the carriage of goods, a pair of marks located roughly half way along the vessel will suffice.

5. Marks or indications which cease to be valid following a further inspection shall be deleted or marked as being no longer valid under the supervision of the inspection body. If a draught mark should disappear, it may only be replaced under the supervision of an inspection body.

6. Where a vessel has been measured in implementation of the 1966 Convention on the Measurement of Inland Navigation Vessels and the plane of the measurement marks meets the requirements of this Directive, those measurement marks shall take the place of the draught marks; this shall be mentioned in the Community certificate.

7. For vessels operating on zones of inland waterways other than Zone 3 (Zones 1, 2 or 4) the bow and stern pairs of draught marks provided for in section 4 shall be supplemented by adding a vertical line to which one or, in the case of several zones, several additional draught lines 150 mm long shall be affixed towards the bow, in relation to the draught mark for Zone 3.

   This vertical line and the horizontal line shall be 30 mm thick. In addition to the draught mark towards the bow of the vessel, the relevant zone numbers shall be indicated in lettering 60 mm high × 40 mm deep (see Figure 1).
If the plane of maximum draught for Zone 3 of a vessel is determined by assuming that the holds may be closed in such a way as to make them spray-proof and weathertight, and if the distance between the plane of maximum draught and the upper edge of the coamings is less than 500 mm, the maximum draught for sailing with uncovered holds shall be determined.

The following statement shall be entered on the Community certificate:

‘Where the hold hatches are totally or partly uncovered the vessel may only be loaded up to ... mm below the draught marks for Zone 3.’

1. Vessels whose draught may exceed 1 m shall bear a draught scale on each of their sides towards the stern; they may bear additional draught scales.

2. The zero points on each draught scale shall be taken vertically to this within the plane running parallel to the plane of maximum draught passing through the lowest point of the hull or of the keel where such exists. The vertical distance above the zero point shall be graduated in decimetres. That graduation shall be located on each scale, from the unladen water line up to 100 mm above the maximum draught by means of punched or chiselled marks, and shall be painted in the form of a highly-visible band in two alternating colours. That graduation shall be identified by figures at a distance of every five decimetres marked next to the scale as well as at the top of the scale.

3. The two stern measurement scales affixed pursuant to the Convention referred to in Article 4.04, section 6, may replace the draught scales, provided that they include a graduation that meets the requirements plus, where appropriate, figures indicating the draught.

CHAPTER 5

MANOEUVRABILITY

Article 5.01

General

Vessels and convoys shall display adequate navigability and manoeuvrability.

Unpowered vessels intended to be towed shall meet the specific requirements laid down by the inspection body.

Powered vessels and convoys shall meet the requirements set out in Articles 5.02 to 5.10.

Article 5.02

Navigation tests

1. Navigability and manoeuvrability shall be checked by means of navigation tests. Compliance with the requirements of Articles 5.06 to 5.10 shall, in particular, be examined.

2. The inspection body may dispense with all or part of the tests where compliance with the navigability and manoeuvrability requirements is proven in another manner.

Article 5.03

Test area

1. The navigation tests referred to in Article 5.02 shall be carried out on areas of inland waterways that have been designated by the competent authorities.
2. Those test areas shall be situated on a stretch of flowing or standing water that is if possible straight, at least 2 km long and sufficiently wide and is equipped with highly-distinctive marks for determining the position of the vessel.

3. It shall be possible for the inspection body to plot the hydrological data such as depth of water, width of navigable channel and average speed of the current in the navigation area as a function of the various water levels.

**Article 5.04**  
Degree of loading of vessels and convoys during navigation tests

During navigation tests, vessels and convoys intended to carry goods shall be loaded to at least 70 % of their tonnage and loading, distributed in such a way as to ensure a horizontal attitude as far as possible. If the tests are carried out with a lesser load the approval for downstream navigation shall be restricted to that loading.

**Article 5.05**  
Use of on-board facilities for navigation test

1. During the navigation test, all of the equipment referred to in items 34 and 52 of the Community certificate which may be actuated from the wheelhouse may be used, apart from anchors.

2. However, during the test involving turning into the current referred to in Article 5.10, bow anchors may be used.

**Article 5.06**  
Prescribed (forward) speed

1. Vessels and convoys shall achieve a speed in relation to the water of at least 13 km/h. That condition is not mandatory where pusher tugs are operating solo.

2. The inspection body may grant exemptions to vessels and convoys operating solely in estuaries and ports.

3. The inspection body shall check if the unladen vessel is capable of exceeding a speed of 40 km/h in relation to water. If this can be confirmed, the following entry shall be made in item 52 of the Community certificate:

   ‘The vessel is capable of exceeding a speed of 40 km/h in relation to water.’

**Article 5.07**  
Stopping capacity

1. Vessels and convoys shall be able to stop facing downstream in good time while remaining adequately manoeuvrable.

2. Where vessels and convoys are not longer than 86 m and not wider than 22.90 m the stopping capacity mentioned above may be replaced by turning capacity.

3. The stopping capacity shall be proved by means of stopping manoeuvres carried out within a test area as referred to in Article 5.03 and the turning capacity by turning manoeuvres in accordance with Article 5.10.

**Article 5.08**  
Capacity for going astern

Where the stopping manoeuvre required by Article 5.07 is carried out in standing water it shall be followed by a navigation test while going astern.

**Article 5.09**  
Capacity for taking evasive action

Vessels and convoys shall be able to take evasive action in good time. That capacity shall be proven by means of evasive manoeuvres carried out within a test area as referred to in Article 5.03.
Article 5.10

Turning capacity

Vessels and convoys not exceeding 86 m in length or 22.90 m in breadth shall be able to turn in good time.

That turning capacity may be replaced by the stopping capacity referred to in Article 5.07.

The turning capacity shall be proven by means of turning manoeuvres against the current.

CHAPTER 6

STEERING SYSTEM

Article 6.01

General requirements

1. Vessels shall be fitted with a reliable steering system which provides at least the manoeuvrability required by Chapter 5.

2. Powered steering systems shall be designed in such a way that the rudder cannot change position unintentionally.

3. The steering system as a whole shall be designed for permanent lists of up to 15° and ambient temperatures from −20 °C to +50 °C.

4. The component parts of the steering system shall be rugged enough to always be able to withstand the stresses to which they may be subjected during normal operation. No external forces applied to the rudder shall impair the operating capacity of the steering apparatus and its drive unit.

5. The steering system shall incorporate a powered drive unit if so required by the forces needed to actuate the rudder.

6. A steering apparatus with powered drive unit shall be protected against overloads by means of a system that restricts the torque applied by the drive unit.

7. The penetrations for the rudder stocks shall be so designed as to prevent the spread of water-polluting lubricants.

Article 6.02

Steering apparatus drive unit

1. If the steering apparatus has a powered drive unit, it shall be possible to bring a second independent drive unit, or manual drive, into use within five seconds if the steering apparatus drive unit fails or malfunctions.

2. If the second drive unit or manual drive is not placed in service automatically, it shall be possible to do so immediately by means of a single operation by the helmsman that is both simple and quick.

3. The second drive unit or manual drive shall ensure the manoeuvrability required by Chapter 5 as well.

Article 6.03

Hydraulic steering apparatus drive unit

1. No other power consumers may be connected to the hydraulic steering apparatus drive unit. Where there are two independent drive units, such a connection to one of the units is however acceptable if the consumers are connected to the return line and may be disconnected from the drive unit by means of an isolating device.
2. Where there are two hydraulic drive units, a separate hydraulic reservoir is needed for each of the two units. However, double reservoirs are acceptable. Hydraulic reservoirs shall be fitted with a warning system that monitors any drop in the oil level below the lowest content level needed for reliable operation.

3. The pilot valve does not have to be duplicated if this can be actuated manually or by manually-controlled hydraulic actuation from the wheelhouse.

4. The dimensions, design and arrangement of the pipework shall as far as possible exclude mechanical damage or damage resulting from fire.

5. As far as hydraulic drive units are concerned, no separate pipework system shall be required for the second unit if independent operation of the two units is guaranteed and if the pipework system is able to withstand a pressure of at least 1.5 times that of the maximum service pressure.

6. Flexible piping is only permitted where its use is essential in order to damp vibrations or to allow freedom of movement of components. It shall be designed for a pressure that is at least equal to the maximum service pressure.

Article 6.04

Power source

1. Steering systems fitted with two powered drive units shall have at least two power sources.

2. If the second power source for the powered steering apparatus is not constantly available while the vessel is under way, a buffer device carrying adequate capacity shall provide back-up during the period needed for start-up.

3. In the case of electrical power sources, no other power consumers may be supplied by the main power source for the steering system.

Article 6.05

Manual drive

1. The manual wheel shall not be driven by a powered drive unit.

2. Regardless of rudder position, a kick-back of the wheel shall be prevented when the manual drive is engaged automatically.

Article 6.06

Rudder-propeller, water-jet, cycloidal-propeller and bow-thruster systems

1. Where the thrust vectoring of rudder-propeller, water-jet, cycloidal-propeller or bow-thruster installations is remotely actuated by electric, hydraulic or pneumatic means, there shall be two actuation systems, each independent of the other, between the wheelhouse and the propeller- or thruster-installation which, mutatis mutandis, meet the requirements of Articles 6.01 to 6.05.

Such systems are not subject to this section if they are not needed in order to achieve the manoeuvrability required by Chapter 5 or if they are only needed for the stopping test.

2. Where there are two or more rudder-propeller, water-jet or cycloidal-propeller installations that are independent of each other the second actuation system is not necessary if the vessel retains the manoeuvrability required by Chapter 5 if one of the systems fails.

Article 6.07

Indicators and monitoring devices

1. The rudder position shall be clearly displayed at the steering position. If the rudder-position indicator is electric it shall have its own power supply.
2. There shall be at least the following indicators and monitoring devices at the steering position:

   (a) oil level in the hydraulic reservoirs in accordance with Article 6.03, section 2, and service pressure of the hydraulic system;
   (b) failure of the electrical supply for the steering control;
   (c) failure of the electrical supply for the drive units;
   (d) failure of the rate-of-turn regulator;
   (e) failure of the required buffer devices.

Article 6.08

Rate-of-turn regulators

1. Rate-of-turn regulators and their components shall meet the requirements laid down in Article 9.20.

2. The proper functioning of the rate-of-turn regulator shall be displayed at the steering position by means of a green indicating light.

Any lack of or unacceptable variations in the supply voltage and an unacceptable decrease in the speed of rotation of the gyroscope shall be monitored.

3. Where, in addition to the rate-of-turn regulator, there are other steering systems, it shall be possible to clearly distinguish at the steering position which of these systems has been activated. It shall be possible to shift from one system to another immediately. The rate-of-turn regulator shall not have any influence on these other steering systems.

4. The electricity supply to the rate-of-turn regulator shall be independent of other power consumers.

5. The gyroscopes, detectors and rate-of-turn indicators used in the rate-of-turn regulators shall meet the minimum requirements of the minimum specifications and test conditions concerning rate-of-turn displays for inland waterways, as laid down in Annex IX.

Article 6.09

Acceptance procedure

1. The compliance of the installed steering system shall be checked by an inspection body. It may, for this purpose, request the following documents:

   (a) description of the steering system;
   (b) drawings and information on the drive units and the steering controls;
   (c) information concerning the steering apparatus;
   (d) electrical wiring diagram;
   (e) description of the rate-of-turn regulator;
   (f) operating instructions for the steering system.

2. Operation of the entire steering system shall be checked by means of a navigation test. If a rate-of-turn regulator is installed it shall be checked that a predetermined course can be reliably maintained and that bends can be negotiated safely.

CHAPTER 7

WHEELHOUSE

Article 7.01

General

1. Wheelhouses shall be arranged in such a way that the helmsman may at all times perform his task while the vessel is under way.
2. Under normal operating conditions, sound pressure generated by the vessel and measured at the level of the helmsman’s head at the steering position shall not exceed 70 dB(A).

3. Where a wheelhouse has been designed for radar navigation by one person, the helmsman shall be able to accomplish his task while seated and all of the display or monitoring instruments and all of the controls needed for operation of the vessel shall be arranged in such a way that the helmsman may use them comfortably while the vessel is under way without leaving his position or losing sight of the radar screen.

Article 7.02
Unobstructed view

1. There shall be an adequately unobstructed view in all directions from the steering position.

2. The area of obstructed vision for the helmsman ahead of the vessel in an unladen state with half of its supplies but without ballast shall not exceed two vessel lengths or 250 m, whichever is less, to the surface of the water over an arc from abeam on either side through right ahead of the vessel.

Optical and electronic means for reducing the area of obstructed vision may not be taken into account during the inspection.

To further reduce any area of obstructed vision, only suitable electronic devices shall be used.

3. The helmsman’s field of unobstructed vision at his normal position shall be at least 240° of the horizon and at least 140° within the forward semicircle.

No window frame, post or superstructure shall lie within the helmsman’s usual axis of vision.

Even in the case where a field of unobstructed vision of at least 240° of the horizon is provided, the inspection body may require other measures and in particular the installation of suitable auxiliary optical or electronic devices if no sufficiently unobstructed view is provided towards the rear.

The height of the lower edge of the side windows shall be kept as low as possible and the height of the upper edge of the side and rear windows shall be kept as high as possible.

In determining whether the requirements in this Article for visibility from the wheelhouse are met, the helmsman shall be assumed to have a height of eye of 1,650 mm above the deck at the steering position.

4. The upper edge of the forward facing windows of the wheelhouse shall be high enough to allow a person at the steering position with height of eye of 1,800 mm a clear forward view to at least 10 degrees above the horizontal at height of eye level.

5. There shall in all weathers be suitable means of providing a clear view through the windscreen.

6. The glazing used in wheelhouses shall be made of safety glass and have a light transmission of at least 75%.

To avoid reflections, the bridge front windows shall be glare-free and inclined from the vertical plane, so as to form an outward angle of not less than 10° and not more than 25°.

Article 7.03
General requirements concerning control, indicating and monitoring equipment

1. Control equipment needed to operate the vessel shall be brought into its operating position easily. That position shall be unambiguously clear.
2. Monitoring instruments shall be easily legible. It shall be possible to adjust their lighting steplessly down to their extinction. Light sources shall be neither intrusive nor impair the legibility of the monitoring instruments.

3. There shall be a system for testing the warning and indicating lights.

4. It shall be possible to clearly establish whether a system is in operation. If its functioning is indicated by means of an indicating light, this shall be green.

5. Any malfunctioning or failure of systems that require monitoring shall be indicated by means of red warning lights.

6. An audible warning shall sound at the same time that a red warning light lights up. Audible warnings may be given by a single, collective signal. The sound pressure level of that signal shall exceed the maximum sound pressure level of the ambient noise at the steering position by at least 3 dB(A).

7. The audible warning shall be capable of being switched off after a malfunction or failure has been acknowledged. Such shutdown shall not prevent the alarm signal from being triggered by other malfunctions. The red warning lights shall only go out when the malfunction has been corrected.

8. The monitoring and indicating devices shall be automatically switched to an alternative power supply if their own power supply fails.

Article 7.04
Specific requirements concerning control, indicating and monitoring equipment of main engines and steering system

1. It shall be possible to control and monitor the main engines and steering systems from the steering position. Main engines fitted with a clutch which can be actuated from the steering position, or driving a controllable pitch propeller which can be controlled from the steering position, need only to be capable of being started up and shut down from the engine room.

2. The control for each main engine shall take the form of a single lever which prescribes an arc within a vertical plane that is approximately parallel to the longitudinal axis of the vessel. Movement of that lever towards the bow of the vessel shall cause forward motion, whereas movement of the lever towards the stern shall cause the vessel to go astern. Clutch engagement and reversal of the direction of motion shall take place about the neutral position of that lever. The lever shall catch in the neutral position.

3. The direction of the propulsion thrust imparted to the vessel and the rotational speed of the propeller or main engines shall be displayed inside wheelhouses that have been designed for radar navigation by one person.

4. The indicating and monitoring devices required by Article 6.07, section 2, Article 8.03, section 2, and Article 8.05, section 13, shall be located at the steering position.

5. Vessels with wheelhouses designed for radar navigation by one person shall be steered by means of a lever. It shall be possible to move that lever easily by hand. The position of the lever in relation to the longitudinal axis of the vessel shall correspond precisely to the position of the rudder blades. It shall be possible to release hold of the lever in any given position without that of the rudder blades changing. The neutral position of the lever shall be clearly perceptible.

6. Where the vessel is fitted with bow rudders or special rudders, particularly for going astern, these shall be actuated in wheelhouses designed for radar navigation by one person by special levers which, mutatis mutandis, meet the requirements set out in section 5.

That requirement shall also apply where, in convoys, the steering system fitted to craft other than those powering the convoy is used.

7. Where rate-of-turn regulators are used, it shall be possible for the rate-of-turn control to be released in any given position without altering the speed selected.

The control shall turn through a wide enough arc to guarantee adequately precise positioning. The neutral position shall be clearly perceptible from the other positions. The scale illumination shall be steplessly variable.
8. The remote-control equipment for the entire steering system shall be installed in a permanent manner and be arranged in such a way that the course selected is clearly visible. If the remote control equipment can be disengaged, it shall be equipped with an indicating device displaying the respective operational conditions ‘in service’ or ‘out of service’. The disposition and manipulation of the controls shall be functional.

For systems that are subsidiary to the steering system, such as active bow thrusters, remote-control equipment not permanently installed shall be acceptable provided that such a subsidiary installation can be activated by means of an override at any time within the wheelhouse.

9. In the case of rudder-propeller, water-jet, cycloidal-propeller and bow-thruster systems, equivalent devices shall be acceptable as control, indicating and monitoring devices.

The requirements set out in sections 1 to 8 shall apply, mutatis mutandis, in view of the specific characteristics and arrangements selected for the abovementioned active steering and propulsion units. The position of the indicating device shall clearly show for each installation the direction of the thrust acting on the vessel or the direction of the jet.

Article 7.05

Navigation lights, light signals and sound signals

1. In this Article the term:

(a) ‘navigation lights’ means the masthead, side and stern lights, and the lights visible from all sides, the blue scintillating lights, yellow rapidly scintillating strong lights for high-speed vessels and blue lights for the carriage of dangerous goods;

(b) ‘light signals’ means the lights accompanying the sound signals and assigned to the blue panel.

2. Current indicating lights or other equivalent devices, such as repeater lights, for monitoring the navigation lights shall be installed in the wheelhouse unless that monitoring can be performed direct from the wheelhouse.

3. In wheelhouses designed for radar navigation by one person, repeater lights shall be installed on the control panel in order to monitor the navigation lights and the light signals. Switches of navigation lights shall be included in the repeater lights or be adjacent to these and shall be clearly assigned to them.

The arrangement and colour of the repeater lights for the navigation lights and light signals shall correspond to the actual position and colour of those lights and signals.

The failure of a navigation light or light signal to function shall cause the corresponding repeater light either to go out or to provide a signal in another manner.

4. In wheelhouses designed for radar navigation by one person it shall be possible to activate the sound signals by a foot operated switch. That requirement shall not apply to the ‘do not approach’ signal in accordance with the applicable navigational authority regulations of the Member States.

5. Navigation lights shall meet the requirements set out in Annex IX, Part I.

Article 7.06

Radar installations and rate-of-turn indicators

1. The radar equipment and rate-of-turn indicators shall be of a type that has been approved by the competent authority. The requirements concerning installation and operational testing of radar equipment and rate-of-turn indicators, as laid down in Annex IX, shall be met. Inland ECDIS equipment which can be operated in navigation mode shall be regarded as radar equipment. In addition the requirements of the Inland ECDIS standard shall be met.

The rate-of-turn indicator shall be located ahead of the helmsman and within his field of vision.

2. In wheelhouses designed for radar navigation by one person:

(a) the radar screen shall not be shifted significantly out of the helmsman’s axis of view in its normal position;
(b) the radar image shall continue to be perfectly visible, without a mask or screen, whatever the lighting conditions outside the wheelhouse;

(c) the rate-of-turn indicator shall be installed directly above or below the radar image or be incorporated into this.

Article 7.07
Radio telephony systems for vessels with wheelhouses designed for radar navigation by one person

1. Where vessel wheelhouses have been designed for radar navigation by one person, reception from the vessel-vessel networks and that of nautical information shall be via a loudspeaker, and outgoing communications via a fixed microphone. Send/receive shall be selected by means of a push-button.

It shall not be possible to use the microphones of those networks for the public correspondence network.

2. Where vessel wheelhouses designed for radar navigation by one person are equipped with a radio telephony system for the public correspondence network, reception shall be possible from the helmsman’s seat.

Article 7.08
Internal communication facilities on board

There shall be internal communication facilities on board vessels with a wheelhouse designed for radar navigation by one person.

It shall be possible to establish communication links from the steering position:

(a) with the bow of the vessel or convoy;

(b) with the stern of the vessel or convoy if no direct communication is possible from the steering position;

(c) with the crew accommodation;

(d) with the boatmaster’s cabin.

Reception at all positions of these internal communication links shall be via loudspeaker, and transmission shall be via a fixed microphone. The link with the bow and stern of the vessel or convoy may be of the radio-telephone type.

Article 7.09
Alarm system

1. There shall be an independent alarm system enabling the accommodation, engine rooms and, where appropriate, the separate pump rooms to be reached.

2. The helmsman shall have within reach an on/off switch controlling the alarm signal; switches which automatically return to the off position when released are not acceptable.

3. The sound pressure level for the alarm signal shall be at least 75 dB(A) within the accommodation area.

In engine rooms and pump rooms the alarm signal shall take the form of a flashing light that is visible on all sides and clearly perceptible at all points.
Article 7.10
*Heating and ventilation*

Wheelhouses shall be equipped with an effective heating and ventilation system that can be regulated.

Article 7.11
*Stern-anchor operating equipment*

On board vessels and convoys whose wheelhouse has been designed for radar navigation by one person and exceeding 86 m in length or 22.90 m in breadth it shall be possible for the helmsman to drop the stern anchors from his position.

Article 7.12
*Retractable wheelhouses*

Retractable wheelhouses shall be fitted with an emergency lowering system.

All lowering operations shall automatically trigger a clearly audible acoustic warning signal. That requirement shall not apply if the risk of injury which may result from the lowering is prevented by appropriate design features.

It shall be possible to leave the wheelhouse safely whatever its position.

Article 7.13
*Entry in the Community certificate for vessels with wheelhouses designed for radar navigation by one person*

Where a vessel complies with the special provisions for wheelhouses designed for radar navigation by one person as set out in Articles 7.01, 7.04 to 7.08 and 7.11, the following entry shall be made in the Community certificate:

‘The vessel has a wheelhouse designed for radar navigation by one person’.

CHAPTER 8
ENGINE DESIGN

Article 8.01
*General*

1. Engines and their ancillaries shall be designed, built and installed in accordance with best practice.

2. Installations requiring regular inspection, particularly steam boilers, other pressure vessels and their accessories, and lifts, shall meet the regulations applying in one of the Member States of the Community.

3. Only internal-combustion engines burning fuels having a flashpoint of more than 55 °C may be installed.

Article 8.02
*Safety equipment*

1. Engines shall be installed and fitted in such a way as to be adequately accessible for operation and maintenance and shall not endanger the persons assigned to those tasks. It shall be possible to make them secure against unintentional starting.

2. Main engines, auxiliaries, boilers and pressure vessels, and their accessories, shall be fitted with safety devices.
3. In case of emergency, it shall also be possible to shut down the motors driving the blower and suction fans from outside the space in which they are located, and from outside the engine room.

4. Where necessary, connections of pipes which carry fuel oil, lubricating oil, and oils used in power transmission systems, control and activating systems and heating systems shall be screened or otherwise suitably protected to avoid oil spray or leakages onto hot surfaces, into machinery air intakes, or other sources of ignition. The number of connections in such piping systems shall be kept to a minimum.

5. External high pressure fuel delivery pipes of diesel engines, between the high pressure fuel pumps and fuel injectors, shall be protected with a jacketed piping system capable of containing fuel from a high pressure pipe failure. The jacketed piping system shall include a means for collection of leakages and arrangements shall be provided for an alarm to be given of a fuel pipe failure, except that an alarm is not required for engines with no more than two cylinders. Jacketed piping systems need not be applied to engines on open decks operating windlasses and capstans.

6. Insulation of engine parts shall meet the requirements of Article 3.04, section 3, second paragraph.

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**Article 8.03**

**Power plant**

1. It shall be possible to start, stop or reverse the ship's propulsion reliably and quickly.

2. The following shall be monitored by suitable devices which trigger an alarm once a critical level has been reached:
   (a) the temperature of the main-engine cooling water;
   (b) the lubricating-oil pressure for the main engines and transmissions;
   (c) the oil and air pressure of the main engine reversing units, reversible transmissions or propellers.

3. Where vessels have only one main engine, that engine shall not be shut down automatically except in order to protect against overspeed.

4. Where vessels have only one main engine, that engine may be equipped with an automatic device for the reduction of the engine speed only if an automatic reduction of the engine speed is indicated both optically and acoustically in the wheelhouse and the device for the reduction of the engine speed can be switched off from the helmsman's position.

5. Shaft bushings shall be designed in such a way as to prevent the spread of water-polluting lubricants.

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**Article 8.04**

**Engine exhaust system**

1. The exhaust gases shall be completely ducted out of the vessel.

2. All suitable measures shall be taken to avoid ingress of the exhaust gases into the various compartments. Exhaust pipes passing through accommodation or the wheelhouse shall, within these, be covered by protective gas-tight sheathing. The gap between the exhaust pipe and this sheathing shall be open to the outside air.

3. The exhaust pipes shall be arranged and protected in such a way that they cannot cause a fire.

4. The exhaust pipes shall be suitably insulated or cooled in the engine rooms. Protection against physical contact may suffice outside the engine rooms.
Article 8.05
Fuel tanks, pipes and accessories

1. Liquid fuels shall be stored in steel tanks which are either an integral part of the hull or which are firmly attached to the hull. If so required by the design of the vessel, an equivalent material in terms of fire-resistance may be used. These requirements shall not apply to tanks having a capacity of no more than 12 litres that have been incorporated in auxiliaries during their manufacture. Fuel tanks shall not have common partitions with drinking-water tanks.

2. Tanks and their pipework and other accessories shall be laid out and arranged in such a way that neither fuel nor fuel vapours may accidentally reach the inside of the vessel. Tank valves intended for fuel sampling or water drainage shall close automatically.

3. No fuel tanks may be located forward of the collision bulkhead.

4. Fuel tanks and their fittings shall not be located directly above engines or exhaust pipes.

5. The filler orifices for fuel tanks shall be marked distinctly.

6. The orifice for the fuel tank filler necks shall be on the deck, except for the daily-supply tanks. The filler neck shall be fitted with a connection piece in accordance with European standard EN 12827:1999. Such tanks shall be fitted with a breather pipe terminating in the open air above the deck and arranged in such a way that no water ingress is possible. The cross-section of the breather pipe shall be at least 1.25 times the cross-section of the filler neck.

If tanks are interconnected, the cross-section of the connecting pipe shall be at least 1.25 times the cross-section of the filler neck.

7. Directly at tank outlets the pipework for the distribution of fuels shall be fitted with a shutoff device that can be operated from the deck. This requirement shall not apply to tanks mounted directly on the engine.

8. Fuel pipes, their connections, seals and fittings shall be made of materials that are able to withstand the mechanical, chemical and thermal stresses to which they are likely to be subjected. The fuel pipes shall not be subjected to any adverse influence of heat and it shall be possible to inspect them throughout their length.

9. Fuel tanks shall be provided with a suitable capacity-gauging device. Capacity-gauging devices shall be legible right up to the maximum filling level. Glass gauges shall be effectively protected against impacts, shall be fitted with an automatic closing device at their base and their upper end shall be connected to the tanks above their maximum filling level. The material used for glass gauges shall not deform under normal ambient temperatures. Sounding pipes shall not terminate in accommodation spaces. Sounding pipes terminating in an engine or boiler room shall be fitted with suitable self-closing devices.

10. (a) Fuel tanks shall be safeguarded against fuel spills during bunkering by means of appropriate onboard technical devices which shall be entered in item 52 of the Community certificate.

(b) If fuel is taken on from bunkering stations with their own technical devices to prevent fuel spills on board during bunkering, the equipment requirements in (a) and section 11 shall no longer apply.

11. If fuel tanks are fitted with an automatic shut-off device, the sensors shall stop fuelling when the tank is 97 % full; this equipment shall meet the 'failsafe' requirements.

If the sensor activates an electrical contact, which can break the circuit provided by the bunkering station by a binary signal, it shall be possible to transmit the signal to the bunkering station by means of a watertight connection plug meeting the requirements of IEC publication 60309-1:1999 for 40 to 50 V DC, housing colour white, earthing contact position ten o’clock.
12. Fuel tanks shall be provided with openings having leak-proof closures that are intended to permit cleaning and inspection.

13. Fuel tanks directly supplying the main engines and engines needed for safe operation of the vessel shall be fitted with a device emitting both visual and audible signals in the wheelhouse if their level of filling is not sufficient to ensure further safe operation.

Article 8.06
Storage of lubricating oil, pipes and accessories

1. Lubricating oil shall be stored in steel tanks which are either an integral part of the hull or which are firmly attached to the hull. If so required by the design of the vessel, an equivalent material in terms of fire-resistance may be used. These requirements shall not apply to tanks having a capacity of no more than 25 litres. Lubricating oil tanks shall not have common partitions with drinking-water tanks.

2. Lubricating oil tanks and their pipework and other accessories shall be laid out and arranged in such a way that neither lubricating oil nor lubricating oil vapour may accidentally reach the inside of the vessel.

3. No lubricating oil tanks may be located forward of the collision bulkhead.

4. Lubricating oil tanks and their fittings shall not be located directly above engines or exhaust pipes.

5. The filler orifices for lubricating oil tanks shall be marked distinctly.

6. Lubricating oil pipes, their connections, seals and fittings shall be made of materials that are able to withstand the mechanical, chemical and thermal stresses to which they are likely to be subjected. The pipes shall not be subjected to any adverse influence of heat and it shall be possible to inspect them throughout their length.

7. Lubricating oil tanks shall be provided with a suitable capacity-gauging device. Capacity-gauging devices shall be legible right up to the maximum filling level. Glass gauges shall be effectively protected against impacts, shall be fitted with an automatic closing device at their base and their upper end shall be connected to the tanks above their maximum filling level. The material used for glass gauges shall not deform under normal ambient temperatures. Sounding pipes shall not terminate in accommodation spaces. Sounding pipes terminating in an engine or boiler room shall be fitted with suitable self-closing devices.

Article 8.07
Storage of oils used in power transmission systems, control and activating systems and heating systems, pipes and accessories

1. Oils used in power transmission systems, control and activating systems and heating systems shall be stored in steel tanks which are either an integral part of the hull or which are firmly attached to the hull. If so required by the design of the vessel, an equivalent material in terms of fire-resistance may be used. These requirements shall not apply to tanks having a capacity of no more than 25 litres. Such oil tanks shall not have common partitions with drinking-water tanks.

2. Such oil tanks and their pipework and other accessories shall be laid out and arranged in such a way that neither such oil nor such oil vapour may accidentally reach the inside of the vessel.

3. No such oil tanks may be located forward of the collision bulkhead.

4. Such oil tanks and their fittings shall not be located directly above engines or exhaust pipes.

5. The filler orifices for such oil tanks shall be marked distinctly.

6. Such oil pipes, their connections, seals and fittings shall be made of materials that are able to withstand the mechanical, chemical and thermal stresses to which they are likely to be subjected. The pipes shall not be subjected to any adverse influence of heat and it shall be possible to inspect them throughout their length.
7. Such oil tanks shall be provided with a suitable capacity-gauging device. Capacity-gauging devices shall be legible right up to the maximum filling level. Glass gauges shall be effectively protected against impacts, shall be fitted with an automatic closing device at their base and their upper end shall be connected to the tanks above their maximum filling level. The material used for glass gauges shall not deform under normal ambient temperatures. Sounding pipes shall not terminate in accommodation spaces. Sounding pipes terminating in an engine or boiler room shall be fitted with suitable self-closing devices.

Article 8.08

Bilge pumping and drainage systems

1. It shall be possible to pump out each watertight compartment separately. However, that requirement shall not apply to watertight compartments that are normally sealed hermetically during operation.

2. Vessels requiring a crew shall be equipped with two independent bilge pumps which shall not be installed within the same space. At least one of these shall be motor driven. However, for vessels with a power of less than 225 kW or with a deadweight of less than 350 t, or where vessels not intended for the carriage of goods have a displacement of less than 250 m³, one pump will suffice which can be either manually-operated or motor-driven.

Each of the required pumps shall be capable of use on each watertight compartment.

3. The minimum pumping capacity \( Q_1 \) of the first bilge pump shall be calculated using the following formula:

\[
Q_1 = 0.1 \cdot d_1^2 \ [l/min]
\]

\( d_1 \) is calculated via the formula:

\[
d_1 = 1.5 \cdot \sqrt{L(B + H)} + 25 \ [mm]
\]

The minimum pumping capacity \( Q_2 \) of the second bilge pump shall be calculated using the following formula:

\[
Q_2 = 0.1 \cdot d_2^2 \ [l/min]
\]

\( d_2 \) is calculated using the formula:

\[
d_2 = 2 \cdot \sqrt{L(B + H)} + 25 \ [mm]
\]

However, the value \( d_2 \) need not exceed value \( d_1 \).

For the calculation of \( Q_2 \), \( L \) shall be taken to be the length of the longest watertight compartment.

In these formulae:

- \( L \) is the length of the watertight compartment in question, in [m];
- \( d_1 \) is the calculated internal diameter of the main drainage pipe, in [mm];
- \( d_2 \) is the calculated internal diameter of the branch pipe, in [mm].

4. Where the bilge pumps are connected to a drainage system the drainage pipes shall have an internal diameter of at least \( d_1 \), in mm, and the branch pipes an internal diameter of at least \( d_2 \), in mm.

Where vessels are less than 25 m in length the values \( d_1 \) and \( d_2 \) may be reduced to 35 mm.

5. Only self-priming bilge pumps are permitted.

6. There shall be at least one suction on both the starboard and port sides of all flat-bottomed, drainable compartments that are wider than 5 m.

7. It may be possible to drain the aft peak via the main engine room by means of an easily accessible, automatically closable fitting.

8. Branch pipes of single compartments shall be connected to the main drainage pipe by means of a lockable non-return valve.
Compartments or other spaces that are capable of carrying ballast need to be connected to the drainage system only by means of a simple closing device. That requirement shall not apply to holds that are capable of carrying ballast. Such holds shall be filled with ballast water by means of ballast piping that is permanently installed and independent of the drainage pipes, or by means of branch pipes that can be connected to the main drainage pipe by flexible pipes or flexible adaptors. Water intake valves located in the bottom of the hold shall not be permitted for this purpose.

9. Hold bilges shall be fitted with gauging devices.

10. Where a drainage system incorporates permanently installed pipework the bilge-bottom drainage pipes intended to extract oily water shall be equipped with closures that have been sealed in position by an inspection body. The number and position of those closures shall be entered on the Community certificate.

11. Locking the closures in position shall be regarded as equivalent to sealing in accordance with section 10. The key or keys for the locking of the closures shall be indicated accordingly and kept in a marked and easily accessible location in the engine room.

Article 8.09

Oily water and used oil stores

1. It shall be possible to store on board oily water accumulated during operation. The engine-room bilge is considered to be a store for this purpose.

2. In order to store used oils there shall, in the engine room, be one or several specific receptacles whose capacity corresponds to at least 1.5 times the quantity of the used oils from the sumps of all of the internal combustion engines and transmissions installed, together with the hydraulic fluids from the hydraulic-fluid tanks.

   The connections used in order to empty the receptacles referred to above shall comply with European standard EN 1305:1996.

3. Where vessels are only used on short-haul operation the inspection body may grant exceptions from the requirements of section 2.

Article 8.10

Noise emitted by vessels

1. The noise produced by a vessel under way, and in particular the engine air intake and exhaust noises, shall be damped by using appropriate means.

2. The noise generated by a vessel under way shall not exceed 75 dB(A) at a lateral distance of 25 m from the ship’s side.

3. Apart from transhipment operations the noise generated by a stationary vessel shall not exceed 65 dB(A) at a lateral distance of 25 m from the ship’s side.
2. Documents containing the following, and duly stamped by the inspection body, shall be kept on board:
   (a) general drawings concerning the entire electrical installation;
   (b) switching diagrams for the main switchboard, the emergency switchboard and the distribution
       switchboard, together with the most important technical data such as the amperage and rated current
       of the protection and control devices;
   (c) power data concerning the electrical machinery and equipment;
   (d) types of cable and information on conductor cross-sections.

   It is not necessary to keep such documents on board unmanned craft, but they shall be available at all
   times with the owner.

3. The equipment shall be designed for permanent lists of up to 15° and ambient inside temperatures of
   between 0 °C and + 40 °C, and on the deck between −20 °C and + 40 °C. It shall function perfectly
   within those limits.

4. The electrical and electronic equipment and appliances shall be fully accessible and easy to maintain.

   Article 9.02
   Electricity supply systems

1. Where craft are fitted with an electrical system, that system shall in principle have at least two power
   sources in such a way that where one power source fails the remaining source is able to supply the
   power consumers needed for safe navigation for at least 30 minutes.

2. Adequate rating of the power supply shall be demonstrated by means of a power balance. An appropriate
   simultaneity factor may be taken into account.

3. Independently of section 1, Article 6.04 shall apply to the power source for the steering system (rudder
   installations).

   Article 9.03
   Protection against physical contact, intrusion of solid objects and the ingress of water

The type of minimum protection for permanently installed parts of an installation shall be as set out in the
following table:

<table>
<thead>
<tr>
<th>Location</th>
<th>Type of minimum protection (in accordance with IEC publ. 60529:1992)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation rooms, engine rooms, steering-gear compartments</td>
<td>IP 22 IP 22 (/) IP 22 (/) IP 22 IP 44 IP 22</td>
</tr>
<tr>
<td>Holds</td>
<td>IP 55 IP 55</td>
</tr>
<tr>
<td>Battery and paint lockers</td>
<td>IP 44 u. (Ex) (?)</td>
</tr>
<tr>
<td>Free decks and open steering positions</td>
<td>IP 55 IP 55 IP 55 IP 55</td>
</tr>
<tr>
<td>Wheelhouse</td>
<td>IP 22 IP 22 IP 22 IP 22 IP 22</td>
</tr>
<tr>
<td>Accommodation apart from sanitary facilities and wash rooms</td>
<td>IP 22 IP 20 IP 20</td>
</tr>
<tr>
<td>Sanitary facilities and wash rooms</td>
<td>IP 44 IP 44 IP 44 IP 55 IP 44</td>
</tr>
</tbody>
</table>

Remarks:
(1) Where appliances release large amounts of heat: IP 12.
(2) Where appliances or panels do not have this type of protection their location shall meet the conditions applying to that type of protection.
(3) Electrical equipment of the certified safety type as in accordance with
or
(b) IEC publication 60079 as of 1 October 2003.
Article 9.04
Protection from explosion

Only explosion-proof electrical equipment (certified safety) may be installed in spaces where potentially explosive gases or mixtures of gases are likely to accumulate, such as compartments dedicated for accumulators or the storage of highly inflammable products. No light switches or switches for other electrical appliances shall be installed in these spaces. The protection from explosion shall take account of the characteristics of the potentially explosive gases or mixtures of gases that are likely to arise (explosion-potential group, temperature class).

Article 9.05
Earthing

1. Systems under a voltage of more than 50 V need to be earthed.

2. Metal parts that are open to physical contact and which, during normal operation, are not electrically live, such as engine frames and casings, appliances and lighting equipment, shall be earthed separately where they are not in electrical contact with the hull as a result of their installation.

3. The casings of mobile power consumers and portable devices shall, during normal use, be earthed by means of an additional earthing conductor that is incorporated into the power cable.

That provision shall not apply where a protective circuit-separation transformer is used, nor to appliances fitted with protective insulation (double insulation).

4. The cross-sections of the earthing conductors shall be not less than given in the following table:

<table>
<thead>
<tr>
<th>Cross-section of outside conductor [mm²]</th>
<th>Minimum cross-section of earthing conductors within insulated cables [mm²]</th>
<th>Minimum cross-section of earthing conductors fitted separately [mm²]</th>
</tr>
</thead>
<tbody>
<tr>
<td>from 0.5 to 4</td>
<td>same cross-section as that of the outside conductor</td>
<td>4</td>
</tr>
<tr>
<td>more than 4 to 16</td>
<td>same cross-section as that of the outside conductor</td>
<td>same cross-section as that of the outside conductor</td>
</tr>
<tr>
<td>more than 16 to 35</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>more than 35 to 120</td>
<td>half of the cross-section of the outside conductor</td>
<td>half of the cross-section of the outside conductor</td>
</tr>
<tr>
<td>more than 120</td>
<td>70</td>
<td>70</td>
</tr>
</tbody>
</table>

Article 9.06
Maximum permissible voltages

1. The following voltages shall not be exceeded:

<table>
<thead>
<tr>
<th>Type of installation</th>
<th>Maximum permissible voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Direct current</td>
</tr>
<tr>
<td>a. Power and heating installations including the sockets for general use</td>
<td>250 V</td>
</tr>
<tr>
<td>b. Lighting, communications, command and information installations including the sockets for general use</td>
<td>250 V</td>
</tr>
<tr>
<td>Type of installation</td>
<td>Maximum permissible voltage</td>
</tr>
<tr>
<td>-----------------------</td>
<td>----------------------------</td>
</tr>
<tr>
<td></td>
<td>Direct current</td>
</tr>
<tr>
<td>c. Sockets intended to supply portable devices used on open decks or within narrow or damp metal lockers, apart from boilers and tanks:</td>
<td></td>
</tr>
<tr>
<td>1. In general</td>
<td>50 V (1)</td>
</tr>
<tr>
<td>2. Where a protective circuit-separation transformer only supplies one appliance</td>
<td>—</td>
</tr>
<tr>
<td>3. Where protective-insulation (double insulation) appliances are used</td>
<td>250 V</td>
</tr>
<tr>
<td>4. Where ≤ 30 mA default current circuit breakers are used.</td>
<td>—</td>
</tr>
<tr>
<td>d. Mobile power consumers such as electrical equipment for containers, motors, blowers and mobile pumps which are not normally moved during service and whose conducting parts which are open to physical contact are earthed by means of an earthing conductor that is incorporated into the connecting cable and which, in addition to that earthing conductor, are connected to the hull by their specific positioning or by an additional conductor</td>
<td>250 V</td>
</tr>
<tr>
<td>e. Sockets intended to supply portable appliances used inside boilers and tanks</td>
<td>50 V (1)</td>
</tr>
</tbody>
</table>

Remarks:

(1) Where that voltage comes from higher-voltage networks galvanic separation shall be used (safety transformer).

(2) All of the poles of the secondary circuit shall be insulated from the earth.

2. By way of derogation from section 1, if the necessary protective measures are applied higher voltages shall be acceptable:

(a) for power installations where their power so requires;

(b) for special on-board installations such as radio and ignition systems.

Article 9.07

Distribution systems

1. The following distribution systems are allowed for direct current and single-phase alternating current:

(a) two-conductor systems of which one is earthed (L1/N/PE);

(b) single-conductor systems using the hull return principle, only for local installations (for example, starting gear for combustion engines, cathodic protection) (L1/PEN);

(c) two-conductor systems that are insulated from the hull (L1/L2/PE).

2. The following distribution systems are allowed for three-phase alternating current:

(a) four-conductor systems with earthig of the neutral point, not using the hull return principle (L1/L2/L3/N/PE) = (network TN-S) or (network TT);

(b) three-conductor systems insulated from the hull (L1/L2/L3/PE) = (network IT);

(c) three-conductor systems with earthing of the neutral point using the hull return principle, however, that shall not be allowed for terminal circuits (L1/L2/L3/PEN).

3. The inspection body may allow the use of other systems.
Article 9.08
Connection to shore or other external networks

1. Incoming supply lines from shore networks or other external networks to the installations of the onboard network shall have a permanent connection on board in the form of fixed terminals or fixed plug sockets. The cable connections shall not be subjected to any pulling load.

2. The hull shall be capable of being earthed effectively when the connection voltage exceeds 50 V. The earthing connection shall be specially marked.

3. The switching devices for the connection shall be arranged such as to prevent the concurrent operation of the onboard network generators and the shore network or another external network. A brief period of concurrent operation shall be permitted when changing from one system to another without a break in voltage.

4. The connection shall be protected against short circuiting and overload.

5. The main switchboard shall indicate whether the connection is live.

6. Indicator devices shall be installed to enable comparison of polarity in the case of direct current and phase sequence in the case of three-phase alternating current, between the connection and the onboard network.

7. A panel adjacent to the connection shall indicate:
   (a) the measures required to establish the connection;
   (b) the type of current and the nominal voltage and, for alternating current, the frequency.

Article 9.09
Power supply to other craft

1. When power is supplied to other craft, a separate connection shall be used. If power sockets rated at more than 16 A are used to supply current to other craft, devices (such as switches or interlocks) shall be provided to ensure that connection and disconnection can take place only when the line is dead.

2. Cable connections shall not be subjected to any pulling load.

3. Article 9.08, sections 3 to 7, shall apply mutatis mutandis.

Article 9.10
Generators and motors

1. Generators, motors and their terminal boxes shall be accessible for inspections, measurements and repairs. The type of protection shall correspond to their location (see Article 9.03).

2. Generators driven by the main engine, the propeller shaft or by an auxiliary set intended for other purposes shall be designed with respect to the range of rotational speeds which can occur during normal operation.

Article 9.11
Accumulators

1. Accumulators shall be accessible and so arranged as not to shift due to movements of the craft. They shall not be placed where they will be exposed to excessive heat, extreme cold, spray, steam or vapour. They shall not be installed in the wheelhouse, accommodation or holds. This requirement shall not apply to accumulators for portable appliances, or to accumulators requiring a charging power of less than 0.2 kW.

2. Accumulators requiring a charging power of more than 2.0 kW (calculated on the basis of the maximum charging current and the nominal voltage of the accumulator and taking into account the characteristic charging curve of the charging appliance) shall be installed in a special room. If placed on deck enclosing them in a cabinet will suffice.
Accumulators requiring a charging power not exceeding 2.0 kW may be installed in a cabinet or chest not only if placed on deck but also below decks. They may also be installed in an engine room or any other well-ventilated space provided that they are protected against falling objects and dripping water.

3. The interior surfaces of all rooms, cabinets or boxes, shelving or other built-in features intended for accumulators shall be protected against the harmful effects of electrolytes.

4. Provision shall be made for effective ventilation when accumulators are installed in a closed compartment, cabinet or chest. Forced-draught ventilation shall be provided for nickel-cadmium accumulators requiring a charging power of more than 2 kW and for lead-acid accumulators requiring more than 3 kW.

The air shall enter at the bottom and be discharged at the top so as to ensure total gas extraction.

Ventilation ducts shall not include any devices which obstruct the air flow, such as stop valves.

5. The required air throughput \( Q \) shall be calculated using the following formula:

\[
Q = 0.11 \cdot I \cdot n \ [m^3/h]
\]

where:

\( I \) = \( \frac{1}{4} \) of the maximum current, in A, provided by the charging device;

\( n \) = the number of cells.

In the case of buffer accumulators within the onboard network other methods of calculation taking into account the characteristic charging curve of the charging device may be accepted by the inspection body, provided that these methods are based on the provisions of approved classification societies or on relevant standards.

6. Where natural ventilation is used the cross-section of the ducts shall be sufficient for the required air throughput on the basis of an air-flow velocity of 0.5 m/sec. However, the cross-section shall be at least 80 cm\(^2\) for lead-acid accumulators and 120 cm\(^2\) for nickel-cadmium accumulators.

7. Where forced-draught ventilation is used a fan shall be provided — preferably of the suction type — whose motor shall be clear of the gas or air stream.

Fans shall be so designed as to preclude the generation of sparks through contact between a blade and the fan casing and to avoid any electrostatic charges.

8. ‘Fire, naked flame and smoking prohibited’ signs according to Fig. 2 of Appendix I having a minimum diameter of 10 cm shall be affixed to the doors or covers of compartments, cabinets and chests containing accumulators.

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Article 9.12

Switchgear installations

1. Electrical switchboards

(a) Appliances, switches, fuses and switchboard instruments shall be clearly arranged and shall be accessible for maintenance and repair.

Terminals for voltages up to 50 V, and those for voltages higher than 50 V, shall be kept separate and marked appropriately;

(b) For all switches and appliances marker plates identifying the circuit shall be affixed to the switchboards.

The nominal amperage and the circuit for fuses shall be identified.

(c) When appliances with an operating voltage greater than 50 V are installed behind doors the live components of those appliances shall be protected against accidental contact while the doors are open.
The materials of switchboards shall have suitable mechanical strength and be durable, flame-retardant and self-extinguishing; they shall not be hygroscopic.

If high rupture capacity (HRC)-fuses are installed in electrical switchboards, accessories and personal protective equipment shall be available for installing and removing such fuses.

2. Switches, protective devices

(a) Generator circuits and power consumer circuits shall be protected against short circuiting and overload on all non-earthed conductors. Switching devices triggered by short-circuiting and overload or fuses may be used for this purpose.

Circuits supplying electric motors of drive units (steering system) and their control circuits shall only be protected against short circuiting. Where circuits include thermal circuit-breakers these shall be neutralised or set at not less than twice the nominal amperage.

(b) Outputs from the main switchboard to power consumers operating at more than 16 A shall include a load or power switch.

(c) Power consumers for the propulsion of the craft, the steering system, the rudder position indicator, navigation or safety systems, and power consumers with a nominal amperage greater than 16 A shall be supplied by separate circuits.

(d) The circuits of power consumers required for propelling and manoeuvring the vessel shall be supplied directly by the main switchboard.

(e) Circuit-breaking equipment shall be selected on the basis of nominal amperage, thermal or dynamic strength, and breaking capacity. Switches shall simultaneously cut off all live conductors. The switching position shall be identifiable.

(f) Fuses shall be of the enclosed-melt type and be made of ceramic or an equivalent material. It shall be possible to change them without any danger of physical contact for the operator.

3. Measuring and monitoring devices

(a) Generator, accumulator and distribution circuits shall be equipped with measuring and monitoring devices where the safe operation of the installation so requires.

(b) Non-earthed networks with a voltage of more than 50 V shall be equipped with an earthing detection device capable of giving both visual and audible alarm. In secondary installations such as control circuits, this device may be dispensed with.

4. Location of electrical switchboards

(a) Switchboards shall be located in accessible and well-ventilated spaces and be protected against water and mechanical damage.

Piping and air ducts shall be so arranged that in the event of leakage the switchboards cannot be damaged. If their installation near electrical switchboards is inevitable, pipes shall not have detachable connections nearby.

(b) Cabinets and wall recesses in which unprotected switching devices are installed shall be of a flame-retardant material or be protected by a metal or other flame-retardant sheathing.

(c) When the voltage is greater than 50 V, insulating gratings or mats shall be placed at the operator’s position in front of the main switchboard.

Article 9.13

Emergency circuit breakers

Emergency circuit breakers for oil burners, fuel pumps, fuel separators and engine-room ventilators shall be installed centrally outside the spaces containing the equipment.
Article 9.14

Installation fittings

1. Cable entries shall be sized as a function of the cables to be connected and be appropriate to the types of cable used.

2. Sockets for distribution circuits at different voltages or frequencies shall be impossible to confuse.

3. Switches shall simultaneously switch all non-earthed conductors within a circuit. However, single-pole switches within non-earthed circuitry shall be permitted in accommodation-lighting circuits apart from in laundries, bathrooms, washrooms and other rooms with wet facilities.

4. Where amperage exceeds 16 A it shall be possible to lock the sockets by means of a switch in such a way that the plug can only be inserted and withdrawn with the power switched off.

Article 9.15

Cables

1. Cables shall be flame-retardant, self-extinguishing and resistant to water and oil.

In accommodation, other types of cable may be used, provided that they are effectively protected, have flame-retardant characteristics and are self-extinguishing.

Flame-retardant standards of electric cables shall be in accordance with:

(a) IEC publications 60332-1:1993, 60332-3:2000, or

(b) equivalent regulations recognised by one of the Member States.

2. Conductors of cables used for power and lighting circuits shall have a minimum cross-section of 1.5 mm².

3. Metal armouring, shielding and sheathing of cables shall not, under normal operating conditions, be used as conductors or for earthing.

4. Metal shielding and sheathing of cables in power and lighting installations shall be earthed at least at one end.

5. The cross-section of conductors shall take account of their maximum permissible end-temperature (current-carrying capacity) and of the permissible voltage drop. The voltage drop between the main switchboard and the least favourable point of the installation shall not be more than 5 % for lighting or more than 7 % for power or heating circuits, referred to the nominal voltage.

6. Cables shall be protected against mechanical damage.

7. The means of fixing the cables shall ensure that any pulling load remains within the permissible limits.

8. When cables pass through bulkheads or decks, the mechanical strength, watertightness and fire resistance of these bulkheads and decks shall not be affected by the penetrations.

9. Terminations and joints in all conductors shall be so made as to retain the original electrical, mechanical, flame-retardant and, where necessary, fire resistant properties.

10. Cables connected to retractable wheelhouses shall be sufficiently flexible and shall have insulation with sufficient flexibility down to –20 °C and resistance to steam and vapour, ultraviolet rays and ozone.

Article 9.16

Lighting installations

1. Lighting appliances shall be so installed that the heat they emit cannot set fire to nearby inflammable objects or components.
2. Lighting appliances on open decks shall be so installed as not to impede the recognition of navigation lights.

3. When two or more lighting appliances are installed in an engine room or boiler room, they shall be supplied by at least two different circuits. This requirement shall also apply to spaces where cooling machinery, hydraulic machinery, or electric motors are installed.

Article 9.17
Navigation lights

1. Switchboards for navigation lights shall be installed in the wheelhouse. They shall be supplied by a separate feeder from the main switchboard or by two independent secondary distributions.

2. Navigation lights shall be supplied, protected and switched separately from the navigation lights switchboard.

3. No fault in the monitoring installation, as provided for in Article 7.05, section 2, shall affect the operation of the light which it monitors.

4. Several lights forming a functional unit and installed together at the same point may be jointly supplied, switched and monitored. The monitoring installation shall be capable of identifying the failure of any one of these lights. However, it shall not be possible to use both light sources in a double light (two lights mounted one above the other or in the same housing) simultaneously.

Article 9.18
(Left void)

Article 9.19
Alarm and safety systems for mechanical equipment

The alarm and safety systems for monitoring and protecting mechanical equipment shall meet the following requirements:

(a) Alarm systems

The alarm systems shall be so designed that no failure in the alarm system can result in failure of the apparatus or installation being monitored.

Binary transmitters shall be designed on the quiescent-current principle or on the monitored load-current principle.

Visual alarms shall remain visible until the fault has been remedied; an alarm that has been acknowledged shall be distinguishable from an alarm that has not yet been acknowledged. Each alarm shall also comprise an audible warning. It shall be possible to switch off acoustic alarms. Switching off one acoustic alarm shall not prevent another signal from being set off by another cause.

Exceptions can be permitted in the case of alarm systems comprising less than five measurement points.

(b) Safety systems

Safety systems shall be designed to halt or slow down the operation of the affected equipment, or to warn a permanently-manned station to do so before a critical state is reached.

Binary transmitters shall be designed according to the load-current principle.

If safety systems are not designed to be self-monitoring it shall be possible to check that they are operating correctly.

Safety systems shall be independent of other systems.

Article 9.20
Electronic equipment

1. General

The test conditions in section 2 below shall apply only to electronic devices that are necessary for the steering system and the craft’s power plants, including their ancillaries.
2. Test conditions

(a) The stresses arising from the following tests shall not cause electronic devices to be damaged or to malfunction. The tests in accordance with relevant international standards, such as IEC publication 60092-504:2001, apart from the cold-condition test, shall be carried out with the device switched on. These tests shall include checking of proper operation.

(b) Variations in voltage and frequency

<table>
<thead>
<tr>
<th></th>
<th>Variations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>continuous</td>
</tr>
<tr>
<td>General</td>
<td>frequency</td>
</tr>
<tr>
<td></td>
<td>voltage</td>
</tr>
<tr>
<td>Battery operation</td>
<td>Voltage</td>
</tr>
</tbody>
</table>

(c) Heating test

The sample is brought up to a temperature of 55 °C within a half-hour period. After that temperature has been reached it is maintained for 16 hours. An operating test is then carried out.

(d) Cold-condition test

The sample is switched off and cooled to –25 °C and held at that temperature for two hours. The temperature is then raised to 0 °C and an operating test is carried out.

(e) Vibration test

The vibration test shall be carried out along the three axes at the resonance frequency of the devices or of components for the period of 90 minutes in each case. If no clear resonance emerges the vibration test shall be carried out at 30 Hz.

The vibration test shall be carried out by sinusoidal oscillation within the following limits:

General:

\[ f = 2.0 \text{ to } 13.2 \text{ Hz}; \; a = \pm 1 \text{ mm} \]

(amplitude \( a = \frac{1}{2} \) the vibration width)

\[ f = 13.2 \text{ Hz to } 100 \text{ Hz}; \; \text{acceleration} = 0.7 \text{ g}. \]

Equipment intended to be fitted to diesel engines or steering apparatus shall be tested as follows:

\[ f = 2.0 \text{ to } 25 \text{ Hz}; \; a = \pm 1.6 \text{ mm} \]

(amplitude \( a = \frac{1}{2} \) the vibration width)

\[ f = 25 \text{ Hz to } 100 \text{ Hz}; \; \text{acceleration} = 4 \text{ g}. \]

The sensors intended to be installed in diesel-engine exhaust pipes may be exposed to considerably higher stresses. Account shall be taken of this during the tests.

(f) The electromagnetic compatibility test shall be carried out on the basis of IEC publications 61000-4-2:1995, 61000-4-3:2002, 61000-4-4:1995, at test degree number 3.

(g) Proof that the electronic equipment is adequate for these test conditions shall be provided by their manufacturer. A certificate by an approved classification society shall likewise be considered to be proof.
Article 9.21

Electromagnetic compatibility

The operation of the electric and electronic systems shall not be impaired by electromagnetic interference. General measures shall, with equal importance, extend to:

(a) disconnection of the transmission paths between the source of interference and affected devices;
(b) reducing the causes of disturbance at their source;
(c) reducing the sensitivity of affected devices to interference.

CHAPTER 10

EQUIPMENT

Article 10.01

Anchor equipment

1. Vessels intended for the carriage of goods, apart from ship-borne lighters whose length \( L \) does not exceed 40 m, shall be equipped with bow anchors whose total mass \( P \) is obtained using the following formula:

\[
P = k \cdot B \cdot T \quad [\text{kg}]
\]

where

\( k \) is a coefficient that takes account of the relationship between length \( L \) and beam \( B \), and of the type of vessel:

\[
k = c \sqrt{\frac{L}{B}}
\]

for lighters, however, \( k = c \) will be taken;

\( c \) is an empirical coefficient given in the following table:

<table>
<thead>
<tr>
<th>Dead weight tonnage in t</th>
<th>Coefficient ( c )</th>
</tr>
</thead>
<tbody>
<tr>
<td>up to 400 inclusive</td>
<td>45</td>
</tr>
<tr>
<td>from 400 to 650 inclusive</td>
<td>55</td>
</tr>
<tr>
<td>from 650 to 1 000 inclusive</td>
<td>65</td>
</tr>
<tr>
<td>more than 1 000</td>
<td>70</td>
</tr>
</tbody>
</table>

On vessels whose deadweight tonnage is not greater than 400 t and which, owing to their design and intended purpose, are used only on predetermined short-haul sections, the inspection body may accept that only two-thirds of total mass \( P \) is required for the bow anchors.

2. Passenger vessels and vessels not intended for the carriage of goods, apart from pushers, shall be fitted with bow anchors whose total mass \( P \) is obtained using the following formula:

\[
P = k \cdot B \cdot T \quad [\text{kg}]
\]

where:

\( k \) is the coefficient corresponding to section 1, but where in order to obtain the value of the empirical coefficient \( c \) the water displacement in \( m^3 \) entered in the Community certificate shall be taken instead of the deadweight tonnage.

3. Vessels referred to in section 1 whose maximum length does not exceed 86 m shall be equipped with stern anchors whose total mass is equal to 25 % of mass \( P \).

Vessels whose maximum length exceeds 86 m shall be equipped with stern anchors whose total mass is equal to 50 % of mass \( P \) calculated in accordance with section 1 or section 2.
Stern anchors are not required for:

(a) vessels for which the stern anchor mass will be less than 150 kg; in the case of vessels referred to in section 1, final paragraph, the reduced mass of the bow anchors shall be taken into account;

(b) lighters.

4. Vessels intended to propel rigid convoys which do not exceed 86 m in length shall be equipped with stern anchors whose total mass is equal to 25 % of maximum mass P calculated in accordance with section 1 for the formations (considered to be a nautical unit) permitted and entered in the Community certificate.

Vessels intended to propel rigid convoys which exceed 86 m in length downstream shall be equipped with stern anchors whose total mass is equal to 50 % of the maximum mass P calculated in accordance with section 1 for the formations (considered to be a nautical unit) permitted and entered in the Community certificate.

5. The anchor masses established in accordance with sections 1 to 4 may be reduced for certain special anchors.

6. The total mass P specified for bow anchors may be distributed between one or two anchors. It may be reduced by 15 % where the vessel is equipped with only a single bow anchor and the hawse pipe is located amidships.

The total mass required for stern anchors for pushers and vessels whose maximum length exceeds 86 m may be distributed between one or two anchors.

The mass of the lightest anchor shall not be less than 45 % of that total mass.

7. Cast iron anchors shall not be permitted.

8. On anchors their mass shall be indicated in characters which stand out in relief in a durable manner.

9. Anchors having a mass in excess of 50 kg shall be equipped with windlasses.

10. Each bow anchor chain shall have a minimum length of:

(a) 40 m for vessels not exceeding 30 m in length;

(b) 10 m longer than the vessel where this is more than 30 m and up to 50 m in length;

(c) 60 m where vessels are more than 50 m in length.

Each of the stern anchor chains shall be at least 40 m long. However, where vessels need to stop facing downstream they shall have stern anchor chains that are each at least 60 m in length.

11. The minimum tensile strength R of the anchor chains shall be calculated using the following formulae:

(a) anchors having a mass up to 500 kg: \( R = 0.35 \cdot P' \) [kN];

(b) anchors having a mass of more than 500 kg and not exceeding 2 000 kg:

\[
R = \left( 0.35 - \frac{P - 500}{15 000} \right) P' \text{ [kN]},
\]

(c) anchors having a mass of more than 2 000 kg: \( R = 0.25 \cdot P' \) [kN].

where

\( P' \) is the theoretical mass of each anchor determined in accordance with sections 1 to 4 and 6.

The tensile strength of anchor chains shall be stated according to a standard in force in a Member State.

Where the anchors have a mass greater than that required by sections 1 to 6, the tensile strength of the anchor chain shall be determined as a function of the actual anchor mass.
12. In cases where heavier anchors with correspondingly stronger anchor chains are aboard, only the minimum masses and minimum tensile strengths required according to sections 1 to 6 and 11 shall be entered in the Community certificate.

13. Connecting pieces (swivels) between anchor and chain shall withstand a tensile load 20% higher than the tensile strength of the corresponding chain.

14. The use of cables instead of anchor chains is permitted. The cables shall have the same tensile strength as that required for chains, but shall be 20% longer.

Article 10.02
Other equipment

1. According to the applicable navigational authority regulations in force in the Member States, at least the following equipment shall be on board:
   (a) radio-telephone system;
   (b) appliances and devices for giving visual and audible signals as well as daytime and night-time vessel marking;
   (c) stand-alone back-up lights for the prescribed mooring lights;
   (d) a fire-proof, marked receptacle, with cover, to receive oily cleaning cloths;
   (e) a fire-proof, marked receptacle, with cover, to receive hazardous or pollutant solid wastes and a fire-proof, marked receptacle, with cover, to receive hazardous or pollutant liquid wastes according to the relevant applicable navigational authority regulations;
   (f) a fire-proof, marked receptacle, with cover, to receive slops.

2. In addition, the equipment shall include at least:
   (a) Mooring cables:
       Vessels shall be equipped with three mooring cables. Their minimum lengths shall be at least the following:
       — first cable: \(L + 20\, m\), but not more than 100 m,
       — second cable: \(2/3\) of the first cable,
       — third cable: \(1/3\) of the first cable.
       The shortest cable is not required on board vessels whose \(L\) is less than 20 m.
       The cables shall have a tensile strength \(R_s\) that is calculated using the following formulae;
       \[
       \text{for } L \cdot B \cdot T \text{ up to } 1\,000\, m^3: \quad R_s = 60 + \frac{L \cdot B \cdot T}{10} \text{ (kN)}; \\
       \text{for } L \cdot B \cdot T \text{ exceeding } 1\,000\, m^3: \quad R_s = 150 + \frac{L \cdot B \cdot T}{100} \text{ (kN)}. 
       \]
       For the required cables a certificate in accordance with European standard EN 10 204:1991, under No 3.1, shall be on board.
       These cables may be replaced by ropes having the same length and tensile strength. The minimum tensile strength of these ropes shall be indicated in a certificate.
   (b) Towing cables:
       Tugs shall be equipped with a number of cables that are suitable for their operation.
       However, the main cable shall be at least 100 m long and have a tensile strength, in kN, not less than one third of the total power, in kW, of the main engine(s).
       Motor vessels and pushers that are also able to tow shall be equipped with a towing cable that is at least 100 m long and whose tensile strength, in kN, is not less than one quarter of the total power, in kW, of the main engine(s).
   (c) A heaving line;
(d) A boarding gangway at least 0.4 m wide and 4 m long whose side edges are defined by a brightly-coloured strip; that gangway shall be equipped with a handrail. The inspection body may permit shorter gangways for small vessels;

(e) A gaff hook;

(f) An appropriate first-aid kit with a content in accordance with a relevant standard of a Member State. The first-aid kit shall be kept in an accommodation room or in the wheelhouse and be stored in such a way that it is easily and safely accessible if necessary. If first-aid kits are stored under cover, the cover shall be marked by a symbol for first-aid kit according to Fig. 8 of Appendix I, having a side length of at least 10 cm;

(g) A pair of binoculars, 7 × 50 or with larger lens diameter;

(h) A notice concerning the rescue and revival of persons overboard;

(i) A searchlight that can be operated from the wheelhouse.

3. There shall be an embarkation stairway or ladder on vessels whose side height above the unladen water-line exceeds 1.50 m.

Article 10.03

Portable fire extinguishers

1. There shall be at least one portable fire extinguisher in accordance with European standard EN 3:1996 at each of the following places:

(a) in the wheelhouse;

(b) close to each entrance from the deck to accommodation spaces;

(c) close to each entrance to service spaces which are not accessible from the accommodation spaces and which contain heating, cooking or refrigeration equipment using solid or liquid fuels or liquefied gas;

(d) at each entrance to engine rooms and boiler rooms;

(e) at suitable points below deck in engine rooms and boiler rooms such that no position in the space is more than 10 metres walking distance away from an extinguisher.

2. For the portable fire extinguishers required by section 1, only powder-type extinguishers with a content of at least 6 kg or other portable fire extinguishers with the same extinguishing capacity may be used. They shall be suitable for Class A, B and C fires and for fires in electrical systems of up to 1 000 V.

3. In addition powder, water or foam fire extinguishers may be used which are suitable at least for the class of fire most likely to occur in the room for which they are intended.

4. Portable fire extinguishers with CO₂ as the extinguishing agent may be used only for extinguishing fires in galleys and electrical installations. The content of these fire extinguishers shall be no more than 1 kg per 15 m³ of the room in which they are made available for use.

5. Portable fire extinguishers shall be checked at least every two years. An inspection certificate shall be issued, signed by the inspector and showing the date of inspection.

6. If portable fire extinguishers are installed in such a way that they are out of sight the panel covering them shall be identified by a symbol for fire extinguishers as shown in Fig. 3 of Appendix I, and having a side length of at least 10 cm.

Article 10.03a

Permanently installed fire-fighting systems in accommodation spaces, wheelhouses and passenger spaces

1. Fire protection in accommodation spaces, wheelhouses and passenger spaces is to be provided only by suitable automatic pressurised water sprinklers as permanently installed fire-fighting systems.

2. Installation or conversion of the systems shall be carried out only by specialised firms.

3. The systems shall be made of steel or equivalent non-combustible materials.
4. The systems shall be able to spray water at a rate of at least 5 l/m² per minute over the area of the largest room to be protected.

5. Systems spraying smaller quantities of water shall have a type-approval pursuant to IMO Resolution A 800(19) or another standard recognised in accordance with the procedure referred to in Article 19(2) of this Directive. Type-approval shall be carried out by an approved classification society or an accredited testing institution. The accredited testing institution shall comply with the European standard for general requirements for the competence of testing and calibrating laboratories (EN ISO/IEC 17025:2000).

6. The systems shall be checked by an expert:
   (a) before being put into service;
   (b) before being put back into service after they have been triggered;
   (c) after any modification or repair;
   (d) regularly at least every two years.

7. When carrying out the check in accordance with section 6, the expert shall verify whether the systems meet the requirements of this section.

   The check shall at least include:
   (a) external inspection of the entire system;
   (b) functional testing of the safety systems and nozzles;
   (c) functional testing of the pressure tanks and pumping system.

8. An inspection certificate, signed by the inspector, shall be issued, showing the date of inspection.

9. The number of installed systems shall be entered in the Community certificate.

10. For protecting objects in accommodation spaces, wheelhouses and passenger spaces, permanently installed fire-fighting systems shall be permissible only on the basis of recommendations from the Committee.

**Article 10.03b**

*Permanently installed fire-fighting systems in engine rooms, boiler rooms and pump rooms*

1. Extinguishing agents

   For protecting engine rooms, boiler rooms and pump rooms, the following extinguishing agents may be used in permanently installed fire-fighting systems:
   (a) CO₂ (carbon dioxide);
   (b) HFC 227ea (heptafluoropropane);
   (c) IG-541 (52 % nitrogen, 40 % argon, 8 % carbon dioxide).

   Other extinguishing agents shall be permissible only in accordance with the procedure referred to in Article 19(2) of this Directive.

2. Ventilation, air intake

   (a) Combustion air for the propulsion engines shall not be extracted from rooms that are to be protected by permanently installed fire-fighting systems. This shall not apply where there are two mutually independent and hermetically separated main engine rooms or if next to the main engine room there is a separate engine room with a bow thruster, ensuring that the vessel is able to make way under its own power in the event of fire in the main engine room.

   (b) Any forced ventilation present in the room to be protected shall switch off automatically if the fire-fighting system is triggered.

   (c) There shall be devices available with which all apertures which can allow air to enter or gas to escape from the room to be protected can be quickly closed. It shall be clearly recognisable whether they are open or closed.
(d) The air escaping from relief valves in the compressed-air tanks installed in engine rooms shall be conveyed to the open air.

(e) Over- or underpressure resulting from the inflow of extinguishing agent shall not destroy the components of the surrounding partitions of the room to be protected. It shall be possible for the pressure to equalise without danger.

(f) Protected rooms shall have a facility for extracting the extinguishing agent and the combustion gases. Such facilities shall be capable of being operated from positions outside the protected rooms and which would not be made inaccessible by a fire within such spaces. If there are permanently installed extractors, it shall not be possible for these to be switched on while the fire is being extinguished.

3. Fire alarm system

The room to be protected shall be monitored by means of an appropriate fire alarm system. The alarm shall be noticeable in the wheelhouse, the accommodation spaces and the room to be protected.

4. Piping system

(a) The extinguishing agent shall be conveyed to the room to be protected and distributed there by means of a fixed piping system. Inside the room to be protected the piping and associated fittings shall be made of steel. Tank connecting pipes and expansion joints shall be exempt from this provided the materials used have equivalent properties in case of fire. Pipes shall be both internally and externally protected against corrosion.

(b) Outlet nozzles shall be dimensioned and fitted such that the extinguishing agent is evenly distributed.

5. Triggering device

(a) Fire-fighting systems with automatic triggering shall not be permissible.

(b) It shall be possible to trigger the fire-fighting system from a suitable place outside the room to be protected.

(c) Triggering devices shall be installed in such a way that they can be operated even in case of a fire and in the event of damage by fire or explosion in the room to be protected the necessary quantity of extinguishing agent can still be conveyed.

Non-mechanical triggering devices shall be powered from two different mutually independent energy sources. These energy sources shall be located outside the room to be protected. Control lines in the room to be protected shall be designed so as to remain functional for at least 30 minutes in the event of fire. This requirement shall be fulfilled in the case of electric wiring if it complies with the standard IEC 60331-21:1999.

If triggering devices are installed in such a way that they are out of sight the panel covering them shall be identified by the 'fire-fighting installation' symbol as shown in Fig. 6 of Appendix I, having a side length of at least 10 cm, and the following text in red lettering on a white background:

‘Feuerlöscheinrichtung
Installation dextinction
Brandblusinstallatie
Fire-fighting installation’. 

(d) If the fire-fighting system is intended for the protection of several rooms, the triggering devices for each room have to be separate and clearly identified.

(e) Next to each triggering device operating instructions in one of the languages of the Member States shall be posted up visibly and indelibly. They shall contain, in particular, instructions regarding:

(aa) triggering of the fire-fighting system;

(bb) the need for checking to ensure that all persons have left the room to be protected;
(cc) action to be taken by the crew when the fire-fighting system is triggered;
(dd) action to be taken by the crew in the case of failure of the fire-fighting system.

(f) The operating instructions shall point out that before the fire-fighting system is triggered combustion engines drawing air from the room to be protected are to be shut down.

6. Warning system

(a) Permanently installed fire-fighting systems shall be provided with acoustic and optical warning systems.

(b) The warning system shall be set off automatically as soon as the fire-fighting system is first triggered. The warning signal shall sound for an appropriate time before the extinguishing agent is released and it shall not be possible to switch it off.

(c) Warning signals shall be clearly visible in the rooms to be protected and outside the accesses to them and clearly audible even under operating conditions producing the loudest inherent noise. They shall be clearly distinct from all other acoustic and optical signals in the room to be protected.

(d) The acoustic warning signals shall be clearly audible in the adjacent rooms even when connecting doors are closed and under operating conditions producing the loudest inherent noise.

(e) If the warning system is not self-monitoring as regards short-circuits, wire breaks and voltage drops, it shall be possible to check that it is working properly.

(f) At every entrance to a room that can be supplied with extinguishing agent, a clearly visible notice shall be put up bearing the following text in red lettering on a white background:

‘Vorsicht, Feuerlöscheinrichtung!
Beim Ertönen des Warnsignals (Beschreibung des Signals) den Raum sofort verlassen!
Attention, installation d’extinction d’incendie
Quitter immédiatement ce local au signal (description du signal)!
Let op, brandblusinstallatie!
Bij het in werking treden van het alarmsignaal (omschrijving van het signaal) deze ruimte onmiddellijk verlaten!
Warning, fire-fighting installation!
Leave the room as soon as the warning signal sounds (description of signal)’

7. Pressure tanks, fittings and pressure pipes

(a) Pressure tanks, fittings and pressure pipes shall comply with the provisions in force in one of the Member States.

(b) Pressure tanks shall be installed in accordance with the manufacturer’s instructions.

(c) Pressure tanks, fittings and pressure pipes are not to be installed in accommodation spaces.

(d) The temperature in cabinets and installation spaces containing pressure tanks shall not exceed 50 °C.

(e) Cabinets or installation spaces on deck shall be firmly fixed in place and have air vents which are to be arranged in such a way that in the event of a leak in the pressure tank no gas can escape into the interior of the vessel. Direct connections to other rooms are not permitted.

8. Quantity of extinguishing agent

If the quantity of extinguishing agent is intended for protecting more than one room, the total amount of extinguishing agent available does not need to be greater than the quantity necessary for the largest room to be protected.
9. Installation, inspection and documentation

(a) The system shall be installed or converted only by a firm specialising in fire-fighting systems. The requirements specified by the extinguishing agent manufacturer and the system manufacturer (product data sheet, safety data sheet) are to be complied with.

(b) The system shall be checked by an expert:
   (aa) before being put into service;
   (bb) before being put back into service after it has been triggered;
   (cc) after any modification or repair;
   (dd) regularly at least every two years.

(c) In the inspection the expert shall check whether the system meets the requirements of this chapter.

(d) The inspection shall cover at least the following:
   (aa) external inspection of the entire installation;
   (bb) tightness check on pipes;
   (cc) functional checking of control and triggering systems;
   (dd) checking of tank pressure and content;
   (ee) checking of tightness and facilities for locking the room to be protected;
   (ff) checking the fire alarm system;
   (gg) checking the warning system.

(e) An inspection certificate shall be issued, signed by the inspector and showing the date of the inspection.

(f) The number of permanently installed fire-fighting systems shall be entered in the Community certificate.

10. CO₂-fire-fighting systems

Fire-fighting systems using CO₂ as the extinguishing agent shall comply with the following provisions in addition to the requirements under sections 1 to 9:

(a) CO₂ containers shall be housed outside the room to be protected in a space or cabinet hermetically separated from other rooms. The doors to these installation spaces and cabinets shall open outwards, be lockable and bear on the outside a symbol for ‘General danger warning’ in accordance with Fig. 4 of Appendix I, at least 5 cm in height, together with the marking ‘CO₂’ in the same colour and with the same height.

(b) Installation spaces below decks for CO₂ containers shall be accessible only from the open air. These spaces shall have their own adequate artificial ventilation system with extraction ducts, completely separate from other ventilation systems on board.

(c) The CO₂ containers shall not be filled to more than 0,75 kg/l. The specific volume of unpressurised CO₂ gas is to be taken as 0,56 m³/kg.

(d) The volume of CO₂ for the room to be protected shall be at least 40 % of its gross volume. It shall be possible to supply this volume within 120 seconds, and to check whether supply has been completed.

(e) Opening the container valves and operating the flood valve shall be separate control operations.

(f) The appropriate time mentioned under section 6(b) shall be at least 20 seconds. There shall be a reliable device to ensure the delay before delivery of the CO₂ gas.

11. HFC-227ea — fire-fighting systems

Fire-fighting systems using HFC-227ea as the extinguishing agent shall comply with the following provisions in addition to the requirements under sections 1 to 9:

(a) If there are several rooms to be protected, each with a different gross volume, each room shall be provided with its own fire-fighting system.
(b) Each container of HFC-227ea that is installed in the room to be protected shall be equipped with an overpressure relief valve. This shall harmlessly release the contents of the container into the room to be protected if the container is exposed to the effects of fire and the fire-fighting system has not been triggered.

(c) Each container shall be fitted with a device for checking the gas pressure.

(d) The containers shall not be filled to more than 1.15 kg/l. The specific volume of the unpressurised HFC-227ea is to be taken as 0.1374 m³/kg.

(e) The volume of HFC-227ea for the room to be protected shall be at least 8 % of the room's gross volume. This volume shall be supplied within 10 seconds.

(f) The HFC-227ea containers shall be provided with a pressure monitor which triggers an acoustic and optical alarm signal in the wheelhouse in the event of an unauthorised loss of propellant. If there is no wheelhouse, this alarm signal shall be given outside the room to be protected.

(g) After flooding, the concentration in the room to be protected shall not exceed 10.5 %.

(h) The fire-fighting system shall not contain any parts made of aluminium.

12. IG-541 — fire-fighting systems

Fire-fighting systems using IG-541 as the extinguishing agent shall comply with the following provisions in addition to the requirements under sections 1 to 9:

(a) If there are several rooms to be protected, each with a different gross volume, each room shall be provided with its own fire-fighting system.

(b) Each container of IG-541 that is installed in the room to be protected shall be equipped with an overpressure relief valve. This shall harmlessly release the contents of the container into the room to be protected if the container is exposed to the effects of fire and the fire-fighting system has not been triggered.

(c) Each container shall be fitted with a device for checking the contents.

(d) The filling pressure of the container shall not exceed 200 bar at +15 °C.

(e) The volume of IG-541 for the room to be protected shall be at least 44 % and no more than 50 % of the room's gross volume. This volume shall be supplied within 120 seconds.

13. Fire-fighting systems for protecting objects

For protecting objects in engine rooms, boiler rooms and pump rooms, permanently installed fire-fighting systems shall be permissible only on the basis of recommendations from the Committee.

Article 10.04

Ship’s boats

1. The following craft shall carry a ship’s boat according to European standard EN 1914:1997:

(a) motor vessels and barges exceeding 150 t deadweight;

(b) tugs and pushers with a water displacement of more than 150 m³;

(c) floating equipment;

(d) passenger vessels.

2. It shall be possible for one person to launch such ship’s boats safely within 5 minutes from the first manual action necessary. If a powered launching device is used this shall be such that safe, quick launching shall not be impaired if its power supply fails.

3. Inflatable ship’s boats shall be inspected according to manufacturer’s instructions.
Article 10.05
Lifebuoys and lifejackets

1. On board craft there shall be at least three lifebuoys in accordance with European standard EN 14144:2002. They shall be ready for use and attached to the deck at appropriate points without being attached to their mounting. At least one lifebuoy shall be in the immediate vicinity of the wheelhouse and shall be equipped with a self-igniting, battery-powered light that will not be extinguished in water.

2. A personalised, automatically inflatable lifejacket in accordance with European standards EN 395:1998 or EN 396:1998 shall be within reach of every person who is regularly on board a craft. Non-inflatable lifejackets in accordance with these standards shall also be admissible for children.

3. Lifejackets shall be inspected in accordance with the manufacturer's instructions.

CHAPTER 11
SAFETY AT WORK STATIONS

Article 11.01
General

1. Vessels shall be built, arranged and equipped in such a way as to enable persons to work and move about in safety.

2. Permanently installed facilities that are necessary for working on board shall be arranged, laid out and secured in such a way as to permit safe and easy operation, use and maintenance. If necessary, mobile or high-temperature components shall be fitted with protective devices.

Article 11.02
Protection against falling

1. Decks and side decks shall be flat and at no point be likely to cause tripping; it shall be impossible for puddles to form.

2. Decks, side decks, engine-room floors, landings, stairways and the tops of side deck bollards shall have non-slip surfaces.

3. The tops of side deck bollards and obstacles in passageways, such as the edges of steps, shall be painted in a colour contrasting with the surrounding deck.

4. The outer edges of decks, as well as work stations where persons might fall more than 1 m, shall be fitted with bulwarks or coamings that are at least 0.70 m high or with a guard rail in accordance with European standard EN 711:1995, which shall comprise a handrail, a rail at knee height and a foot-rail. Side decks shall be fitted with a foot-rail and a continuous hand-rail that is secured to the coaming. Coaming hand-rails shall not be required where side decks are fitted with non-retractable shipside guard rails.

5. At work stations where there is danger of falling more than 1 m the inspection body may require appropriate fittings and equipment to ensure safe working.

Article 11.03
Dimensions of working spaces

Working spaces shall be large enough to provide every person working in them with adequate freedom of movement.

Article 11.04
Side decks

1. The clear width of a side deck shall be at least 0.60 m. That figure may be reduced to 0.50 m at certain points that are necessary for the operation of the vessel such as deck-washing valves. It may be reduced to 0.40 m at bollards and cleats.
2. Up to a height of 0.90 m above the side deck, the clear width of the side deck may be reduced to 0.54 m provided that the clear width above, between the outer edge of the hull and the inner edge of the hold, is not less than 0.65 m. In this case, the clear width of the side deck may be reduced to 0.50 m if the outer edge of the side deck is fitted with a guard rail in accordance with European standard EN 711:1995 to prevent falling. On vessels 55 m or less in length with only aft accommodation, the guard rail may be dispensed with.

3. The requirements of sections 1 and 2 shall apply up to a height of 2.00 m above the side deck.

Article 11.05
Access to working spaces

1. Points of access and passageways for the movement of persons and objects shall be of sufficient size and so arranged that:
   (a) in front of the access opening, there is sufficient room not to impede movement;
   (b) the clear width of the passageway shall be appropriate for the intended use of the working space and shall be not less than 0.60 m, except in the case of craft less than 8 m wide, where it may be reduced to 0.50 m;
   (c) the clear height of the passageway including the sill is not less than 1.90 m.

2. Doors shall be so arranged that they can be opened and closed safely from either side. They shall be protected against accidental opening or closing.

3. Appropriate stairs, ladders or steps shall be installed in accesses, exits and passageways where there is more than a 0.50 m difference in floor level.

4. Working spaces which are manned continuously shall be fitted with stairs if there is a difference in floor level of more than 1.00 m. This requirement shall not apply to emergency exits.

5. Vessels with holds shall have at least one permanently installed means of access at each end of each hold.

By way of derogation from the first sentence the permanently installed means of access may be dispensed with if at least two movable ladders are provided which reach at least 3 rungs over the hatch coaming at an angle of inclination of 60°.

Article 11.06
Exits and emergency exits

1. The number, arrangement and dimensions of exits, including emergency exits, shall be in keeping with the purpose and dimensions of the relevant space. Where one of the exits is an emergency exit, it shall be clearly marked as such.

2. Emergency exits or windows or the covers of skylights to be used as emergency exits shall have a clear opening of not less than 0.36 m², and the smallest dimension shall be not less than 0.50 m.

Article 11.07
Ladders, steps and similar devices

1. Stairs and ladders shall be securely fixed. Stairs shall be not less than 0.60 m wide and the clear width between hand-rails shall be not less than 0.60 m; steps shall be not less than 0.15 m deep; steps shall have non-slip surfaces and stairs with more than three steps shall be fitted with hand-rails.

2. Ladders and separately attached rungs shall have a clear width of not less than 0.30 m; rungs shall be not more than 0.30 m apart and the distance between rungs and structures shall be not less than 0.15 m.
3. Ladders and separately attached rungs shall be clearly recognisable from above and shall be equipped with safety handles above exit openings.

4. Movable ladders shall be at least 0.40 m wide, and at least 0.50 m wide at the base; it shall be possible to ensure that they will not topple or skid; the rungs shall be securely fixed in the uprights.

Article 11.08

Interior spaces

1. The dimensions, arrangement and layout of interior working spaces shall be in keeping with the work to be carried out and shall meet the health and safety requirements. They shall be equipped with sufficient non-dazzle lighting and with sufficient ventilation arrangements. If necessary, they shall be fitted with heating appliances capable of maintaining an adequate temperature.

2. The floors of interior working spaces shall be solid and durable, and shall be designed not to cause tripping or slipping. Openings in decks and floors shall, when open, be secured against the danger of falling, and windows and skylights shall be so arranged and fitted that they can be operated and cleaned safely.

Article 11.09

Protection against noise and vibration

1. Working spaces shall be so situated, equipped and designed that crew members are not exposed to harmful vibrations.

2. Permanent working spaces shall, in addition, be so constructed and soundproofed that the health and safety of crew members are not affected by noise.

3. For crew members who are likely to be exposed to noise levels exceeding 85 dB(A) every day individual acoustic protection devices shall be available. In working spaces where noise levels exceed 90 dB(A) it shall be indicated that wearing of acoustic protection devices is mandatory by a symbol ‘Wear acoustic protection device’ with a diameter of at least 10 cm in accordance with Fig. 7 of Appendix I.

Article 11.10

Hatch covers

1. Hatch covers shall be easily accessible and safe to handle. Hatch-cover components weighing more than 40 kg shall be designed to slide or pivot or be fitted with mechanical opening devices. Hatch covers operated by lifting gear shall be fitted with adequate and easily accessible attachment devices. Non-interchangeable hatch covers and upper sills shall be clearly marked to show the hatches to which they belong and their correct position on those hatches.

2. Hatch covers shall be secured against being tilted by the wind or by loading gear. Sliding covers shall be fitted with catches to prevent accidental horizontal movement of more than 0.40 m; they shall be capable of being locked in their final position. Appropriate devices shall be fitted to hold stacked hatch covers in position.

3. The power supply for mechanically operated hatch covers shall be cut off automatically when the control switch is released.

4. Hatch covers shall be capable of bearing the loads to which they are likely to be subjected: Hatch covers designed to be walked on shall be capable of bearing concentrated loads of at least 75 kg. Hatch covers not designed to be walked on shall be marked as such. Hatch covers designed to receive deck cargo shall have the permissible load in t/m² marked on them. Where supports are needed to achieve the maximum permissible load this shall be indicated in an appropriate place; in this case the relevant drawings shall be kept on board.
Article 11.11

Winches

1. Winches shall be designed in such a way as to enable work to be carried out safely. They shall be fitted with devices that prevent unintentional load release. Winches that do not lock automatically shall be fitted with a brake that is adequate to deal with their tractive force.

2. Hand-operated winches shall be fitted with devices to prevent kick-back of the crank. Winches that are both power- and manually driven shall be designed in such a way that the motive-power control cannot actuate the manual control.

Article 11.12

Cranes

1. Cranes shall be built in accordance with best practice. The forces arising during their operation shall be safely transmitted into the vessel's structure; they shall not impair its stability.

2. A manufacturer's plate containing the following information shall be affixed to cranes:
   (a) manufacturer's name and address;
   (b) the CE marking, together with the year of manufacture;
   (c) series or type reference;
   (d) where applicable, serial number.

3. The maximum permissible loadings shall be permanently marked in a clearly legible manner on cranes. Where a crane's safe working load does not exceed 2 000 kg it will be sufficient if the safe working load at the maximum reach is permanently marked in a clearly legible manner on the crane.

4. There shall be devices to protect against crushing or shearing accidents. The outer parts of the crane shall leave a safety clearance of 0.5 m upwards, downwards and to the sides, between them and all surrounding objects. The safety clearance to the sides shall not be required outside work stations and passageways.

5. It shall be possible to protect power driven cranes against unauthorised use. It shall only be possible to start these up from the crane's driving position. The control shall be of the automatic-return type (buttons without stops); their operating direction shall be unambiguously clear.

   If the motive power fails it shall not be possible for the load to drop uncontrolled. Unintentional crane movements shall be prevented.

   Any upward movement of the hoisting device and any exceeding of the safe working load shall be limited by an appropriate device. Any downward movement of the hoisting device shall be limited if under any envisaged operating conditions at the moment of attaching the hook there can be less than two cable windings on the drum. The corresponding counter movement shall still be possible after the automatic limiting devices have been actuated.

   The tensile strength of the cables for running rigging shall correspond to five times the cable's permissible loading. The cable construction shall be faultless and the design shall be suitable for use on cranes.

6. Before putting into service for the first time or before putting back into service following major alteration, calculations and a load test shall provide proof of adequate strength and stability.

   Where a crane's safe working load does not exceed 2 000 kg the expert may decide that the proof by calculation may be fully or partly replaced by a test with a load 1.25 times the safe working load carried out over the full working range.

   The acceptance test according to the first or second paragraph shall be carried out by an expert recognised by the inspection body.
7. Cranes shall be checked regularly and in any case at least every 12 months, by an expert. During that inspection the safe working condition of the crane shall be determined by a visual check and an operating check.

8. Every ten years, at the latest, after the acceptance test the crane shall again be inspected by an expert recognised by the inspection body.

9. Cranes with a safe working load exceeding 2 000 kg, or which are used for transhipment of cargo, or which are mounted on board lifting jacks, pontoons and other floating equipment or worksite craft shall in addition meet the requirements of one of the Member States.

10. For all cranes at least the following documents shall be kept on board:

(a) the crane manufacturer's operating instructions, including at least the following information:
   — operating range and function of the controls;
   — maximum permissible safe working load as a function of the reach;
   — maximum permissible inclination of the crane;
   — assembly and maintenance instructions;
   — instructions concerning regular checks;
   — general technical data.

(b) certificates concerning the checks carried out in accordance with sections 6 to 8 or 9.

Article 11.13

Storing flammable liquids

To store flammable liquids with a flash point of less than 55 °C there shall be a ventilated cupboard made of non-combustible material on deck. On its outside there shall be a symbol ‘Fire, naked flame and smoking prohibited’ with a diameter of at least 10 cm in accordance with Fig. 2 of Appendix I.

CHAPTER 12

ACCOMMODATION

Article 12.01

General

1. Vessels shall have accommodation for the persons lodging habitually on board, and at least for the minimum crew.

2. Accommodation shall be so designed, arranged and fitted out as to meet the health, safety and comfort needs of those on board. It shall be of safe and easy access and adequately insulated against heat and cold.

3. The inspection body may authorise exceptions to the provisions of this Chapter if the health and safety of those on board are ensured by other means.

4. The inspection body shall enter on the Community certificate any restrictions on the vessel's daily operating periods and its operating mode resulting from the exceptions referred to in section 3.

Article 12.02

Special design requirements for accommodation

1. It shall be possible to ventilate accommodation adequately even when the doors are closed; in addition, communal living quarters shall receive adequate daylight and, as far as possible, provide a view out.

2. Where there is no deck-level access to the accommodation and the difference in level is 0.30 m or more the accommodation shall be accessible by means of stairs.
3. In the foresection of the vessel no floor shall be more than 1,20 m below the plane of maximum draught.

4. Living and sleeping quarters shall have at least two exits which are as far apart from each other as possible and which serve as escape routes. One exit may be designed as an emergency exit. This does not apply to rooms with an exit leading directly onto the deck or into a corridor which serves as an escape route, provided the corridor has two exits apart from each other leading to port and starboard. Emergency exits, which may include skylights and windows, shall have a clear opening of at least 0,36 m² and a shortest side no less than 0,50 m and permit rapid evacuation in an emergency. Insulation and cladding of escape routes shall be made of flame-retardant materials and the usability of escape routes shall be guaranteed at all times by appropriate means such as ladders or separately attached rungs.

5. Accommodation shall be protected against inadmissible noise and vibration. Sound pressure levels shall not exceed:
   (a) 70 dB(A) in communal living quarters;
   (b) 60 dB(A) in sleeping quarters. This provision shall not apply to vessels operating exclusively outside the rest periods of the crew as laid down by the national legislation of the Member States. The restriction of the daily operating period shall be entered on the Community certificate.

6. Headroom in the accommodation shall be not less than 2,00 m.

7. As a general rule, vessels shall have at least one communal living room partitioned off from the sleeping quarters.

8. The free floor area of communal living quarters shall be not less than 2 m² per person, and in any event not less than 8 m² in total (not counting furniture, except tables and chairs).

9. The cubic capacity of private living and sleeping rooms shall be not less than 7 m³ each.

10. The volume of airspace per person shall be at least 3,5 m³ in private living quarters. In sleeping quarters it shall be at least 5 m³ for the first occupant and at least 3 m³ for each additional occupant (not counting volume of furniture). Sleeping cabins shall, as far as possible, be intended for no more than two persons. Berths shall be not less than 0,30 m above the floor. Where one berth is placed over another, the headroom above each berth shall be not less than 0,60 m.

11. Doors shall have an opening whose upper edge is at least 1,90 m above deck or above the floor and a clear width of at least 0,60 m. The prescribed height may be achieved by means of sliding or hinged covers or flaps. Doors shall open to the outside and it shall be possible to open them from either side. Sills shall not be more than 0,40 m high, but shall nonetheless comply with the provisions of other safety regulations.

12. Stairways shall be permanently fixed and safely negotiable. They shall be deemed to be so when:
   (a) they are at least 0,60 m wide;
   (b) the tread is at least 0,15 m deep;
   (c) the steps are non-slip;
   (d) stairways with more than three steps are fitted with at least one handrail or handle.

13. Pipes carrying dangerous gases or liquids, and particularly those under such a high pressure that a leak could pose a danger to persons, shall not be located in the accommodation or in corridors leading to the accommodation. This does not apply to steam pipes and hydraulic system pipes, provided they are fitted in metal sleeves, and for the pipes of liquefied gas installations for domestic purposes.

**Article 12.03**
**Sanitary installations**

1. At least the following sanitary installations shall be provided in vessels with accommodation:
   (a) one toilet per accommodation unit or per six crew members; it shall be possible to ventilate these with fresh air;
(b) one wash basin with waste pipe and connected up to hot and cold potable water per accommodation unit or per four crew members;
(c) one shower or bath connected up to hot and cold potable water per accommodation unit or per six crew members.

2. The sanitary installations shall be in close proximity to the accommodation. Toilets shall not have direct access to galleys, mess rooms or combined communal living quarters/galleys.

3. Toilet compartments shall have a floor space of at least 1 m², not less than 0,75 m wide and not less than 1,10 m long. Toilet compartments in cabins for no more than two persons may be smaller. Where a toilet contains a wash basin and/or shower, the floor space shall be increased at least by the floor space occupied by the wash basin and/or shower (or bath).

Article 12.04
Galleys

1. Galleys may be combined with communal living quarters.

2. Galleys shall comprise:
   (a) a cooker;
   (b) a sink with waste connection;
   (c) a supply of potable water;
   (d) a refrigerator;
   (e) sufficient storage and working space.

3. The eating area of combined galleys/communal living quarters shall be large enough to accommodate the number of crew normally using it at the same time. Seats shall be not less than 0,60 m wide.

Article 12.05
Potable water

1. Vessels with accommodation shall have a potable water installation. Potable water tank filling apertures and potable water hoses shall be marked as being intended exclusively for potable water. Potable water filler necks shall be installed above the deck.

2. Potable water installations shall:
   (a) on their inner surfaces be made of a material which resists corrosion and poses no physiological danger;
   (b) be free of pipe sections where a regular flow of water is not guaranteed, and
   (c) be protected against excessive heating.

3. In addition to section 2 potable water tanks shall:
   (a) have a capacity of at least 150 l per person normally living on board, and at least per member of the minimum crew:
   (b) have a suitable, lockable opening to enable the inside to be cleaned:
   (c) have a water level indicator;
   (d) have ventilation pipes which lead to the open air or are fitted with appropriate filters.
4. Potable water tanks shall not share walls with other tanks. Potable water pipes shall not pass through tanks containing other liquids. Connections are not permitted between the potable water supply system and other pipes. Pipes carrying gas or liquids other than potable water shall not pass through potable water tanks.

5. Potable water pressure vessels shall operate only on uncontaminated compressed air. Where it is produced by means of compressors, appropriate air filters and oil separators shall be installed directly in front of the pressure vessel unless the water and the air are separated by a diaphragm.

Article 12.06
Heating and ventilation

1. It shall be possible to heat accommodation in accordance with its intended use. Heating installations shall be appropriate for the weather conditions which may arise.

2. It shall be possible to ventilate the living and sleeping quarters adequately even when the doors are closed. Ventilation shall ensure adequate air circulation in all climatic conditions.

3. The accommodation shall be so designed and arranged as to prevent as far as possible the entry of foul air from other areas of the vessel such as engine rooms or holds; where forced-air ventilation is used, the intake vents shall be so placed as to satisfy the above requirements.

Article 12.07
Other accommodation installations

1. Each crew member living on board shall have an individual berth and an individual clothes locker fitted with a lock. The internal measurements of the berth shall be not less than 2.00 × 0.90 m.

2. Suitable places for storing and drying work clothes shall be provided, but not in the sleeping quarters.

3. All accommodation areas shall be fitted with electric lighting. Additional lamps using gas or liquid fuel may only be used in communal living quarters. Lighting devices using liquid fuel shall be made of metal and shall burn only fuels with a flash point above 55 °C or commercial paraffin oil. They shall be placed or attached so as not to constitute a fire hazard.

CHAPTER 13
FUEL-FIRED HEATING, COOKING AND REFRIGERATING EQUIPMENT

Article 13.01
General

1. Heating, cooking and refrigeration equipment running on liquefied gas shall meet the requirements of Chapter 14.

2. Heating, cooking and refrigeration equipment, together with its accessories, shall be so designed and installed that it is not dangerous even in the event of overheating. It shall be so installed that it cannot overturn or be moved accidentally.

3. The equipment referred to in section 2 shall not be installed in areas in which substances with a flash point below 55 °C are used or stored. No flues from these installations may pass through such areas.

4. The supply of air necessary for combustion shall be ensured.

5. Heating appliances shall be securely connected to flues, which shall be fitted with suitable cowls or devices affording protection against the wind. They shall be arranged in such a manner as to permit cleaning.
Article 13.02
Use of liquid fuels, oil-fired equipment

1. Heating, cooking and refrigeration equipment which uses liquid fuel may be operated only with fuels whose flash point is above 55 °C.

2. By way of derogation from section 1, cooking appliances and heating and refrigeration appliances fitted with burners with wicks and running on commercial paraffin oil may be permitted in the accommodation and wheelhouse provided the capacity of the fuel tank does not exceed 12 litres.

3. Appliances fitted with burners with wicks shall be:
   (a) fitted with a metal fuel tank whose filling aperture may be locked and which has no soft-solder joints below the maximum filling level, and shall be designed and installed in such a way that the fuel tank cannot be opened or emptied accidentally;
   (b) capable of being lit without the aid of another liquid fuel;
   (c) so installed as to ensure the safe evacuation of combustion gases.

Article 13.03
Vaporising oil burner stoves and atomising oil burner heating appliances

1. Vaporising oil burner stoves and atomising oil burner heating appliances shall be built in accordance with best practice.

2. Where a vaporising oil burner stove or an atomising oil burner heating appliance is installed in an engine room, the air supply to the heating appliance and the engines shall be so designed that the heating appliance and the engines can operate properly and safely independently of one another. Where necessary, there shall be a separate air supply. The equipment shall be installed in such a way that no flame from the burner can reach other parts of the engine room installations.

Article 13.04
Vaporising oil burner stoves

1. It shall be possible to light vaporising oil burner stoves without the aid of another combustible liquid. They shall be fixed above a metal drip pan which encompasses all the fuel-carrying parts, whose sides are at least 20 mm high and which has a capacity of at least 2 litres.

2. For vaporising oil burner stoves installed in an engine room, the sides of the metal drip pan prescribed in section 1 shall be at least 200 mm high. The lower edge of the vaporising burner shall be located above the edge of the drip pan. In addition, the upper edge of the drip pan shall extend at least 100 mm above the floor.

3. Vaporising oil burner stoves shall be fitted with a suitable regulator which, at all settings, ensures a virtually constant flow of fuel to the burner and which prevents any fuel leak should the flame go out. Regulators shall be considered suitable which function properly even when exposed to vibration and inclined up to 12° and which, in addition to a level-regulating float, have
   (a) a second float which closes off the fuel supply safely and reliably when the permitted level is exceeded, or
   (b) an overflow pipe, but only if the drip pan has sufficient capacity to accommodate at least the contents of the fuel tank.
4. Where the fuel tank of a vaporising oil burner stove is installed separately:
   (a) the drop between the tank and the burner feed may not exceed that laid down in the manufacturer's operating instructions;
   (b) it shall be so installed as to be protected from unacceptable heating;
   (c) it shall be possible to interrupt the fuel supply from the deck.
5. The flues of vaporising oil burner stoves shall be fitted with a device to prevent draught inversion.

Article 13.05
Atomising oil burner heating appliances

Atomising oil burner heating appliances shall in particular meet the following requirements:
(a) adequate ventilation of the burner shall be ensured before the fuel is supplied;
(b) the fuel supply shall be regulated by a thermostat;
(c) the fuel shall be ignited by an electric device or by a pilot flame;
(d) a flame monitoring device shall cut off the fuel supply when the flame goes out;
(e) the main switch shall be placed at an easily accessible point outside the installation room.

Article 13.06
Forced-air heating appliances

Forced-air heating appliances consisting of a combustion chamber around which the heating air is conducted under pressure to a distribution system or to a room shall meet the following requirements:
(a) If the fuel is atomised under pressure the combustion air shall be supplied by a blower.
(b) The combustion chamber shall be well ventilated before the burner can be lit. Ventilation may be considered complete when the combustion air blower continues to operate after the flame has gone out.
(c) The fuel supply shall be automatically cut off if:
   the fire goes out;
   the supply of combustion air is not sufficient;
   the heated air exceeds a previously set temperature, or
   the power supply of the safety devices fails.
   In the above cases the fuel supply shall not be re-established automatically after being cut off.
(d) It shall be possible to switch off the combustion air and heating air blowers from outside the room where the heating appliance is located.
(e) Where heating air is drawn from outside, the intake vents shall be located as far as possible above the deck. They shall be installed in such a manner that rain and spray water cannot enter.
(f) Heating air pipes shall be made of metal.
(g) It shall not be possible to close the heating air outlet apertures completely.
(h) It shall not be possible for any leaking fuel to reach the heating air pipes.
(i) It shall not be possible for forced-air heating appliances to draw their heating air from an engine room.
Article 13.07
Solid fuel heating

1. Solid fuel heating appliances shall be placed on a metal plate with raised edges such that no burning fuel or hot cinders fall outside the plate.
This requirement does not apply to appliances installed in compartments built of non-combustible materials and intended solely to house boilers.

2. Solid fuel boilers shall be fitted with thermostatic controls to regulate the flow of combustion air.

3. A means by which cinders can be quickly doused shall be placed in the vicinity of each heating appliance.

CHAPTER 14
LIQUEFIED GAS INSTALLATIONS FOR DOMESTIC PURPOSES

Article 14.01
General

1. Liquefied gas installations consist essentially of a supply unit comprising one or more gas receptacles, and of one or more pressure regulators, a distribution system and a number of gas-consuming appliances.
Spare and empty receptacles not in the supply unit shall not be considered part of the installation. Article 14.05 shall apply to them mutatis mutandis.

2. Installations may be operated only with commercial propane.

Article 14.02
Installations

1. Liquefied gas installations shall be suitable throughout for use with propane and shall be built and installed in accordance with best practice.

2. Liquefied gas installations may be used only for domestic purposes in the accommodation and the wheelhouse, and for corresponding purposes on passenger vessels.

3. There may be a number of separate installations on board. A single installation shall not be used to serve accommodation areas separated by a hold or a fixed tank.

4. No part of a liquefied gas installation shall be located in the engine room.

Article 14.03
Receptacles

1. Only receptacles with an approved content of between 5 and 35 kg are permitted. In the case of passenger vessels, the inspection body may approve the use of receptacles with a larger content.

2. Receptacles shall bear the official stamp certifying that they have been accepted following the required tests.

Article 14.04
Location and arrangement of supply units

1. Supply units shall be installed on deck in a freestanding or wall cupboard located outside the accommodation in a position such that it does not interfere with movement on board. They shall not, however, be installed against the fore or aft bulwark. The cupboard may be a wall cupboard set into the superstructure provided that it is gastight and can only be opened from outside the superstructure. It shall be so located that the distribution pipes leading to the gas consumption points are as short as possible.
No more receptacles may be in operation simultaneously than are necessary for the functioning of the installation. Several receptacles may be connected only if a reversing coupler is used. Up to four receptacles may be connected per supply unit. The number of receptacles on board, including spare receptacles, shall not exceed six per installation.

Up to six receptacles may be connected on passenger vessels with galleys or canteens for passengers. The number of receptacles on board, including spare receptacles, shall not exceed nine per installation.

Pressure regulators, or in case of two-stage regulation the first pressure regulator, shall be fitted to a wall in the same cupboard as the receptacles.

2. Supply units shall be so installed that any leaking gas can escape from the cupboard into the open without any risk of it penetrating inside the vessel or coming into contact with a source of ignition.

3. Cupboards shall be constructed of flame-retardant materials and shall be sufficiently ventilated by apertures in the top and bottom. Receptacles shall be placed upright in the cupboards in such a way that they cannot overturn.

4. Cupboards shall be so built and placed that the temperature of the receptacles cannot exceed 50 °C.

5. The words ‘Liquefied gas’ and a ‘Fire, naked flame and smoking prohibited’ symbol at least 10 cm in diameter in accordance with Fig. 2 of Appendix I shall be affixed to the outer wall of the cupboard.

Article 14.05

Spare and empty receptacles

Spare and empty receptacles not located in the supply unit shall be stored outside the accommodation and the wheelhouse in a cupboard built in accordance with Article 14.04.

Article 14.06

Pressure regulators

1. Gas-consuming appliances may be connected to receptacles only through a distribution system fitted with one or more pressure regulators to bring the gas pressure down to the utilisation pressure. The pressure may be reduced in one or two stages. All pressure regulators shall be set permanently at a pressure determined in accordance with Article 14.07.

2. The final pressure regulators shall be either fitted with or immediately followed by a device to protect the pipe automatically against excess pressure in the event of a malfunctioning of the pressure regulator. It shall be ensured that in the event of a leak in the protection device any leaking gas can escape into the open without any risk of it penetrating inside the vessel or coming into contact with a source of ignition; if necessary, a special pipe shall be fitted for this purpose.

3. The protection devices and vents shall be protected against the entry of water.

Article 14.07

Pressure

1. Where two-stage regulating systems are used, the mean pressure shall be not more than 2.5 bar above atmospheric pressure.

2. The pressure at the outlet from the last pressure regulator shall be not more than 0.05 bar above atmospheric pressure, with a tolerance of 10 %.
Article 14.08
Piping and flexible tubes

1. Pipes shall consist of permanently installed steel or copper tubing. However, pipes connecting with the receptacles shall be high-pressure flexible tubes or spiral tubes suitable for propane. Gas-consuming appliances may, if not permanently installed, be connected by means of suitable flexible tubes not more than 1 m long.

2. Pipes shall be able to withstand any stresses, in particular regarding corrosion and strength, which may occur under normal operating conditions on board and their characteristics and layout shall be such that they ensure a satisfactory flow of gas at the appropriate pressure to the gas-consuming appliances.

3. Pipes shall have as few joints as possible. Both pipes and joints shall be gastight and shall remain gastight despite any vibration or expansion to which they may be subjected.

4. Pipes shall be readily accessible, properly fixed and protected at every point where they might be subject to impact or friction, particularly where they pass through steel bulkheads or metal walls. The entire surface of steel pipes shall be treated against corrosion.

5. Flexible pipes and their joints shall be able to withstand any stresses which may occur under normal operating conditions on board. They shall be installed in such a way that they are free of tension, cannot be heated excessively and can be inspected over their entire length.

Article 14.09
Distribution system

1. It shall be possible to shut off the entire distribution system by means of a main valve which is at all times easily and rapidly accessible.

2. Each gas-consuming appliance shall be supplied by a separate branch of the distribution system, and each branch shall be controlled by a separate closing device.

3. Valves shall be fitted at points where they are protected from the weather and from impact.

4. An inspection connection shall be fitted after each pressure regulator. It shall be ensured using a closing device that in pressure tests the pressure regulator is not exposed to the test pressure.

Article 14.10
Gas-consuming appliances and their installation

1. The only appliances that may be installed are propane-consuming appliances approved in one of the Member States and equipped with devices that effectively prevent the escape of gas in the event of either the flame or the pilot light being extinguished.

2. Appliances shall be so placed and connected that they cannot overturn or be accidentally moved and any risk of accidental wrenching of the connecting pipes is avoided.

3. Heating and water-heating appliances and refrigerators shall be connected to a flue for evacuating combustion gases into the open air.

4. The installation of gas-consuming appliances in the wheelhouse is permitted only if the wheelhouse is so constructed that no leaking gas can escape into the lower parts of the craft, in particular through the penetrations for control lines to the engine room.

5. Gas-consuming appliances may be installed in sleeping quarters only if combustion is independent of ambient air in the quarters.

6. Gas-consuming appliances in which combustion depends on ambient air shall be installed in rooms which are sufficiently large.
Article 14.11  
Ventilation and evacuation of combustion gases

1. In rooms containing gas-consuming appliances in which combustion depends on ambient air, fresh air shall be supplied and combustion gases evacuated by means of ventilation apertures of adequate dimensions, with a clear section of at least 150 cm² per aperture.

2. Ventilation apertures shall not have any closing device and shall not lead to sleeping quarters.

3. Evacuation devices shall be so designed as to ensure the safe evacuation of combustion gases. They shall be reliable in operation and made of non-combustible materials. Their operation shall not be affected by forced ventilation.

Article 14.12  
Operating and safety requirements

An operating instruction shall be affixed on board in a suitable place. It shall contain at least the following:

‘The valves of receptacles not connected to the distribution system shall be closed, even if the receptacles are presumed empty.’

‘Flexible pipes shall be replaced as soon as their condition so requires.’

‘All gas-consuming appliances shall be connected or the corresponding connecting pipes shall be sealed.’

Article 14.13  
Acceptance test

Before a liquefied gas installation is put into service, after any modification or repair and on every renewal of the attestation referred to in Article 14.15, the entire installation shall be accepted by an expert recognised by the inspection body. During the acceptance test the expert shall verify whether the installation conforms to the requirements of this Chapter. He shall submit an acceptance report to the inspection body.

Article 14.14  
Tests

Tests on the installation shall be carried out under the following conditions:

1. Medium-pressure pipes between the closing device, referred to in Article 14.09, section 4, of the first pressure regulator and the valves fitted before the final pressure regulator:
   (a) pressure test, carried out with air, an inert gas or a liquid at a pressure 20 bar above atmospheric pressure;
   (b) tightness test, carried out with air or an inert gas at a pressure 3.5 bar above atmospheric pressure.

2. Pipes at the service pressure between the closing device, referred to in Article 14.09, section 4, of the only pressure regulator or the final pressure regulator and the valves fitted before the gas-consuming appliances:
   tightness test, carried out with air or an inert gas at a pressure of 1 bar above atmospheric pressure.

3. Pipes situated between the closing device, referred to in Article 14.09, section 4, of the only pressure regulator or the final pressure regulator and the controls of gas-consuming appliances:
   tightness test at a pressure of 0.15 bar above atmospheric pressure.

4. In the tests referred to in sections 1(b), 2 and 3, the pipes are deemed gastight if, after sufficient time to allow for equalisation with ambient temperature, no decrease in the test pressure is observed during a further 10 minute test period.
5. Receptacle connectors, pipe joints and other fittings subjected to the pressure in the receptacles, and joints between pressure regulators and the distribution pipe: tightness test, carried out with a foaming substance, at the service pressure.

6. All gas-consuming appliances shall be brought into service at the nominal capacity and shall be tested for satisfactory and undisturbed combustion at different capacity settings. Flame failure devices shall be checked to ensure that they operate satisfactorily.

7. After the test referred to in section 6, it shall be verified for each gas-consuming appliance connected to a flue, whether, after five minutes' operation at the nominal capacity, with windows and doors closed and the ventilation devices in operation, any combustion gases are escaping into the room through the air intake.

If there is a more than momentary escape of such gases, the cause shall immediately be detected and remedied. The appliance shall not be approved for use until all defects have been eliminated.

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**Article 14.15**

**Attestation**

1. The Community certificate shall include an attestation to the effect that all liquefied gas installations conform to the requirements of this Chapter.

2. The attestation will be issued by the inspection body following the acceptance test referred to in Article 14.13.

3. The attestation shall be valid for a period not exceeding three years. It may be renewed only after a further acceptance test carried out in accordance with Article 14.13.

Exceptionally, where the owner of a vessel or his representative submits a reasoned request, the inspection body may extend the validity of the attestation for not more than three months without carrying out the acceptance test referred to in Article 14.13. Such extension shall be entered in the Community certificate.

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**CHAPTER 15**

**SPECIFIC REQUIREMENTS APPLICABLE TO PASSENGER VESSELS**

**Article 15.01**

**General provisions**

1. The following provisions shall not apply:
   (a) Article 3.02, section 1(b);
   (b) Articles 4.01 to 4.03;
   (c) Article 8.08, section 2, second sentence, and section 7;
   (d) Article 9.14, section 3, second sentence, for rated voltages of over 50 V.

2. The following items of equipment are prohibited on passenger vessels:
   (a) lamps powered by liquefied gas or liquid fuel according to Article 12.07, section 3;
   (b) vaporising oil-burner stoves according to Article 13.04;
   (c) solid fuel heaters according to Article 13.07;
   (d) devices fitted with wick burners according to Article 13.02, sections 2 and 3, and liquefied gas devices according to Chapter 14.

3. Vessels without their own power cannot be licensed for passenger transport.
4. On passenger vessels, areas shall be provided for use by persons with reduced mobility, according to the provisions of this Chapter. If the application of provisions of this Chapter which take into account the specific safety needs of persons with reduced mobility is difficult in practice or incurs unreasonable costs, the inspection body may allow derogations from these provisions on the basis of recommendations in accordance with the procedure referred to in Article 19(2) of this Directive. These derogations shall be mentioned in the Community certificate.

Article 15.02
Vessels’ hulls

1. In the course of the inspections referred to in Article 2.09, the thickness of the outside plating of steel passenger vessels shall be determined as follows:

(a) The minimum thickness $t_{min}$ of the bottom, bilge and side plating of the outer hull of passenger vessels is determined in accordance with the larger value of the following formulae:

\[ t_{1\text{min}} = 0.006 \cdot a \cdot \sqrt{T} \text{ [mm]} \]

\[ t_{2\text{min}} = f \cdot 0.55 \cdot \sqrt[4]{LWL} \text{ [mm]} \]

In these formulae:

\[ f = 1 + 0.0013 \cdot (a - 500); \]

\[ a = \text{longitudinal or transverse frame spacing [mm], and where the frame spacing is less than 400 mm, } a = 400 \text{ mm should be entered; } \]

(b) It is permissible to fall short of the minimum value determined in accordance with (a) above for the plate thickness in cases where the permitted value has been determined and certified on the basis of a mathematical proof for the sufficient strength (longitudinal, transverse and local) of the vessel’s hull.

(c) At no point of the outside plating shall the thickness calculated in accordance with (a) or (b) above be less than 3 mm.

(d) Plate renewals shall be carried out when bottom, bilge or side plate thicknesses have fallen short of the minimum value determined in accordance with (a) or (b), in conjunction with (c) above.

2. The number and position of bulkheads shall be selected such that, in the event of flooding, the vessel remains buoyant according to Article 15.03, sections 7 to 13. Every portion of the internal structure which affects the efficiency of the subdivision of such vessels shall be watertight, and shall be of a design which will maintain the integrity of the subdivision.

3. The distance between the collision bulkhead and the forward perpendicular shall be at least 0.04 LWL and not more than 0.04 LWL + 2 m.

4. A transverse bulkhead may be fitted with a bulkhead recess, if all parts of this offset lie within the safe area.

5. The bulkheads, which are taken into account in the damaged stability calculation according to Article 15.03, sections 7 to 13, shall be watertight and be installed up to the bulkhead deck. Where there is no bulkhead deck, these bulkheads shall extend to a height at least 20 cm above the margin line.

6. The number of openings in these bulkheads shall be kept as low as is consistent with the type of construction and normal operation of the vessel. Openings and penetrations shall not have a detrimental effect on the watertight function of the bulkheads.

7. Collision bulkheads shall have no openings and no doors.

8. Bulkheads according to section 5 separating the engine rooms from passenger areas or crew and shipboard personnel accommodation shall have no doors.

9. Manually operated doors without remote control in bulkheads referred to in section 5, are permitted only in areas not accessible to passengers. They shall:

(a) remain closed at all times and be opened only temporarily to allow access;

(b) be fitted with suitable devices to enable them to be closed quickly and safely;
(c) display the following notice on both sides of the doors:

‘Close door immediately after passing through’.

10. Doors in bulkheads referred to in section 5 that are open for long periods shall comply with the following requirements:

(a) They shall be capable of being closed from both sides of the bulkhead and from an easily accessible point above the bulkhead deck.

(b) After being closed by remote control the door shall be such that it can be opened again locally and closed safely. Closure shall not be impeded by carpeting, foot rails or other obstructions.

(c) The time taken for the remote-controlled closure process shall be at least 30 seconds but not more than 60 seconds.

(d) During the closure procedure an automatic acoustic alarm shall sound by the door.

(e) The door drive and alarm shall also be capable of operating independently of the on-board power supply. There shall be a device at the location of the remote control that displays whether the door is open or closed.

11. Doors in bulkheads referred to in section 5, and their actuators shall be located in the safe area.

12. There shall be a warning system in the wheelhouse to indicate which of the doors in bulkheads referred to in section 5 are open.

13. Open-ended piping and ventilation ducts shall be offset in such a way that, in any conceivable flooding, no additional spaces or tanks are flooded through them.

(a) If several compartments are openly connected by piping or ventilation ducts, such piping and ducts shall, in an appropriate place, be lead above the waterline corresponding to the worst possible flooding.

(b) Piping need not meet the requirement under (a) if shut-off devices are fitted in the piping where it passes through the bulkheads and which can be remotely controlled from a point above the bulkhead deck.

(c) Where a pipework system has no open outlet in a compartment, the pipework shall be regarded as intact in the event of this compartment being damaged, if it runs within the safe area and is more than 0,50 m from the bottom of the vessel.

14. Remote controls of bulkhead doors according to section 10 and shut-off devices according to section 13(b) above the bulkhead deck shall be clearly indicated as such.

15. Where double bottoms are fitted, their height shall be at least 0,60 m, and where wing voids are fitted, their width shall be at least 0,60 m.

16. Windows may be situated below the margin line if they are watertight, cannot be opened, possess sufficient strength and conform to Article 15.06, section 14.

Article 15.03
Stability

1. The applicant shall prove by a calculation based on the results from the application of a standard for intact stability that the intact stability of the vessel is appropriate. All calculations shall be carried out free to trim and sinkage.

2. The intact stability shall be proven for the following standard load conditions:

(a) at the start of the voyage:

100 % passengers, 98 % fuel and fresh water, 10 % waste water;

(b) during the voyage:

100 % passengers, 50 % fuel and fresh water, 50 % waste water;
Wednesday, 5 July 2006

(c) at the end of the voyage:

100 % passengers, 10 % fuel and fresh water, 98 % waste water;

d) unladen vessel:

no passengers, 10 % fuel and fresh water, no waste water.

For all standard load conditions, the ballast tanks shall be considered as either empty or full in accordance with normal operational conditions.

As a precondition for changing the ballast whilst under way, the requirement of section 3(d) shall be proved for the following load condition:

100 % passengers, 50 % fuel and fresh water, 50 % waste water, all other liquid (including ballast) tanks are considered filled to 50 %.

If this condition cannot be met, an entry shall be made in item 52 of the Community certificate to the effect that, whilst under way, the ballast tanks can only be empty or full and that, whilst under way, the ballast conditions must not be changed.

3. The proof of adequate intact stability by means of a calculation shall be produced using the following definitions for the intact stability and for the standard load conditions mentioned in section 2(a) to (d):

(a) the maximum righting lever $h_{\text{max}}$ shall occur at a heeling angle of $\phi_{\text{max}} \geq 15^\circ$ and shall not be less than 0,20 m. However, in case $\phi_f < \phi_{\text{max}}$ the righting lever at the downflooding angle $\phi_f$ shall not be less than 0,20 m;

(b) the downflooding angle $\phi_f$ shall not be less than 15°;

(c) the area $A$ under the curve of the righting lever shall, depending on the position of $\phi_f$ and $\phi_{\text{max}}$, reach at least the following values:

<table>
<thead>
<tr>
<th>Case</th>
<th>$\phi_{\text{max}}$</th>
<th>$A$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>$\phi_{\text{max}} = 15^\circ$</td>
<td>0,07 m rad to angle $\phi = 15^\circ$</td>
</tr>
<tr>
<td>2</td>
<td>$15^\circ &lt; \phi_{\text{max}} &lt; 30^\circ$</td>
<td>$\phi_{\text{max}} \leq \phi_f$</td>
</tr>
<tr>
<td>3</td>
<td>$15^\circ &lt; \phi_f &lt; 30^\circ$</td>
<td>$\phi_{\text{max}} &gt; \phi_f$</td>
</tr>
<tr>
<td>4</td>
<td>$\phi_{\text{max}} \geq 30^\circ$ and $\phi_f \geq 30^\circ$</td>
<td>$0,055$ m rad to angle $\phi = 30^\circ$</td>
</tr>
</tbody>
</table>

Where

$h_{\text{max}}$ is the maximum lever

$\phi$ the heeling angle

$\phi_f$ the downflooding angle, that is the heeling angle at which openings in the hull, in the superstructure or deck houses which cannot be closed so as to be weather tight, are immersed

$\phi_{\text{max}}$ the heeling angle at which the maximum righting lever occurs

$A$ area beneath the curve of the righting levers

(d) the initial metacentric height, $GM_o$, corrected by the effect of the free surfaces in liquid tanks, shall not be less than 0,15 m;

(e) in each of the following two cases the heeling angle shall not exceed 12°:

(aa) in application of the heeling moment due to passengers and wind according to sections 4 and 5;

(bb) in application of the heeling moment due to passengers and turning according to sections 4 and 6.
(f) for a heeling moment resulting from moments due to passengers, wind and turning according to sections 4, 5 and 6, the residual freeboard shall be not less than 200 mm;

(g) for vessels with windows or other openings in the hull located below the bulkhead decks and not closed watertight, the residual safety clearance shall be at least 100 mm on the application of the three heeling moments resulting from subsection (f).

4. The heeling moment due to one-sided accumulation of persons shall be calculated according to the following formula:

\[ M_p = g \cdot P \cdot y = g \cdot \sum P_i \cdot y_i \ [\text{kNm}] \]

where:

\[ P = \text{total mass of persons on board in [t], calculated by adding up the maximum permitted number of passengers and the maximum number of shipboard personnel and crew under normal operating conditions, assuming an average mass per person of 0,075 t} \]

\[ y = \text{lateral distance of centre of gravity of total mass of persons P from centre line in [m]} \]

\[ g = \text{acceleration of gravity (g = 9,81 m/s}^2\) \]

\[ P_i = \text{mass of persons accumulated on area A}_i \ [\text{[t]} \]

\[ P_i = n_i \cdot 0,075 \cdot A_i \ [\text{[t]} \]

where

\[ A_i = \text{area occupied by persons in [m}^2\] \]

\[ n_i = \text{number of persons per square meter} \]

\[ n_i = 4 \text{ for free deck areas and deck areas with movable furniture; for deck areas with fixed seating furniture such as benches, ni shall be calculated by assuming an area of 0,45 m in width and 0,75 m in seat depth per person} \]

\[ y_i = \text{lateral distance of geometrical centre of area A}_i \text{ from centre line in [m]} \]

The calculation shall be carried out for an accumulation of persons both to starboard and to port.

The distribution of persons shall correspond to the most unfavourable one from the point of view of stability. Cabins shall be assumed unoccupied for the calculation of the persons’ moment.

For the calculation of the loading cases, the centre of gravity of a person shall be taken as 1 m above the lowest point of the deck at 0,5 LWL, ignoring any deck curvature and assuming a mass of 0,075 t per person.

A detailed calculation of deck areas which are occupied by persons may be dispensed with if the following values are used:

\[ P = 1,1 \cdot F_{\text{max}} \cdot 0,075 \text{ for day trip vessels} \]

\[ 1,5 \cdot F_{\text{max}} \cdot 0,075 \text{ for cabin vessels} \]

where

\[ F_{\text{max}} = \text{maximum permitted number of passengers on board} \]

\[ y = B/2 \text{ in [m]} \]

5. The moment due to wind pressure (\( M_w \)) shall be calculated as follows:

\[ M_w = p_w \cdot A_w \cdot (L_w + T/2) \ [\text{kNm}] \]

where

\[ p_w = \text{the specific wind pressure of 0,25 kN/m}^2\] \]

\[ A_w = \text{lateral plane of the vessel above the plane of draught according to the considered loading condition in m}^2\] \]

\[ L_w = \text{distance of the centre of gravity of the lateral plane A}_w \text{ from the plane of draught according to the considered loading condition in m} \]
6. The moment due to centrifugal force ($M_{dr}$), caused by the turning of the vessel, shall be calculated as follows:

$$M_{dr} = c_{dr} \cdot C_B \cdot \frac{v^2}{D/LWL} \cdot (KG - T/2) \text{ [kNm]}$$

where

- $c_{dr}$ = a coefficient of 0.45;
- $C_B$ = block coefficient (if not known, taken as 1.0);
- $v$ = maximum speed of the vessel in m/s;
- $KG$ = distance between the centre of gravity and the keel line in m.

For passenger vessels with propulsion systems according to Article 6.06, Mdr shall be derived from full-scale or model tests or else from corresponding calculations.

7. The applicant shall prove, by means of a calculation based on the method of lost buoyancy, that the damaged stability of the vessel is appropriate in the event of flooding. All calculations shall be carried out free to trim and sinkage.

8. Buoyancy of the vessel in the event of flooding shall be proven for the standard load conditions specified in section 2. Accordingly, mathematical proof of sufficient stability shall be determined for the three intermediate stages of flooding (25 %, 50 % and 75 % of flood build-up) and for the final stage of flooding.

9. Passenger vessels shall comply with the 1-compartment status and the 2-compartment status.

The following assumptions concerning the extent of damage shall be taken into account in the event of flooding:

<table>
<thead>
<tr>
<th>Dimension of the side damage</th>
<th>1-compartment status</th>
<th>2-compartment status</th>
</tr>
</thead>
<tbody>
<tr>
<td>longitudinal $l$ [m]</td>
<td>$1.20 + 0.07 \cdot L_{WL}$</td>
<td></td>
</tr>
<tr>
<td>transverse $b$ [m]</td>
<td>$B/5$</td>
<td>0.59</td>
</tr>
<tr>
<td>vertical $h$ [m]</td>
<td>from vessel bottom to top without delimitation</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dimension of the bottom damage</th>
<th>1-compartment status</th>
<th>2-compartment status</th>
</tr>
</thead>
<tbody>
<tr>
<td>longitudinal $l$ [m]</td>
<td>$1.20 + 0.07 \cdot L_{WL}$</td>
<td></td>
</tr>
<tr>
<td>transverse $b$ [m]</td>
<td>$B/5$</td>
<td></td>
</tr>
<tr>
<td>vertical $h$ [m]</td>
<td>0.59; pipework installed according to Article 15.02, section 13(c), shall be deemed intact</td>
<td></td>
</tr>
</tbody>
</table>

(a) For 1-compartment status the bulkheads can be assumed to be intact if the distance between two adjacent bulkheads is greater than the damage length. Longitudinal bulkheads at a distance of less than $B/3$ from the outer plating measured perpendicular to centre line from the shell plating at the maximum draught shall not be taken into account for calculation purposes.

(b) For 2-compartment status each bulkhead within the extent of damage will be assumed to be damaged. This means that the position of the bulkheads shall be selected in such a way as to ensure that the passenger vessel remains buoyant after flooding of two or more adjacent compartments in the longitudinal direction.

(c) The lowest point of every non-watertight opening (e.g. doors, windows, access hatchways) shall lie at least 0.10 m above the damaged waterline. The bulkhead deck shall not be immersed in the final stage of flooding.
(d) Permeability is assumed to be 95%. If it is proven by a calculation that the average permeability of any compartment is less than 95%, the calculated value can be used instead.

The values to be adopted shall not be less than:

- Lounges: 95%
- Engine and boiler rooms: 85%
- Luggage and store rooms: 75%

Double bottoms, fuel bunkers, ballast and other tanks, depending on whether, according to their intended purpose, they are to be assumed to be full or empty for the vessel floating at the plane of maximum draught, 0 or 95%.

The calculation of free surface effect in intermediate stages of flooding shall be based on the gross surface area of the damaged compartments.

(e) If damage of a smaller dimension than specified above produces more detrimental effects with respect to heeling or loss of metacentric height, such damage shall be taken into account for calculation purposes.

10. For all intermediate stages of flooding referred to in section 8, the following criteria shall be met:

(a) the heeling angle \( \varphi \) at the equilibrium position of the intermediate stage in question shall not exceed 15°;

(b) beyond the heel in the equilibrium position of the intermediate stage in question, the positive part of the righting lever curve shall display a righting lever value of \( GZ \geq 0.02 \) m before the first unprotected opening becomes immersed or a heeling angle \( \varphi \) of 25° is reached;

(c) non-watertight openings shall not be immersed before the heel in the equilibrium position of the intermediate stage in question has been reached.

11. During the final stage of flooding, the following criteria shall be met taking into account the heeling moment due to persons in accordance with section 4:

(a) the heeling angle \( \varphi_E \) shall not exceed 10°;

(b) beyond the equilibrium position the positive part of the righting lever curve shall display a righting lever value of \( GZ_e \geq 0.05 \) m with an area \( A \geq 0.0065 \) mrad. These minimum values for stability shall be met until the immersion of the first unprotected opening or in any case before reaching a heeling angle \( \varphi_m \leq 25° \).
(c) non-watertight openings shall not be immersed before the equilibrium position has been reached; if such openings are immersed before this point, the rooms affording access are deemed to be flooded for damaged stability calculation purposes.

12. The shut-off devices which shall be able to be closed watertight shall be marked accordingly.

13. If cross-flood openings to reduce asymmetrical flooding are provided, they shall meet the following conditions:
   (a) for the calculation of cross-flooding, IMO Resolution A.266 (VIII) shall be applied;
   (b) they shall be self-acting;
   (c) they shall not be equipped with shut-off devices;
   (d) the total time allowed for compensation shall not exceed 15 minutes.

Article 15.04
Safety clearance and freeboard

1. The safety clearance shall be at least equal to the sum of:
   (a) the additional lateral immersion, which, measured on the outside plating, is produced by the permissible heeling angle according to Article 15.03, section 3(e), and
   (b) the residual safety clearance according to Article 15.03, section 3(g).
   For vessels without a bulkhead deck, the safety clearance shall be at least 500 mm.

2. The freeboard shall be at least equal to the sum of:
   (a) the additional lateral immersion, which, measured on the outside plating, is produced by the heeling angle according to Article 15.03, section 3(e), and
   (b) the residual freeboard according to Article 15.03, section 3(f).
   However, the freeboard shall be at least 300 mm.

3. The plane of maximum draught is to be set so as to ensure compliance with the safety clearance according to section 1, and the freeboard according to section 2 and Articles 15.02 and 15.03.

4. For safety reasons, the inspection body may stipulate a greater safety clearance or a greater freeboard.

Article 15.05
Maximum permitted number of passengers

1. The inspection body shall set the maximum permitted number of passengers and shall enter this number on the Community certificate.

2. The maximum permitted number of passengers shall not exceed any of the following values:
   (a) number of passengers for whom the existence of an evacuation area according to Article 15.06, section 8, has been proven;
   (b) number of passengers that has been taken into account for the stability calculation according to Article 15.03;
   (c) number of available berths for passengers on cabin vessels used for voyages including overnight stays.

3. For cabin vessels which are also used as day trip vessels, the number of passengers shall be calculated for use both as a day trip vessel and as a cabin vessel and entered on the Community certificate.

4. The maximum permitted number of passengers shall be displayed on clearly legible and prominently positioned notices on board the vessel.
1. Passenger rooms shall:

   (a) on all decks, be located aft of the level of the collision bulkhead and, as long as they are below the bulkhead deck, forward of the level of the aft-peak bulkhead, and

   (b) be separated from the engine and boiler rooms in a gas-tight manner;

   (c) be so arranged, that sight lines in accordance with Article 7.02 do not pass through them.

2. Cupboards and rooms referred to in Article 11.13 and intended for the storage of flammable liquids shall be outside the passenger area.

3. The number and width of the exits of passenger rooms shall comply with the following requirements:

   (a) Rooms or groups of rooms designed or arranged for 30 or more passengers or including berths for 12 or more passengers shall have at least two exits. On day trip vessels one of these two exits can be replaced by two emergency exits.

   (b) If rooms are located below the bulkhead deck, one of the exits can be a watertight bulkhead door, according to Article 15.02, section 10, leading into an adjacent compartment from which the upper deck can be reached directly. The other exit shall lead directly or, if permitted in accordance with (a), as an emergency exit into the open air, or to the bulkhead deck. This requirement does not apply to individual cabins.

   (c) Exits according to (a) and (b) shall be suitably arranged and shall have a clear width of at least 0,80 m and also a clear height of at least 2,00 m. For doors of passenger cabins and other small rooms, the clear width can be reduced to 0,70 m.

   (d) In the case of rooms or groups of rooms intended for more than 80 passengers the sum of the widths of all exits intended for passengers and which shall be used by them in an emergency shall be at least 0,01 m per passenger.

   (e) If the total width of the exits is determined by the number of passengers, the width of each exit shall be at least 0,005 m per passenger.

   (f) Emergency exits shall have a shortest side at least 0,60 m long or a minimum diameter of 0,70 m. They shall open in the direction of escape and be marked on both sides.

   (g) Exits of rooms intended for use by persons with reduced mobility shall have a clear width of at least 0,90 m. Exits normally used for embarking and disembarking people with reduced mobility shall have a clear width of at least 1,50 m.

4. Doors of passenger rooms shall comply with the following requirements:

   (a) With the exception of doors leading to connecting corridors, they shall be capable of opening outwards or be constructed as sliding doors.

   (b) Cabin doors shall be made in such a way that they can also be unlocked from the outside at any time.

   (c) Powered doors shall open easily in the event of failure of the power supply to this mechanism.

   (d) For doors intended for use by persons with reduced mobility, there shall be from the direction from which the door opens, a minimum clearance of 0,60 m between the inner edge of the door-frame on the lock side and an adjacent perpendicular wall.

5. Connecting corridors shall comply with the following requirements:

   (a) They shall have a clear width of at least 0,80 m or, if they lead to rooms used by more than 80 passengers, at least 0,01 m per passenger.

   (b) Their clear height shall be not less than 2,00 m.
(c) Connecting corridors intended for use by persons with reduced mobility shall have a clear width of 1,30 m. Connecting corridors more than 1,50 m wide shall have hand rails on either side.

(d) Where a part of the vessel or a room intended for passengers is served by a single connecting corridor, the clear width thereof shall be at least 1,00 m.

(e) Connecting corridors shall be free of steps.

(f) They shall lead only to open decks, rooms or staircases.

(g) Dead ends in connecting corridors shall be not longer than two meters.

6. In addition to the provisions of section 5, escape routes shall also comply with the following requirements:

(a) Stairways, exits and emergency exits shall be so disposed that, in the event of a fire in any given area, the other areas may be evacuated safely.

(b) The escape routes shall lead by the shortest route to evacuation areas according to section 8.

(c) Escape routes shall not lead through engine rooms or galleys.

(d) There shall be no rungs, ladders or the like installed at any point along the escape routes.

(e) Doors to escape routes shall be constructed in such a way as not to reduce the minimum width of the escape route referred to in section 5(a) or (d).

(f) Escape routes and emergency exits shall be clearly signed. The signs shall be lit by the emergency lighting system.

7. Escape routes and emergency exits shall have a suitable safety guidance system.

8. For all persons on board, there shall be muster areas available which satisfy the following requirements:

(a) The total area of the muster areas in m² shall correspond to at least the value produced by the following formulae:

Day trip vessels: \[ A_s = 0,35 \cdot F_{\text{max}} \] [m²]

Cabin vessels: \[ A_s = 0,45 \cdot F_{\text{max}} \] [m²]

In these formulae the following definition applies:

\[ F_{\text{max}} \] maximum permitted number of passengers on board

(b) Each individual muster or evacuation area shall be larger than 10 m².

(c) The muster areas shall be clear of furniture, whether movable or fixed.

(d) If movable furniture is located in a room in which muster areas are defined, it shall be secured appropriately to avoid slipping.

(e) Life-saving appliances shall be easily accessible from the evacuation areas.

(f) It shall be possible to evacuate people safely from these evacuation areas, using either side of the vessel.

(g) The muster areas shall lie above the margin line.

(h) The muster and evacuation areas are to be shown as such in the safety plan and signposted on board the vessel.

(i) If fixed seats or benches are located in a room in which muster areas are defined the corresponding number of persons need not be taken into account when calculating the total area of muster areas according to (a). However, the number of persons for whom fixed seats or benches in a certain room are taken into account must not exceed the number of persons for whom muster areas are available in this room.

(j) The provisions of (d) and (i) shall also apply to free decks on which muster areas are defined.

(k) If collective life-saving appliances complying with Article 15.09, section 5, are available on board, the number of persons for whom such appliances are available may be disregarded when calculating the total surface area of the muster areas referred to in (a).
(l) However, in all cases where reductions according to (i) to (k) are applied, the total area according to
(a) shall be sufficient for at least 50% of the maximum permitted number of passengers.

9. Stairs and their landings in the passenger areas shall comply with the following requirements:

(a) They shall be constructed in accordance with European standard EN 13056:2000.

(b) They shall have a clear width of at least 0.80 m or, if they lead to connecting corridors or areas
used by more than 80 passengers, at least 0.01 m per passenger.

(c) They shall have a clear width of at least 1.00 m if they provide the only means of access to a room
intended for passengers.

(d) Where there is not at least one staircase on each side of the vessel in the same room, they shall lie
in the safe area.

(e) In addition, stairs intended for use by persons with reduced mobility shall comply with the
following requirements:

(aa) The gradient of the stairs shall not exceed 38°.

(bb) The stairs shall have a clear width of at least 0.90 m.

(cc) Spiral staircases are not allowed.

(dd) The stairs shall not run in a direction transverse to the vessel.

(ee) The handrails of the stairs shall extend approximately 0.30 m beyond the top and bottom of
the stairs without restricting traffic routes.

(ff) Handrails, front sides of at least the first and the last step as well as the floor coverings at the
ends of the stairs shall be colour highlighted.

Lifts intended for persons with reduced mobility, and lifting equipment, like stairlifts or lifting plat-
forms, shall be constructed according to a relevant standard or a regulation of a Member State.

10. Parts of the deck intended for passengers, and which are not enclosed, shall comply with the following
requirements:

(a) They shall be surrounded by a fixed bulwark or guard rail at least 1.00 m high or a railing
according to the European standard EN 711:1995, construction type PF, PG or PZ. Bulwarks and
railings of decks intended for use by persons with reduced mobility shall be at least 1.10 m high.

(b) Openings and equipment for embarking or disembarking and also openings for loading or
unloading shall be such that they can be secured and have a clear width of at least 1.00 m. Open-
ings, used normally for the embarking or disembarking of persons with reduced mobility, shall
have a clear width of at least 1.50 m.

(c) If the openings and equipment for embarking or disembarking cannot be observed from the wheel-
house, optical or electronic aids shall be provided.

(d) Passengers sitting down shall not interrupt sight lines in accordance with Article 7.02.

11. The parts of the vessel not intended for passengers, in particular access to the wheelhouse, to the
winches and to the engine rooms, shall be such that they can be secured against unauthorised entry. At
any such access, a symbol corresponding to Fig. 1 in Appendix I shall be displayed in a prominent
position.

12. Gangways shall be constructed in accordance with European standard EN 14206:2003. By way of dero-
gation from Article 10.02, section 2(d), their length can be less than 4 m.

13. Traffic areas intended for use by persons with reduced mobility shall have a clear width of 1.30 m and
be free of doorsteps and sills more than 0.025 m high. Walls in traffic areas intended for use by
persons with reduced mobility shall be equipped with handrails at a height of 0.90 m above the floor.
14. Glass doors and walls in traffic areas and also window panes shall be manufactured from pre-stressed glass or laminated glass. They may also be made from a synthetic material, provided this is authorised for use in a fire-protection context.

Transparent doors and transparent walls extending as far as the floor in traffic areas shall be prominently marked.

15. Superstructures or their roofs consisting completely of panoramic panes shall only be manufactured from materials which, in the event of an accident, reduce as much as possible the risks of injury to the persons on board.

16. Potable water systems shall, at least, comply with the requirements of Article 12.05.

17. There shall be toilets available for passengers. At least one toilet shall be fitted for use by persons with reduced mobility according to a relevant standard or a regulation of a Member State and shall be accessible from areas intended for use by persons with reduced mobility.

18. Cabins without an opening window shall be connected to a ventilation system.

19. By analogy, rooms in which crew members or shipboard personnel are accommodated shall comply with the provisions of this Article.

**Article 15.07**

*Propulsion system*

In addition to the main propulsion system, vessels shall be equipped with a second independent propulsion system so as to ensure that, in the event of a breakdown affecting the main propulsion system, the vessel can continue to make steerageway under its own power.

The second independent propulsion system shall be placed in a separate engine room. If both engine rooms have common partitions, these shall be built according to Article 15.11, section 2.

**Article 15.08**

*Safety devices and equipment*

1. All passenger vessels shall have internal communication facilities according to Article 7.08. Such facilities shall also be available in the operation rooms and — where there is no direct communication from the wheelhouse — in the access and evacuation areas for passengers as referred to in Article 15.06, section 8.

2. All passenger areas shall be reachable via a loudspeaker system. The system shall be designed in such a way as to ensure that the information transmitted can be clearly distinguished from background noise. Loudspeakers are optional where direct communication between the wheelhouse and the passenger area is possible.

3. The vessel shall be equipped with an alarm system. The system shall include:

   (a) An alarm system enabling passengers, crew members and shipboard personnel to alert the vessel's command and crew.

       This alarm should be given only in areas assigned to the vessel's command and to the crew; it should only be possible for the vessel's command to stop the alarm. The alarm shall be capable of being triggered from at least the following places:

       (aa) in each cabin;

       (bb) in the corridors, lifts and stairwells, with the distance to the nearest trigger not exceeding 10 m and with at least one trigger per watertight compartment;

       (cc) in lounges, dining rooms and similar recreation rooms;

       (dd) in toilets, intended for use by persons with reduced mobility;
(ee) in engine rooms, galleys and similar rooms where there is a fire risk;

(ff) in the cold-storage rooms and other store rooms.

The alarm triggers shall be installed at a height above the floor of 0.85 m to 1.10 m.

(b) An alarm system enabling the vessel’s command to alert passengers.

This alarm shall be clearly and unmistakably audible in all rooms accessible to passengers. It shall be capable of being triggered from the wheelhouse and from a location that is permanently staffed.

(c) An alarm system enabling the vessel’s command to alert the crew and shipboard personnel.

The alarm system referred to in Article 7.09, section 1, shall also reach the recreation rooms for the shipboard personnel, the cold-storage rooms and other store rooms.

Alarm triggers shall be protected against unintentional use.

4. Each watertight compartment shall be fitted with a bilge level alarm.

5. Two motor-driven bilge pumps shall be provided.

6. A permanently installed drainage system according to Article 8.08, section 4, shall be provided on board.

7. Cold-storage room doors, even when locked, shall also be capable of being opened from the inside.

8. Where CO₂ bar-systems are situated in rooms below deck these rooms shall be fitted with an automatic ventilation system which turns itself on automatically when the door or hatch to the room is opened. The ventilation ducts shall run down to 0.05 m from the floor of this room.

9. In addition to the first-aid kit according to Article 10.02, section 2(f), further first-aid kits shall be provided in sufficient number. The first-aid kits and their storage shall comply with the requirements set out in Article 10.02, section 2(f).

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Article 15.09
Life-saving equipment

1. In addition to the lifebuoys specified in Article 10.05, section 1, all parts of the deck intended for passengers and not enclosed shall be equipped with lifebuoys in accordance with the European standard EN 14144:2003 on both sides of the vessel, positioned not more than 20 m apart.

Half of all the prescribed lifebuoys shall be fitted with a buoyant cord at least 30 m long with a diameter of 8 to 11 mm. The other half of the prescribed lifebuoys shall be fitted with a self-igniting, battery-powered light which will not be extinguished in water.

2. In addition to the lifebuoys referred to in section 1, the following equipment shall be available and ready for use:

(a) individual life-saving equipment according to Article 10.05, section 2, for shipboard personnel responsible for undertaking duties according to the safety rota;

(b) individual life-saving equipment according to European standard EN 395:1998 or EN 396:1998 for other shipboard personnel.

3. Passenger vessels shall have appropriate equipment to enable persons to be transferred safely to shallow water, to the bank or to another craft.

4. In addition to the life-saving equipment referred to in sections 1 and 2, individual life-saving equipment according to European standard EN 395:1998 or EN 396:1998 shall be available for 100 % of the maximum permitted number of passengers.

Where individual life-saving equipment as referred to in the first paragraph is not also suitable for children, individual life-saving equipment according to European standard EN 395:1998 for children weighing not more than 30 kg shall be available for 10 % of the maximum number of permitted passengers.
5. The term ‘collective life-saving equipment’ covers ship’s boats according to Article 10.04, and life rafts.

Life rafts shall:
(a) bear a notice indicating their purpose and the number of persons for whom they are approved;
(b) offer adequate seating space for the permitted number of persons;
(c) provide a buoyancy of at least 750 N per person in fresh water;
(d) be provided with a rope linked to the passenger vessel to prevent them drifting away;
(e) be made of suitable materials and be resistant to oil, oil products and temperatures up to 50 °C;
(f) assume and maintain a stable trim and, in this respect, be fitted with appropriate devices enabling them to be grabbed by the indicated number of persons;
(g) be fluorescent orange in colour or have fluorescent surfaces, visible from all sides, of at least 100 cm²;
(h) be such that they can be released from their stowed position and put overboard quickly and safely by one person, or can float free from their stowed position;
(i) be provided with appropriate means of evacuation from the evacuation areas referred to in Article 15.06, section 8, onto the life rafts if the vertical distance between the deck of the evacuation areas and the plane of maximum draught is greater than 1 m.

6. Additional collective life-saving appliances are items of life-saving equipment which ensure the buoyancy of several persons in the water. These shall:
(a) bear a notice indicating their purpose and the number of persons for whom they are approved;
(b) provide a buoyancy of at least 100 N per person in fresh water;
(c) be made of suitable materials and be resistant to oil, oil products and to temperatures of up to 50 °C;
(d) assume and maintain a stable trim and, in this respect, be fitted with appropriate devices enabling them to be grabbed by the indicated number of persons;
(e) be fluorescent orange in colour or have fluorescent surfaces, visible from all sides, of at least 100 cm²;
(f) be such that they can be released from their stowed position and put overboard quickly and safely by one person, or can float free from their stowed position.

7. Inflatable collective life-saving appliances shall in addition:
(a) comprise at least two separate air compartments;
(b) inflate automatically or by manual command when launched;
(c) assume and maintain a stable trim irrespective of the load to be supported, even when only half the air compartments are inflated.

8. The life-saving appliances shall be stowed on board in such a way that they can be reached easily and safely when required. Concealed storage places shall be clearly marked.

9. Life-saving equipment shall be checked according to the manufacturer’s instructions.

10. The ship’s boat shall be equipped with an engine and a searchlight.

11. A suitable stretcher shall be available.
1. Only electrical equipment shall be permitted for lighting.

2. Article 9.16, section 3, shall also apply additionally for passageways and recreation rooms for passengers.

3. For the following rooms and locations, adequate lighting and emergency lighting shall be provided:
   (a) locations where life-saving equipment is stored and where such equipment is normally prepared for use;
   (b) escape routes, access for passengers, including gangways, entrances and exits, connecting corridors, lifts and accommodation area companionways, cabin areas and accommodation areas;
   (c) markings on the escape routes and emergency exits;
   (d) in other areas intended for use by persons with reduced mobility;
   (e) operation rooms, engine rooms, steering equipment rooms and their exits;
   (f) wheelhouse;
   (g) emergency power supply room;
   (h) points at which extinguishers and fire extinguishing equipment controls are located;
   (i) areas in which passengers, shipboard personnel and crew muster in the event of danger.

4. There shall be an emergency power plant, consisting of an emergency power source and emergency switchboard, which, in the event of a failure of the supply to the following electrical equipment, can immediately take over as their replacement supply, where the equipment does not have its own power source:
   (a) signal lights;
   (b) audible warning devices;
   (c) emergency lighting in accordance with section 3;
   (d) radiotelephone installations;
   (e) alarm, loudspeaker and on-board message communications systems;
   (f) searchlights according to Article 10.02, section 2(i);
   (g) fire alarm system;
   (h) other safety equipment such as automatic pressurised sprinkler systems or fire extinguishing pumps;
   (i) lifts and lifting equipment within the meaning of Article 15.06, section 9, second sentence.

5. The light fittings for the emergency lighting shall be marked as such.

6. The emergency power plant shall be installed outside the main engine room, outside the rooms housing the power sources referred to in Article 9.02, section 1, and outside the room where the main switchboard is located; it shall be separated from these rooms by partitions according to Article 15.11, section 2.
Cables feeding the electrical installations in the event of an emergency shall be installed and routed in such a way as to maintain the continuity of supply of these installations in the event of fire or flooding. These cables shall never be routed through the main engine room, galleys or rooms where the main power source and its connected equipment is installed, except insofar as it is necessary to provide emergency equipment in such areas.

The emergency power plant shall be installed above the margin line.

7. The following are admissible for use as an emergency power source:

(a) auxiliary generator sets with their own independent fuel supply and independent cooling system which, in the event of a power failure, turn on and take over the supply of power within 30 seconds automatically or, if they are located in the immediate vicinity of the wheelhouse or any other location permanently manned by crew members, can be turned on manually, or

(b) accumulator batteries, which, in the event of a power failure, turn on automatically or, if they are located in the immediate vicinity of the wheelhouse or any other location permanently manned by crew members, can be turned on manually. They shall be capable of powering the abovementioned power consumers throughout the prescribed period without recharging and without an unacceptable voltage reduction.

8. The projected operating period for the emergency power supply is to be defined according to the defined purpose of the passenger vessel. It shall not be less than 30 minutes.

9. The insulation resistances and the earthing for electrical systems shall be tested on the occasion of inspections according to Article 2.09.

10. The power sources according to Article 9.02, section 1, shall be independent of each other.

11. A failure of the main or emergency power equipment shall not mutually affect the operational safety of the installations.

Article 15.11

Fire protection

1. The suitability for fire protection of materials and components shall be established by an accredited test institution on the basis of appropriate test methods.

(a) The test institution shall satisfy:

(aa) the Code for Fire Test Procedures, or

(bb) European standard EN ISO/IEC 17025:2000 concerning the general requirements for the competence of testing and calibration laboratories.

(b) The recognised test methods for determining the non-flammability of materials are:

(aa) Annex I, Part 1, of the Code for Fire Test Procedures, and

(bb) the equivalent regulations of one of the Member States.

(c) The recognised test methods for determining that a material is flame-retardant are:

(aa) the respective requirements laid down in Annex I, Parts 5 (Surface flammability test), 6 (Test for the deck coverings), 7 (Test for hanging textiles and plastics), 8 (Test for upholstered furniture) and 9 (Test for components of bedding) of the Code for Fire Test Procedures, and

(bb) the equivalent regulations of one of the Member States.

(d) The recognised test methods for determining fire resistance are:

(aa) IMO Resolution A.754 (18), and

(bb) the equivalent regulations of one of the Member States.
2. Partitions between rooms shall be designed in accordance with the following tables:

### Table for partitions between rooms, in which no pressurised sprinkler systems according to Article 10.03a are installed

<table>
<thead>
<tr>
<th>Rooms</th>
<th>Control centres</th>
<th>Stairwells</th>
<th>Muster areas</th>
<th>Lounges</th>
<th>Engine rooms</th>
<th>Galleys</th>
<th>Store rooms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control centres</td>
<td>—</td>
<td>A0</td>
<td>A0/B15 (1)</td>
<td>A30</td>
<td>A60</td>
<td>A60</td>
<td>A60</td>
</tr>
<tr>
<td>Stairwells</td>
<td>—</td>
<td>A0</td>
<td>A30</td>
<td>A60</td>
<td>A60</td>
<td>A60</td>
<td></td>
</tr>
<tr>
<td>Muster areas</td>
<td>—</td>
<td>—</td>
<td>A30/B15 (2)</td>
<td>A60</td>
<td>A60</td>
<td>A60</td>
<td></td>
</tr>
<tr>
<td>Lounges</td>
<td>—</td>
<td>—</td>
<td>—/B15 (3)</td>
<td>A60</td>
<td>A60</td>
<td>A60</td>
<td></td>
</tr>
<tr>
<td>Engine rooms</td>
<td>—</td>
<td></td>
<td></td>
<td>A60/A0</td>
<td>A60</td>
<td>A60</td>
<td></td>
</tr>
<tr>
<td>Galleys</td>
<td>—</td>
<td></td>
<td>A0</td>
<td>A60/B15 (4)</td>
<td>—</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Store rooms</td>
<td>—</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(1) Partitions between control centres and internal muster areas shall correspond to Type A0, but external muster areas only to Type B15.

(2) Partitions between lounges and internal muster areas shall correspond to Type A30, but external muster areas only to Type B15.

(3) Partitions between cabins, partitions between cabins and corridors and vertical partitions separating lounges according to section 10 shall comply with Type B15, for rooms fitted with pressurised sprinkler systems B0.

(4) Partitions between engine rooms according to Articles 15.07 and 15.10, section 6, shall comply with Type A60; in other cases they shall comply with Type A0.

(4) B15 is sufficient for partitions between galleys, on the one hand, and cold-storage rooms and food store rooms, on the other.

### Table for partitions between rooms, in which pressurised sprinkler systems according to Article 10.03a are installed

<table>
<thead>
<tr>
<th>Rooms</th>
<th>Control centres</th>
<th>Stairwells</th>
<th>Muster areas</th>
<th>Lounges</th>
<th>Engine rooms</th>
<th>Galleys</th>
<th>Store rooms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control centres</td>
<td>—</td>
<td>A0</td>
<td>A0/B15 (1)</td>
<td>A0</td>
<td>A60</td>
<td>A60</td>
<td>A30</td>
</tr>
<tr>
<td>Stairwells</td>
<td>—</td>
<td>A0</td>
<td>A0</td>
<td>A60</td>
<td>A30</td>
<td>A0</td>
<td></td>
</tr>
<tr>
<td>Muster areas</td>
<td>—</td>
<td>—</td>
<td>A30/B15 (2)</td>
<td>A60</td>
<td>A60</td>
<td>A60</td>
<td></td>
</tr>
<tr>
<td>Lounges</td>
<td>—</td>
<td>—</td>
<td>—/B15 (3)</td>
<td>A60</td>
<td>A30</td>
<td>A0</td>
<td></td>
</tr>
<tr>
<td>Engine rooms</td>
<td>—</td>
<td></td>
<td></td>
<td>A60/A0</td>
<td>A60</td>
<td>A60</td>
<td></td>
</tr>
<tr>
<td>Galleys</td>
<td>—</td>
<td></td>
<td>A0</td>
<td></td>
<td>B15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Store rooms</td>
<td>—</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(1) Partitions between control centres and internal muster areas shall correspond to Type A0, but external muster areas only to Type B15.

(2) Partitions between lounges and internal muster areas shall correspond to Type A30, but external muster areas only to Type B15.

(3) Partitions between cabins, partitions between cabins and corridors and vertical partitions separating lounges according to section 10 shall comply with Type B15, for rooms fitted with pressurised sprinkler systems B0.

(4) Partitions between engine rooms according to Articles 15.07 and 15.10, section 6, shall comply with Type A60; in other cases they shall comply with Type A0.
1. Type A partitions are bulkheads, walls and decks which satisfy the following requirements:

   (aa) They are made of steel or of another equivalent material.

   (bb) They are appropriately stiffened.

   (cc) They are insulated with an approved non-combustible material such that the average temperature on the side facing away from the fire rises to not more than 140 °C above the initial temperature and at no point, including the gaps at the joints, does a temperature increase of more than 180 °C above the initial temperature occur within the following specified periods:

   Type A60  60 minutes
   Type A30  30 minutes
   Type A0   0 minutes.

   (dd) They are constructed in such a way as to prevent the transmission of smoke and flames until the end of the one-hour normal fire test.

(b) Type B partitions are bulkheads, walls, decks, ceilings or facings that meet the following requirements:

   (aa) They are made of an approved non-combustible material. Furthermore, all materials used in the manufacture and assembly of partitions shall be non-combustible, except for the facing, which shall be at least flame retardant.

   (bb) They demonstrate an insulation value such that the average temperature on the side facing away from the fire rises to not more than 140 °C above the initial temperature and at no point, including the gaps at the joints, does a temperature increase of more than 225 °C above the initial temperature occur within the following specified periods:

   Type B15  15 minutes
   Type B0   0 minutes.

   (cc) They are constructed in such a way as to prevent the transmission of flames until the end of the first half hour of the normal fire test.

(c) The inspection body may, in accordance with the Code for Fire Test Procedures, prescribe a test on a sample partition in order to ensure compliance with the above provisions on resistivity and temperature increase.

3. Paints, lacquers and other surface treatment products as well as deck coverings used in rooms except engine rooms and store rooms shall be flame-retardant. Carpets, fabrics, curtains and other hanging textile materials as well as upholstered furniture and components of bedding shall be flame-retardant if the rooms in which they are located are not equipped with a pressurised sprinkler system according to Article 10.03a.

4. Lounge ceilings and wall claddings, including their substructures, shall, where these lounges do not have a pressurised sprinkler system according to Article 10.03a, be manufactured from non-combustible materials with the exception of their surfaces, which shall be at least flame-retardant.

5. Furniture and fittings in lounges which serve as muster areas shall, where the rooms do not have a pressurised sprinkler system according to Article 10.03a, be manufactured from non-combustible materials.

6. Paints, lacquers and other materials used on exposed internal areas shall not produce excessive amounts of smoke or toxic substances. This shall be proven in accordance with the Code for Fire Test Procedures.

7. Insulation materials in lounges shall be non-combustible. This does not apply to insulations used on coolant-carrying pipes. The surfaces of the insulation materials used on these pipes shall be at least flame-retardant.
8. Doors in partitions according to section 2 shall satisfy the following requirements:

(a) They shall satisfy the same requirements set out in section 2 as the partitions themselves.

(b) They shall be self-closing in the case of doors in partition walls according to section 10 or in the case of enclosures around engine rooms, galleys and stairwells.

(c) Self-closing doors which remain open in normal operation shall be such that they can be closed from a location permanently manned by shipboard personnel or crew members. Once a door has been remotely closed, it shall be possible to reopen and close it safely on the spot.

(d) Watertight doors according to Article 15.02 need not be insulated.

9. Walls according to section 2 shall be continuous from deck to deck or end at continuous ceilings, which satisfy the same requirements as referred to in section 2.

10. The following passenger areas shall be divided by vertical partitions as referred to in section 2:

(a) passenger areas with a total surface area of more than 800 m²;

(b) passenger areas in which there are cabins, at intervals of not more than 40 m.

The vertical partitions shall be smoke-tight under normal operating conditions and shall be continuous from deck to deck.

11. Hollows above ceilings, beneath floors and behind wall claddings shall be separated at intervals of not more than 14 m by non-combustible draught stops which, even in the event of fire, provide an effective fireproof seal.

12. Stairs shall be made of steel or another equivalent non-combustible material.

13. Internal stairs and lifts shall be encapsulated at all levels by walls according to section 2. The following exceptions are permissible:

(a) a staircase connecting only two decks does not need to be encapsulated, if on one of the decks the staircase is enclosed according to section 2;

(b) in a lounge, stairs need not be encapsulated if they are located entirely within the interior of this room, and

  (aa) if this room extends over only two decks, or

  (bb) if there is a pressurised sprinkler system according to Article 10.03a installed in this room on all decks, this room has a smoke extraction system according to section 16 and the room has access on all decks to a stairwell.

14. Ventilation systems and air supply systems shall satisfy the following requirements:

(a) They shall be designed in such a way as to ensure that they themselves do not cause the spread of fire and smoke.

(b) Openings for air intake and extraction and air supply systems shall be such that they can be closed off.

(c) Ventilation ducts shall be made from steel or an equivalent non-combustible material and be securely connected to each other and to the superstructure of the vessel.

(d) When ventilation ducts with a cross-section of more than 0.02 m² are passed through partitions according to section 2 of Type A or partitions according to section 10, they shall be fitted with automatic fire dampers which can be operated from a location permanently manned by shipboard personnel or crew members.

(e) Ventilation systems for galleys and engine rooms shall be separated from ventilation systems which supply other areas.

(f) Air extraction ducts shall be provided with lockable openings for inspection and cleaning. These openings shall be located close to the fire dampers.

(g) Built-in ventilators shall be such that they can be switched off from a central location outside the engine room.
15. Galleys shall be fitted with ventilation systems and stoves with extractors. The air extraction ducts of the extractors shall satisfy the requirements according to section 14 and, additionally, be fitted with manually operated fire dampers at the inlet openings.

16. Control centres, stairwells and internal evacuation areas shall be fitted with natural or mechanical smoke extraction systems. Smoke extraction systems shall satisfy the following requirements:

(a) They shall offer sufficient capacity and reliability.

(b) They shall comply with the operating conditions for passenger vessels.

(c) If smoke extraction systems also serve as general ventilators for the rooms, this shall not hinder their function as smoke extraction systems in the event of a fire.

(d) Smoke extraction systems shall have a manually operated triggering device.

(e) Mechanical smoke extraction systems shall additionally be such that they can be operated from a location permanently manned by shipboard personnel or crew members.

(f) Natural smoke extraction systems shall be fitted with an opening mechanism, operated either manually or by a power source inside the extraction system.

(g) Manually operated triggering devices and opening mechanisms shall be accessible from inside or outside the room being protected.

17. Lounges not constantly supervised by shipboard personnel or crew members, galleys, engine rooms and other rooms presenting a fire risk shall be connected to an appropriate fire alarm system. The existence of a fire and its exact whereabouts shall be automatically displayed at a location permanently manned by shipboard personnel or crew members.

Article 15.12

Fire-fighting

1. In addition to the portable extinguishers according to Article 10.03, at least the following portable extinguishers shall be available on board:

(a) one portable extinguisher for every 120 m² of gross floor area in passenger areas;

(b) one portable extinguisher per group of 10 cabins, rounded upwards;

(c) one portable extinguisher in each galley and in the vicinity of any room in which flammable liquids are stored or used. In galleys the extinguishing agent shall also be suitable for fighting fat fires.

These additional fire extinguishers shall meet the requirements laid down in Article 10.03, section 2, and be installed and distributed on the vessel so that, in the event of a fire starting at any point and at any time, a fire extinguisher can be reached immediately. In every galley and also in hairdressing salons and perfumeries, there shall be a fire blanket to hand.

2. Passenger vessels shall be provided with a hydrant system consisting of:

(a) two motor-driven fire extinguishing pumps of sufficient capacity, at least one of which is permanently installed;

(b) one fire extinguisher line with a sufficient number of hydrants with permanently connected fire hoses at least 20 m in length and fitted with a nozzle capable of producing both a mist and a jet of water and incorporating a shut-off facility.

3. Hydrant systems shall be designed and dimensioned in such a way that:

(a) any point of the vessel can be reached from at least two hydrants in different places, each with a single hose length of not more than 20 m;
(b) the pressure at the hydrants is at least 300 kPa, and
(c) on all decks a water jet length of at least 6 m can be attained.

If a hydrant chest is provided, an ‘extinguisher hose’ symbol similar to that shown in Fig. 5 in Appendix I, of at least 10 cm side length, shall be affixed to the outside of the chest.

4. Hydrant valves with screw threads or cocks shall be such that they can be set so that each of the fire hoses can be separated and removed during operation of the fire extinguishing pumps.

5. Fire extinguisher hoses in the internal area shall be rolled up on an axially connected reel.

6. Materials for fire-fighting equipment shall either be heat-resistant or shall be suitably protected against failure to work when subjected to high temperatures.

7. Pipes and hydrants shall be arranged in such a way that the possibility of freezing is avoided.

8. The fire extinguishing pumps shall:
   (a) be installed or housed in separate rooms;
   (b) be such that they can be operated independently of each other;
   (c) each be capable, on all decks, of maintaining the necessary pressure at the hydrants and achieving the requisite length of water jet;
   (d) be installed forward of the aft bulkhead.

Fire extinguishing pumps may also be used for general purposes.

9. Engine rooms shall be fitted with a permanently fitted fire extinguishing system according to Article 10.03b.

10. On cabin vessels there shall be:
   (a) two self-contained breathing apparatus sets corresponding to European standard EN 137:1993 with full-face masks corresponding to European standard EN 136:1998;
   (b) two sets of equipment consisting of at least a protective suit, helmet, boots, gloves, axe, crowbar, torch and safety-line, and
   (c) four smoke hoods.

Article 15.13
Safety organisation

1. A safety rota shall be provided on board passenger vessels. The safety rota describes the duties of the crew and the shipboard personnel in the following eventualities:
   (a) breakdown,
   (b) fire on board,
   (c) evacuation of passengers,
   (d) person overboard.

Specific safety measures for persons with reduced mobility shall be taken into consideration.

The crew members and shipboard personnel designated in the safety rota should be assigned their various duties, depending on the posts they occupy. Special instructions to the crew shall ensure that, in the event of danger, all doors and openings in the watertight bulkheads referred to in Article 15.02 will be hermetically closed immediately.
2. The safety rota includes a safety plan, in which at least the following are clearly and precisely designated:

(a) areas intended for use by persons with reduced mobility;
(b) escape routes, emergency exits and muster and evacuation areas as referred to in Article 15.06, section 8;
(c) life-saving equipment and ship's boats;
(d) fire extinguishers and fire extinguishing and pressurised sprinkler systems;
(e) other safety equipment;
(f) the alarm system referred to in Article 15.08, section 3(a);
(g) the alarm system referred to in Article 15.08, section 3(b) and (c);
(h) the bulkhead doors referred to in Article 15.02, section 5, and the position of their controls, as well as the other openings referred to in Article 15.02, sections 9, 10 and 13, and Article 15.03, section 12;
(i) doors referred to in Article 15.11, section 8;
(j) fire dampers;
(k) fire alarm system;
(l) emergency power plant;
(m) ventilation system control units;
(n) shore connections;
(o) fuel line shut-offs;
(p) liquefied gas installations;
(q) public address systems;
(r) radiotelephone equipment;
(s) first-aid kits.

3. The safety rota according to section 1 and the safety plan according to section 2 shall:

(a) be duly stamped by the inspection body, and
(b) be prominently displayed at an appropriate point on each deck.

4. A code of conduct for passengers shall be posted up in each cabin and also a simplified safety plan containing only the information referred to in section 2(a) to (f).

This code of conduct shall include at least:

(a) designation of emergencies
   — fire;
   — flooding;
   — general hazard;
(b) description of the various alarm signals;
(c) instructions concerning the following:
   — escape routes
   — what to do
   — need to keep calm;
(d) instructions concerning the following:

— smoking
— use of fire and naked flame
— opening windows
— use of certain items of equipment.

These details shall be posted up in Dutch, English, French and German.

Article 15.14
Waste water collection and disposal facilities

1. Passenger vessels shall be equipped with waste water collecting tanks or appropriate on-board sewage treatment systems.

2. Waste water collection tanks shall have sufficient capacity. Tanks shall be fitted with a device to indicate their content level. There shall be on-board pumps and pipes for emptying the tanks, whereby waste water can be passed from both sides of the vessel. It shall be possible to pass waste water from other vessels through.

The pipes shall be fitted with a discharge connection according to European standard EN 1306:1996.

Article 15.15
Derogations for certain passenger vessels

1. As an alternative to proving adequate stability after damage according to Article 15.03, sections 7 to 13, passenger vessels with a length of not more than 25 m and authorised to carry up to a maximum of 50 passengers shall comply with the following criteria:

(a) after symmetrical flooding, the immersion of the vessel shall not exceed the margin line, and

(b) the metacentric height \( G_{MR} \) shall not be less than 0.10 m.

The necessary residual buoyancy shall be assured through the appropriate choice of material used for the construction of the hull or by means of highly cellular foam floats, solidly attached to the hull. In the case of vessels with a length of more than 15 m, residual buoyancy can be ensured by a combination of floats and subdivision complying with the 1-compartment status according to Article 15.03.

2. For passenger vessels in accordance with section 1 the inspection body may permit minor derogations from the clear height required in Article 15.06, section 3(c) and section 5(b). The derogation shall not be more than 5 %. In the case of derogations the relevant parts shall be indicated by colour.

3. By way of derogation from Article 15.03, section 9, passenger vessels not exceeding 45 m in length and authorised to carry up to a maximum of 250 passengers do not need to have 2-compartment status.

4. (Left void)

5. The inspection body may waive the application of Article 10.04 in the case of passenger vessels authorised to carry up to a maximum of 250 passengers and with a length of not more than 25 m, provided they are equipped with a platform, accessible from each side of the vessel, directly above the waterline, so as to enable persons to be recovered safely from the water. Passenger vessels may be equipped with a comparable installation, subject to the following conditions:

(a) one person alone shall be able to operate the installation;

(b) mobile installations are allowed;
(c) the installations shall be outside the danger area of the propulsion systems, and

(d) effective communication shall be possible between the boatmaster and the person in charge of the installation.

6. The inspection body may waive the application of Article 10.04 in the case of passenger vessels authorised to carry up to a maximum of 600 passengers and with a length of not more than 45 m, provided they are equipped with a platform according to section 5, first sentence, or with an equivalent installation according to section 5, second sentence. In addition, the passenger vessel shall have:

(a) a rudder propeller, a cycloidal propeller or a water jet as main propulsion, or

(b) a main propulsion system with 2 propulsion units, or

(c) a main propulsion system and a bow-thruster.

7. By way of derogation from Article 15.02, section 9, passenger vessels not exceeding 45 m in length and authorised to carry at most a number of passengers corresponding to the length of the vessel in metres are allowed to have on board, in the passenger area, a manually controlled bulkhead door without remote control according to Article 15.02, section 5, if:

(a) the vessel has only one deck;

(b) this door is accessible directly from the deck and is not more than 10 m away from the deck;

(c) the lower edge of the door opening lies at least 30 cm above the floor of the passenger area, and

(d) each of the compartments divided by the door is fitted with a bilge level alarm.

8. On passenger vessels in accordance with section 7, by way of derogation from Article 15.06, section 6(c), one escape route may lead through a galley, as long as there is a second escape route available.

9. For passenger vessels with a length not exceeding 45 m the following shall not apply: Article 15.01, section 2(e), when the liquefied gas installations are fitted with appropriate alarm systems for CO concentrations posing a health risk and for potentially explosive mixtures of gas and air.

10. The following provisions shall not apply to passenger vessels not exceeding 25 m in length:

(a) Article 15.04, section 1, last sentence;

(b) Article 15.06, section 6(c), for the galleys, as long as a second escape route is available;

(c) Article 15.07.

11. For cabin vessels not exceeding 45 m in length, Article 15.12, section 10, shall not apply, provided smoke-hoods in a number corresponding to the number of berths are readily accessible in each cabin.

CHAPTER 15a

SPECIFIC REQUIREMENTS FOR PASSENGER SAILING VESSELS

Article 15a.01

Application of Part II

In addition to the provisions of Part II, the requirements in this Chapter shall apply to passenger sailing vessels.
Article 15a.02  
Exceptions for certain passenger sailing vessels

1. For passenger sailing vessels having an \( L_{WL} \) not exceeding 45 m and a maximum permissible number of passengers not exceeding \( L_{WL} \) in whole meters, the following provisions shall not apply:
   (a) Article 3.03, section 7, provided that anchors are not transported in hawse pipes;
   (b) Article 10.02, section 2(d), with regard to length;
   (c) Article 15.08, section 3(a);
   (d) Article 15.15, section 9(a).

2. By way of derogation from section 1, the number of passengers may be raised to 1.5 times the \( L_{WL} \) in whole meters, if sails, rigging and deck fittings so permit.

Article 15a.03  
Stability requirements for vessels under sail

1. For the calculation of the heeling moment according to Article 15.03, section 3, the furled sails shall be taken into account when determining the centre of gravity of the vessel.

2. Taking into consideration all load conditions according to Article 15.03, section 2, and using a standard arrangement of sails, the heeling moment caused by wind pressure shall not be so high as to exceed a heeling angle of 20°. At the same time
   (a) a constant wind pressure of 0.07 kN/m² shall be applied for the calculation,
   (b) the residual safety clearance shall be at least 100 mm, and
   (c) the residual freeboard shall not be negative.

3. The righting lever of static stability shall
   (a) reach its maximum value at a heeling angle of 25° or over,
   (b) amount to at least 200 mm at a heeling angle of 30° or over,
   (c) be positive at a heeling angle of up to 60°.

4. The area under the righting lever curve shall not be less than
   (a) 0.055 mrad up to 30°;
   (b) 0.09 mrad up to 40° or at the angle at which an unprotected opening reaches the water surface and which is less than 40°.

   Between
   (c) 30° and 40°, or
   (d) 30° and the angle at which an unprotected opening reaches the water surface and which is less than 40°,

   this area shall not be less than 0.03 mrad.

Article 15a.04  
Shipbuilding and mechanical requirements

1. By way of derogation from Article 6.01, section 3, and Article 9.01, section 3, the equipment must be designed for permanent lists of up to 20°.
2. By way of derogation from Article 15.15, section 7(c), the height of the lower edge of the door opening may be reduced to 200 mm above the floor of the passenger area. Once opened, the door shall close and lock automatically.

3. By way of derogation from Article 15.06, section 10(a), the inspection body may, in specific cases, authorise the use of removable guard rails in areas where this is necessary for controlling the sails.

4. By way of derogation from Article 15.06, section 5(a) and Article 15.06, section 9(b), the inspection body may, in the case of passenger sailing vessels not more than 25 m long, authorise a clear width of less than 800 mm for connecting corridors and companionways. However, the clear width shall be at least 600 mm.

5. Within the meaning of Article 15.07, sails rank as a main propulsion system.

6. If there is a possibility of the propeller idling while the vessel is under sail, any endangered parts of the propulsion system shall be protected against potential damage.

Article 15a.05

Rigging in general

1. The parts of the rigging shall be arranged in such a way as to prevent unacceptable chafing.

2. If a material other than wood is used or if special types of rigging are used, such a design shall guarantee equivalent levels of safety with the dimensions and strength values laid down in this Chapter. As evidence of the strength

(a) a strength calculation shall be carried out, or

(b) confirmation of sufficient strength shall have been obtained from an approved classification society, or

(c) dimensioning shall be based on the procedures set out in a recognised regulatory framework (e.g. Middendorf, Kusk-Jensen).

The evidence shall be presented to the inspection body.

Article 15a.06

Masts and spars in general

1. All spars shall be made of high-quality material.

2. Wood for masts shall:

(a) be free of knot concentrations;

(b) be free of sapwood within the required dimensions;

(c) as far as possible be straight-grained;

(d) contain as little as possible twisted growth.

3. If the chosen timber is either pitch pine or Oregon pine of quality level ‘clear and better’ the diameters in the tables reproduced in Articles 15a.07 to 15a.12 can be reduced by 5 %.

4. If the timbers used for masts, topmasts, yardarms, booms and bowsprits are not round in cross-section, such timbers must be of equivalent strength.

5. Mast pedestals, mast trunks and fastenings on deck, on floor-plates and on stem or stern shall be constructed in such a way that they can either absorb the forces they are subjected to or transfer them to other connected parts of the structure.
6. Depending on the stability of the vessel and the external forces it is subjected to and also the distribution of the available sail area, the inspection body may, on the basis of the dimensions laid down in Articles 15a.07 to 15a.12, allow reductions in the cross-sections of the spars and, where appropriate, of the rigging. Evidence shall be submitted in accordance with Article 15a.05, section 2.

7. If the vessel's period of oscillation/period of roll, in seconds, is less than three quarters of its breadth, in metres, the dimensions set out in Articles 15a.07 to 15a.12 shall be increased. Evidence shall be submitted in accordance with Article 15a.05, section 2.

8. In the tables reproduced in Articles 15a.07 to 15a.12 and 15a.14, possible intermediate values shall be interpolated.

**Article 15a.07**

*Special provisions for masts*

1. Wooden masts shall meet the following minimum requirements:

<table>
<thead>
<tr>
<th>Length (*) (m)</th>
<th>Diameter on deck (cm)</th>
<th>Diameter on the cross-tree (cm)</th>
<th>Diameter on the mast cap (cm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>20</td>
<td>17</td>
<td>15</td>
</tr>
<tr>
<td>11</td>
<td>22</td>
<td>17</td>
<td>15</td>
</tr>
<tr>
<td>12</td>
<td>24</td>
<td>19</td>
<td>17</td>
</tr>
<tr>
<td>13</td>
<td>26</td>
<td>21</td>
<td>18</td>
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<tr>
<td>14</td>
<td>28</td>
<td>23</td>
<td>19</td>
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<tr>
<td>15</td>
<td>30</td>
<td>25</td>
<td>21</td>
</tr>
<tr>
<td>16</td>
<td>32</td>
<td>26</td>
<td>22</td>
</tr>
<tr>
<td>17</td>
<td>34</td>
<td>28</td>
<td>23</td>
</tr>
<tr>
<td>18</td>
<td>36</td>
<td>29</td>
<td>24</td>
</tr>
<tr>
<td>19</td>
<td>39</td>
<td>31</td>
<td>25</td>
</tr>
<tr>
<td>20</td>
<td>41</td>
<td>33</td>
<td>26</td>
</tr>
<tr>
<td>21</td>
<td>43</td>
<td>34</td>
<td>28</td>
</tr>
<tr>
<td>22</td>
<td>44</td>
<td>35</td>
<td>29</td>
</tr>
<tr>
<td>23</td>
<td>46</td>
<td>37</td>
<td>30</td>
</tr>
<tr>
<td>24</td>
<td>49</td>
<td>39</td>
<td>32</td>
</tr>
<tr>
<td>25</td>
<td>51</td>
<td>41</td>
<td>33</td>
</tr>
</tbody>
</table>

(*) Distance from the cross-tree to the deck.

If a mast has two yards, the diameters shall be increased by at least 10 %.

If a mast has more than two yards, the diameters shall be increased by at least 15 %.

In the case of masts fitted through the deck, the diameter at the mast foot shall be at least 75 % of the diameter of the mast at deck level.

2. Mast fittings, mast bands, cross-trees and mast caps shall be sufficiently strongly dimensioned and attached.
Article 15a.08
Special provisions for topmasts

1. Wooden topmasts shall meet the following minimum requirements:

<table>
<thead>
<tr>
<th>Length (*) (m)</th>
<th>Diameter at the foot (cm)</th>
<th>Half-length diameter (cm)</th>
<th>Diameter at fitting (**) (cm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>8</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>5</td>
<td>10</td>
<td>9</td>
<td>7</td>
</tr>
<tr>
<td>6</td>
<td>13</td>
<td>11</td>
<td>8</td>
</tr>
<tr>
<td>7</td>
<td>14</td>
<td>13</td>
<td>10</td>
</tr>
<tr>
<td>8</td>
<td>16</td>
<td>15</td>
<td>11</td>
</tr>
<tr>
<td>9</td>
<td>18</td>
<td>16</td>
<td>13</td>
</tr>
<tr>
<td>10</td>
<td>20</td>
<td>18</td>
<td>15</td>
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<tr>
<td>11</td>
<td>23</td>
<td>20</td>
<td>16</td>
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<tr>
<td>12</td>
<td>25</td>
<td>22</td>
<td>17</td>
</tr>
<tr>
<td>13</td>
<td>26</td>
<td>24</td>
<td>18</td>
</tr>
<tr>
<td>14</td>
<td>28</td>
<td>25</td>
<td>20</td>
</tr>
<tr>
<td>15</td>
<td>31</td>
<td>27</td>
<td>21</td>
</tr>
</tbody>
</table>

(*) Total length of the topmast, without the masthead.
(**) Diameter of the topmast at the level of the masthead fitting.

If square sails are attached to a topmast, the dimensions set out in the table shall be increased by 10%.

2. The overlap between the topmast and the mast shall be at least 10 times the required foot diameter of the topmast.

Article 15a.09
Special provisions for bowsprits

1. Wooden bowsprits shall meet the following minimum requirements:

<table>
<thead>
<tr>
<th>Length (*) (m)</th>
<th>Diameter at stem (cm)</th>
<th>Half-length diameter (cm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>14,5</td>
<td>12,5</td>
</tr>
<tr>
<td>5</td>
<td>18</td>
<td>16</td>
</tr>
<tr>
<td>6</td>
<td>22</td>
<td>19</td>
</tr>
<tr>
<td>7</td>
<td>25</td>
<td>23</td>
</tr>
<tr>
<td>8</td>
<td>29</td>
<td>25</td>
</tr>
<tr>
<td>9</td>
<td>32</td>
<td>29</td>
</tr>
<tr>
<td>10</td>
<td>36</td>
<td>32</td>
</tr>
<tr>
<td>11</td>
<td>39</td>
<td>35</td>
</tr>
<tr>
<td>12</td>
<td>43</td>
<td>39</td>
</tr>
</tbody>
</table>

(*) Total length of the bowsprit.

2. The inboard section of the bowsprit shall have a length of at least four times the diameter of the bowsprit at the stem.

3. The diameter of the bowsprit at its head shall be at least 60% of the diameter of the bowsprit at the stem.
Article 15a.10

Special provisions for jib-booms

1. Wooden jib-booms shall meet the following minimum requirements:

<table>
<thead>
<tr>
<th>Length (*) (m)</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diameter at the stem (cm)</td>
<td>7</td>
<td>10</td>
<td>14</td>
<td>17</td>
<td>21</td>
<td>24</td>
<td>28</td>
<td>31</td>
<td>35</td>
</tr>
</tbody>
</table>

(*) Total length of the jib-boom.

2. The diameter of the jib-boom at its head shall be at least 60 % of the diameter at the stem.

Article 15a.11

Special provisions for main booms

1. Wooden main booms shall meet the following minimum requirements:

<table>
<thead>
<tr>
<th>Length (*) (m)</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
<th>16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diameter (cm)</td>
<td>14</td>
<td>15</td>
<td>16</td>
<td>17</td>
<td>18</td>
<td>20</td>
<td>21</td>
<td>23</td>
<td>24</td>
<td>25</td>
<td>26</td>
<td>27</td>
</tr>
</tbody>
</table>

(*) Total length of the main boom.

2. The diameter at the swivel pin shall be at least 72 % of the diameter specified in the table.

3. The diameter at the clew shall be at least 85 % of the diameter specified in the table.

4. Measured from the mast, the greatest diameter shall be at two thirds of the length.

5. Where:

(a) there is an angle of less than 65° between the main boom and the after leech and the main sheet is attached to the end of the boom, or

(b) the attachment point of the sheet is not abreast of the clew,

the inspection body may, according to Article 15a.05, section 2, require a greater diameter.

6. For sail areas of less than 50 m², the inspection body may authorise reductions in the dimensions set out in the table.

Article 15a.12

Special provisions for gaffs

1. Wooden gaffs shall meet the following minimum requirements:

<table>
<thead>
<tr>
<th>Length (*) (m)</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diameter (cm)</td>
<td>10</td>
<td>12</td>
<td>14</td>
<td>16</td>
<td>17</td>
<td>18</td>
<td>20</td>
</tr>
</tbody>
</table>

(*) Total length of the gaff.
2. The unsupported length of the gaff shall be not more than 75%.

3. The breaking strength of the crowfoot shall be at least equal to 1.2 times the breaking strength of the peak halyard.

4. The top angle of the crowfoot shall be a maximum of 60°.

5. If, by way of derogation from section 4, the top angle of the crowfoot is greater than 60°, the tensile strength shall be adjusted to accommodate the forces that will then occur.

6. For sail areas of less than 50 m², the inspection body may authorise reductions in the dimensions set out in the table.

Article 15a.13

General provisions for standing and running rigging

1. Standing and running rigging shall comply with the strength requirements set out in Articles 15a.14 and 15a.15.

2. Wire cable connections may take the form of:

   (a) splicings,
   (b) compression sleeves, or
   (c) sealing sleeves.

   Splicings shall be marled and ends shall be whipped.

3. Eye splices shall be provided with thimbles.

4. Ropes shall be routed in such a way as not to obstruct entrances and companionways.

Article 15a.14

Special provisions for standing rigging

1. Forestays and shrouds shall meet the following minimum requirements:

<table>
<thead>
<tr>
<th>Mast length (*) (m)</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
<th>16</th>
<th>17</th>
<th>18</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tensile strength of the forestay (kN)</td>
<td>160</td>
<td>172</td>
<td>185</td>
<td>200</td>
<td>220</td>
<td>244</td>
<td>269</td>
<td>294</td>
</tr>
<tr>
<td>Tensile strength of the shrouds (kN)</td>
<td>355</td>
<td>415</td>
<td>450</td>
<td>485</td>
<td>525</td>
<td>540</td>
<td>630</td>
<td>720</td>
</tr>
<tr>
<td>Number of shroud cables and ropes per side</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>

(*) Distance from the top or cross-tree to the deck.
2. Backstays, topmasts, flying jib-stays, jib-booms and bowsprit shrouds shall meet the following minimum requirements:

<table>
<thead>
<tr>
<th>Mast length (*) (m)</th>
<th>&lt; 13</th>
<th>13-18</th>
<th>&gt; 18</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tensile strength of the backstay (kN)</td>
<td>89</td>
<td>119</td>
<td>159</td>
</tr>
<tr>
<td>Tensile strength of the topmast (kN)</td>
<td>89</td>
<td>119</td>
<td>159</td>
</tr>
<tr>
<td>Length of topmast (m)</td>
<td>&lt; 6</td>
<td>6-8</td>
<td>&gt; 8</td>
</tr>
<tr>
<td>Tensile strength of the flying jib-stay (kN)</td>
<td>58</td>
<td>89</td>
<td>119</td>
</tr>
<tr>
<td>Length of jib-boom (m)</td>
<td>&lt; 5</td>
<td>5.7</td>
<td>&gt; 7</td>
</tr>
<tr>
<td>Tensile strength of the bowsprit shrouds (kN)</td>
<td>58</td>
<td>89</td>
<td>119</td>
</tr>
</tbody>
</table>

(*) Distance from the top or cross-tree to the deck.

3. The preferred rope design shall be based on Rope Construction Method 6 × 7 FE in the strength class 1 550 N/mm². Alternatively, at the same strength class, Construction Method 6 × 36 SE or 6 × 19 FE may be used. Because of the higher elasticity of Construction Method 6 × 19, the tensile strengths given in the table shall be increased by 10 %. Use of a different rope design shall be permitted provided it has comparable properties.

4. If rigid rigging is used, the tensile strengths shown in the table shall be increased by 30 %.

5. For rigging, only approved forks, round eyes and bolts may be used.

6. Bolts, forks, round eyes and turnbuckles shall be capable of being properly secured.

7. The tensile strength of the bobstay shall be at least 1.2 times the tensile strength of the respective jib-stay and flying jib-stay.

8. For vessels with less than 30 m³ water displacement, the inspection body may permit the reductions in tensile strengths shown in the table set out below:

<table>
<thead>
<tr>
<th>Water displacement divided by the number of masts (m³)</th>
<th>Reduction (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; 20 to 30</td>
<td>20</td>
</tr>
<tr>
<td>10 to 20</td>
<td>35</td>
</tr>
<tr>
<td>&lt; 10</td>
<td>60</td>
</tr>
</tbody>
</table>
1. For running rigging, fibre ropes or steel wire ropes shall be used. The minimum tensile strength and the diameter for running rigging shall, in relation to the sail area, meet the following minimum requirements:

<table>
<thead>
<tr>
<th>Type of running rigging</th>
<th>Rope material</th>
<th>Sail area (m²)</th>
<th>Minimum tensile strength (KN)</th>
<th>Diameter of rope (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staysail halyards</td>
<td>Steel wire</td>
<td>up to 35</td>
<td>20</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&gt; 35</td>
<td>38</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Fibre (polypropylene-PP)</td>
<td>Rope diameter of at least 14 mm and one rope sheave for every 25 m² or part thereof</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gaff sail halyards</td>
<td>Steel wire</td>
<td>up to 50</td>
<td>20</td>
<td>6</td>
</tr>
<tr>
<td>Top sail halyards</td>
<td></td>
<td>&gt; 50 to 80</td>
<td>30</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&gt; 80 to 120</td>
<td>60</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&gt; 120 to 160</td>
<td>80</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>Fibre (PP)</td>
<td>Rope diameter of at least 18 mm and one rope sheave for every 30 m² or part thereof</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Staysail sheets</td>
<td>Fibre (PP)</td>
<td>up to 40</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>&gt; 40</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>For sail areas of more than 30 m², the sheet shall take the form of a tackle or shall be capable of being operated by a winch</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gaff-/Top-sail sheets</td>
<td>Steel wire</td>
<td>&lt; 100</td>
<td>60</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>100 to 150</td>
<td>85</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&gt; 150</td>
<td>116</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>Fibre (PP)</td>
<td>Rope diameter of at least 18 mm and at least three rope sheaves. Where the sail area is greater than 60 m², one rope sheave per 20 m²</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. Running rigging forming part of the staying shall have a tensile strength which corresponds to that of the respective stay or shrouds.

3. If materials other than those stated in section 1 are used, the strength values given in the table in section 1 shall be complied with.

Fibre ropes of polyethylene shall not be used.
Article 15a.16
Fittings and parts of the rigging

1. If steel wire ropes or fibre ropes are used, the diameters of the rope sheaves (measured from centre of rope to centre of rope) shall meet the following minimum requirements:

<table>
<thead>
<tr>
<th>Steel wire (mm)</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fibre (mm)</td>
<td>16</td>
<td>18</td>
<td>20</td>
<td>22</td>
<td>24</td>
<td>26</td>
<td>28</td>
</tr>
<tr>
<td>Rope sheave (mm)</td>
<td>100</td>
<td>110</td>
<td>120</td>
<td>130</td>
<td>145</td>
<td>155</td>
<td>165</td>
</tr>
</tbody>
</table>

2. By way of derogation from section 1, the diameter of the rope sheaves may be equal to six times the diameter of the steel wire, provided that the steel wire does not constantly run over sheaves.

3. The tensile strength of the fittings (e.g. forks, round eyes, turnbuckles, eye-plates, bolts, rings and shackles) shall be compatible with the tensile strength of the standing or running rigging that is attached to them.

4. The fastenings of stay and shroud futtocks shall be designed to take up the forces they are subjected to.

5. Only one shackle, along with the relevant stay or shroud, may be attached to each eye.

6. Blocks of halyards and topping lifts shall be securely fastened to the mast, and the revolving crowfeet used for this purpose shall be in good condition.

7. Attachments of eye-bolts, cleats, belaying pins and fife-rails shall be designed to cope with the forces they are subjected to.

Article 15a.17
Sails

1. It shall be ensured that sails can be taken in simply, swiftly and safely.

2. The sail area shall be appropriate for the type of vessel and the water displacement.

Article 15a.18
Equipment

1. Vessels that are fitted with a jib-boom or a bowsprit shall have a jib-net and an adequate number of appropriate holding and tensioning devices.

2. The equipment according to section 1 may be dispensed with if the jib-boom or bowsprit is equipped with a hand becket and a foot rope adequately dimensioned to allow for the attachment of a safety harness to be carried on board.

3. For work on the rigging, a boatswain’s chair shall be provided.

Article 15a.19
Testing

1. The rigging shall be tested by the inspection body every 2.5 years. As a minimum, the test shall cover the following:
   (a) the sails, including leeches, clews and reef eyes;
   (b) the state of the masts and spars;
   (c) the state of the standing and running rigging together with cable wire connections;
   (d) facilities for taking in the sail swiftly and safely;
(e) the secure fastening of blocks of halyards and topping lifts;
(f) the fastening of mast trunks and other fastening points for standing and running rigging that are attached to the vessel;
(g) the winches for operating the sails;
(h) other facilities fitted for the purposes of sailing, such as lee-boards and the fittings for operating them;
(i) the measures taken to prevent the chafing of the spars, the running and standing rigging and the sails;
(j) the equipment according to Article 15a.18.

2. That part of the wooden mast passing through the deck and located below the deck shall be re-examined at intervals to be determined by the inspection body, but at the very least on the occasion of each periodical inspection according to Article 2.09. The mast shall be extracted for this purpose.

3. A certificate of the last inspection carried out in accordance with section 1 and issued, dated and signed by the inspection body, shall be carried on board.

CHAPTER 16
SPECIFIC REQUIREMENTS APPLICABLE TO CRAFT INTENDED TO FORM PART OF A PUSHED OR TOWED CONVOY OR OF A SIDE-BY-SIDE FORMATION

Article 16.01
Craft suitable for pushing

1. Craft which are to be used for pushing purposes shall incorporate a suitable pushing device. They shall be designed and equipped in such a way as to:
   (a) enable crews easily and safely to cross over to the pushed craft with the coupling devices connected;
   (b) enable them to occupy a fixed position in relation to the coupled craft;
   (c) prevent relative movement between the craft themselves.

2. If the craft are joined together with cables the pusher craft shall be equipped with at least two special winches or equivalent coupling devices for tensioning the cables.

3. The coupling devices shall enable a rigid assembly to be formed with the pushed craft.

   Where convoys consist of a pusher craft and a single pushed craft the coupling devices may permit controlled articulation. The necessary drive units shall easily absorb the forces to be transmitted and shall be capable of being controlled easily and safely. Articles 6.02 to 6.04 shall apply mutatis mutandis to such drive units.

4. The collision bulkhead referred to in Article 3.03, section 1(a), can be dispensed with for pushers.

Article 16.02
Craft suitable for being pushed

1. The following shall not apply to lighters without steering system, accommodation, engine or boiler rooms:
   (a) Chapters 5 to 7 and 12;
   (b) Article 8.08, sections 2 to 8, Article 10.02 and Article 10.05, section 1.

   If steering systems, accommodation, engine or boiler rooms are present the relevant requirements of this Annex shall apply to them.
2. In addition, ship-borne lighters whose length $L$ does not exceed 40 m shall meet the following requirements:

   (a) Collision bulkheads referred to in Article 3.03, section 1, can be dispensed with if their front faces are able to bear a load at least 2.5 times that set for the collision bulkheads on inland waterway vessels with the same draught and built in accordance with the requirements of an approved classification society.

   (b) By way of derogation from Article 8.08, section 1, compartments of the double bottom to which access is difficult do not have to be drainable unless their volume exceeds 5 % of the water displacement of the ship-borne lighter at the maximum authorised loaded draught.

3. Craft intended for being pushed shall be fitted with coupling devices ensuring a safe connection to other craft.

   Article 16.03

   Craft suitable for propelling side-by-side formations

   Craft intended to propel side-by-side formations shall be equipped with bollards or equivalent devices which, as a result of their number and arrangement, enable the formation to be coupled in a safe manner.

   Article 16.04

   Craft suitable for being propelled in convoys

   Craft intended to be propelled in convoys shall be equipped with coupling devices, bollards or equivalent devices which, as a result of their number and arrangement, ensure a safe connection to other craft in the convoy.

   Article 16.05

   Craft suitable for towing

   1. Craft intended for towing shall meet the following requirements:

      (a) The towing devices shall be arranged in such a way that their use does not compromise the safety of the craft, crew or cargo.

      (b) Tugging and towing craft shall be fitted with a tow hook which shall be capable of being released safely from the wheelhouse; this shall not apply if the design or other fittings prevent capsizing.

      (c) Towing devices shall consist of winches or a tow hook. The towing devices shall be located ahead of the propeller plane. This requirement shall not apply to craft that are steered by their propulsion units such as rudder propellers or cycloidal propellers.

      (d) By way of derogation from the requirements of (c), for craft solely giving — in accordance with applicable navigational authority regulations of the Member States — towing assistance to motorised craft, a towing device such as a bollard or an equivalent device shall suffice. Point (b) shall apply mutatis mutandis.

      (e) Where the towing cables could snag on the stern of the vessel, deflector hoops with cable catchers shall be provided.

   2. Craft of length $L$ exceeding 86 m shall not be authorised for towing downstream.

   Article 16.06

   Navigation tests on convoys

   1. In order to authorise a pusher or motor vessel to propel a rigid convoy, and to enter this on the Community certificate, the inspection body shall decide which formations are to be presented and shall conduct the navigation tests referred to in Article 5.02 with the convoy in the formation(s) applied for, which the inspection body regards to be the least favourable one(s). The requirements set out in Articles 5.02 to 5.10 shall be met by this convoy.

   The inspection body shall check that the rigid connection of all craft in the convoy is maintained during the manoeuvres required by Chapter 5.
2. If during the navigation tests referred to in section 1 there are specific installations on board the craft that are being either pushed or propelled side-by-side, such as the steering system, propulsion units or manoeuvring equipment, or articulated couplings in order to meet the requirements set out in Articles 5.02 to 5.10, the following shall be entered on the Community certificate for the craft propelling the convoy: formation, position, name and official number of those craft which are fitted with the specific installations used.

Article 16.07

Entries on the Community certificate

1. If a craft is intended to propel a convoy, or be propelled in a convoy, its compliance with the relevant requirements as set out in Articles 16.01 to 16.06 shall be entered on the Community certificate.

2. The following information shall be entered on the Community certificate for the propelling craft:
   (a) the convoys and formations that have been accepted;
   (b) the types of coupling;
   (c) the maximum coupling forces determined, and
   (d) where appropriate, the minimum tensile strength of the coupling cables for the longitudinal connection and also the number of cable windings.

CHAPTER 17

SPECIFIC REQUIREMENTS APPLICABLE TO FLOATING EQUIPMENT

Article 17.01

General

For construction and equipment of floating equipment Chapters 3, 7 to 14 and 16 shall apply. Floating equipment with its own means of propulsion shall also meet the requirements of Chapters 5 and 6. Propulsion units permitting only short-haul operation shall not constitute own means of propulsion.

Article 17.02

Derogations

1. The inspection body may grant derogations from the following requirements:
   (a) Article 3.03, sections 1 and 2, shall apply mutatis mutandis;
   (b) Article 7.02 shall apply mutatis mutandis;
   (c) the maximum sound pressure levels prescribed by Article 12.02, section 5, second sentence, may be exceeded while the floating equipment’s working gear is operating, provided that, during service, nobody sleeps on board at night;
   (d) derogations may be granted from other requirements concerning structure, working gear or equipment provided that equal safety is ensured in each case.

2. The inspection body may dispense with the application of the following requirements:
   (a) Article 10.01, section 1, shall not apply if during operation of floating equipment that equipment can be securely anchored by means of a working anchor or piles. However, floating equipment with its own means of propulsion shall have at least one anchor meeting the requirements in Article 10.01, section 1, where an empirical coefficient $k$ is taken to be equal to 45, and the smallest height is taken for $T$.
   (b) Article 12.02, section 1, second part of sentence, if the accommodation can be adequately lit by means of electricity.

3. In addition, the following shall apply:
   (a) for Article 8.08, section 2, second sentence, the bilge pump shall be motor driven;
   (b) for Article 8.10, section 3, the noise may exceed 65 dB(A) at a lateral distance of 25 m from the ship’s side of any stationary floating equipment while its working gear is operating.
(c) for Article 10.03, section 1, at least one further portable extinguisher is required if working gear not permanently attached to the craft is placed on the deck;

(d) for Article 14.02, section 2, in addition to the liquefied-gas equipment for domestic use, there may also be other liquefied-gas facilities. Those facilities and their accessories shall meet the requirements of one of the Member States.

**Article 17.03**

*Additional requirements*

1. Floating equipment on which persons are present during operation shall be fitted with a general alarm system. The alarm signal shall be clearly distinguishable from other signals and, within accommodation and at all work stations, shall produce a sound pressure level that is at least 5 dB(A) higher than the maximum local sound pressure level. It shall be possible to actuate the alarm system from the wheelhouse and the main work stations.

2. Working equipment shall have sufficient strength to withstand the loads it is subjected to and shall meet the requirements of Directive 98/37/EC of the European Parliament and of the Council of 22 June 1998 on the approximation of the laws of the Member States relating to machinery (1).

3. The stability (resistance to overbalancing) and strength of working equipment, and where appropriate its attachments, shall be such that it may withstand the forces resulting from the expected heel, trim and movement of the floating equipment.

4. If loads are lifted by means of hoists the maximum authorised load deriving from stability and strength shall be prominently displayed on panels on deck and at the control stations. If the lifting capacity can be increased by connecting additional floats the values authorised both with and without these additional floats shall be clearly stated.

**Article 17.04**

*Residual safety clearance*

1. For the purposes of this Chapter and by way of derogation from Article 1.01 of this Annex, residual safety clearance means the shortest vertical distance between surface of the water and the lowest part of the floating equipment beyond which it is no longer watertight, taking into account trim and heel resulting from the moments referred to in Article 17.07, section 4.

2. The residual safety clearance is sufficient according to Article 17.07, section 1, for any spray-proof and weathertight aperture if it is at least 300 mm.

3. At an aperture that is not spray-proof and weathertight the residual safety clearance shall be at least 400 mm.

**Article 17.05**

*Residual freeboard*

1. For the purposes of this Chapter and by way of derogation from Article 1.01 of this Annex, residual freeboard means the smallest vertical distance between the surface of the water and the upper surface of the deck at its edge taking into account trim and heel resulting from the moments referred to in Article 17.07, section 4.

2. The residual freeboard is sufficient according to Article 17.07, section 1, if it is at least 300 mm.

3. The residual freeboard may be reduced if it is proven that the requirements of Article 17.08 have been met.

4. Where the shape of a float differs perceptibly from that of a pontoon, as in the case of a cylindrical float, or where the cross-section of a float has more than four sides, the inspection body may require or authorise a residual freeboard that differs from section 2. This shall also apply to floating equipment consisting of several floats.

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Article 17.06

Heeling test

1. Confirmation of stability according to Articles 17.07 and 17.08 shall be based on a heeling test that has been carried out in a proper manner.

2. If during a heeling test it is not possible to achieve adequate heeling angles, or if the heeling test causes unreasonable technical difficulties, this may be replaced by a calculation of the craft’s centre of gravity and weight. The result of the weight calculation shall be checked by measuring the draught, and the difference shall not exceed ± 5%.

Article 17.07

Confirmation of stability

1. It shall be confirmed that, when taking into account the loads applied during operation of the working gear and whilst under way, the residual freeboard and the residual safety clearance are sufficient. For that purpose the sum of the trim and heeling angles shall not exceed 10° and the bottom of the float shall not emerge.

2. Confirmation of stability shall include the following data and documents:
   (a) scale drawings of floats and working gear and the detailed data relating to these that are needed to confirm stability, such as content of the tanks, openings providing access to the inside of the vessel;
   (b) hydrostatic data or curves;
   (c) righting lever curves for static-stability to the extent required in accordance with section 5 below or Article 17.08;
   (d) description of the operating conditions together with the corresponding data concerning weight and centre of gravity, including its unladen state and the equipment situation as regards transport;
   (e) calculation of the heeling, trimming and righting moments, with a specification of the trim and heeling angles and the corresponding residual freeboard and residual safety clearances;
   (f) a compilation of the results of the calculation with a specification of the limits for operation and the maximum loads.

3. Confirmation of stability shall be based on at least the following load assumptions:
   (a) specific mass of the dredging products for dredgers:
      — sands and gravels: 1.5 t/m³
      — very wet sands: 2.0 t/m³
      — soil, on average: 1.8 t/m³
      — mixture of sand and water in the ducts: 1.3 t/m³;
   (b) for clamshell dredgers, the values given under point (a) shall be increased by 15 %;
   (c) for hydraulic dredgers the maximum lifting power shall be considered.

4. Confirmation of stability shall take account of the moments resulting from:
   (a) load;
   (b) asymmetric structure;
   (c) wind pressure;
   (d) turning whilst under way of self-propelled floating equipment;
   (e) cross current, if necessary;
   (f) ballast and provisions;
   (g) deck loads and, where appropriate, cargo;
(h) free surfaces of liquids;
(i) inertia forces;
(j) other mechanical equipment.

The moments which may act simultaneously shall be added up.

4.2 The moment caused by the wind pressure shall be calculated in accordance with the following formula:

\[ M_w = c \cdot p_w \cdot A \left( l_w + \frac{T}{2} \right) \text{[kNm]} \]

where:
\[ c = \text{shape-dependent coefficient of resistance} \]
For frameworks \( c = 1.2 \) and for solid-section beams \( c = 1.6 \). Both values take account of gusts of wind.

The whole area encompassed by the contour line of the framework shall be taken to be the surface area exposed to the wind.

\[ p_w = \text{specific wind pressure; this shall uniformly be taken to be 0.25 kN/m}^2; \]
\[ A = \text{lateral plane above the plane of maximum draught in m}^2; \]
\[ l_w = \text{distance from the centre of area of the lateral plane A from the plane of maximum draught, in m}. \]

4.3 In order to determine the moments due to turning whilst under way according to section 4.1(d) for self-propelled floating equipment, the formula set out in Article 15.03, section 6 shall be used.

4.4 The moment resulting from cross current according to section 4.1(e) shall be taken into account only for floating equipment which is anchored or moored across the current while operating.

4.5 The least favourable extent of tank filling from the point of view of stability shall be determined and the corresponding moment introduced into the calculation when calculating the moments resulting from liquid ballast and liquid provisions according to section 4.1(f).

4.6 The moment resulting from inertia forces according to section 4.1(i) shall be given due consideration if the movements of the load and the working gear are likely to affect stability.

5. The righting moments for floats with vertical side walls may be calculated using the following formula

\[ M_z = 10 \cdot D \cdot \frac{M_G}{M_G} \cdot \sin \varphi \text{[kNm]} \]

where:
\[ M_G = \text{metacentric height, in m;} \]
\[ \varphi = \text{heeling angle in degrees.} \]

That formula shall apply up to heeling angles of 10° or up to a heeling angle corresponding to immersion of the edge of the deck or emergence of the edge of the bottom; the smallest angle shall be decisive. The formula may be applied to slanting side walls up to heeling angles of 5°; the limit conditions set out in sections 3 and 4 shall also apply.

If the particular shape of the float(s) does not permit such simplification the righting lever curves according to section 2(c) shall be required.

Article 17.08

**Confirmation of stability in the case of reduced residual freeboard**

If a reduced residual freeboard according to Article 17.05, section 3, is used, it shall be proven for all operating conditions that:

(a) after correction for the free surfaces of liquids, the metacentric height is not less than 0.15 m;
(b) for heeling angles between 0 and 30°, there is a righting lever of at least
\[ h = 0.30 - 0.28 \cdot \phi_n \, [\text{m}] \]
\( \phi_n \) being the heeling angle from which the righting lever curve displays negative values (range of stability); it shall not be less than 20° or 0.35 rad and shall not be introduced into the formula for more than 30° or 0.52 rad, taking the radian (rad) (1° = 0.01745 rad) for the unit of \( \phi_n \).

(c) the sum of the trim and heeling angles does not exceed 10°;

(d) a residual safety clearance meeting the requirements in Article 17.04 remains;

(e) a residual freeboard of at least 0.05 m remains;

(f) for heeling angles between 0 and 30°, a residual righting lever of at least
\[ h = 0.20 - 0.23 \cdot \phi_n \, [\text{m}] \]
remains, where \( \phi_n \) is the heeling angle from which the righting lever curve displays negative values; it shall not be introduced into the formula for more than 30° or 0.52 rad.

Residual righting lever means the maximum difference existing between 0° and 30° of heel between the righting lever curve and the heeling lever curve. If an opening towards the inside of the vessel is reached by the water at a heeling angle less than that corresponding to the maximum difference between the lever curves, the lever corresponding to that heeling angle shall be taken into account.

**Article 17.09**

*Draught marks and draught scales*

Draught marks and draught scales shall be affixed in accordance with Articles 4.04 and 4.06.

**Article 17.10**

*Floating equipment without confirmation of stability*

1. The application of Articles 17.04 to 17.08 may be dispensed with for floating equipment:
   (a) whose working gear can in no way alter their heeling or trim, and
   (b) where any displacement of the centre of gravity can be reasonably excluded.

2. However,
   (a) at maximum load the safety clearance shall be at least 300 mm and the freeboard at least 150 mm;
   (b) for apertures which cannot be closed spray-proof and weathertight the safety clearance shall be at least 500 mm.

**CHAPTER 18**

*SPECIFIC REQUIREMENTS APPLICABLE TO WORKSITE CRAFT*

**Article 18.01**

*Operating conditions*

Worksite craft designated as such in the Community certificate set out in Part I or II of Annex V may navigate outside worksites only when unladen. That restriction shall be entered on the Community certificate.

For this purpose worksite craft shall have a certificate issued by the competent authority indicating the duration of works and the geographical boundaries of the worksite in which the craft may be operated.
Article 18.02
Application of Part II

Unless otherwise specified in this Chapter the construction and equipment of worksite craft shall be in line with Chapters 3 to 14 of Part II.

Article 18.03
Derogations

1. (a) Article 3.03, section 1, shall apply *mutatis mutandis*;
(b) Chapters 5 and 6 shall apply *mutatis mutandis* where the craft is self-propelled;
(c) Article 10.02, section 2(a) and (b), shall apply *mutatis mutandis*;
(d) the inspection body may grant exceptions to the other requirements concerning construction, arrangement and equipment provided that equivalent safety is proven in every case.

2. The inspection body may dispense with the following provisions:
(a) Article 8.08, sections 2 to 8, if no crew is required;
(b) Article 10.01, sections 1 and 3, if the worksite craft can be securely anchored by means of working anchors or piles. However, self-propelled worksite craft shall be equipped with at least one anchor meeting the requirements set out in Article 10.01, section 1, where coefficient k is taken to be 45 and T is taken to be the lowest height;
(c) Article 10.02, section 1(c), if the worksite craft is not self-propelled.

Article 18.04
Safety clearance and freeboard

1. If a worksite craft is used as a reclamation barge or a hopper barge the safety clearance outside the hold area shall be at least 300 mm and the freeboard at least 150 mm. The inspection body may permit a smaller freeboard if proof by calculation is provided that stability is sufficient for a cargo having a specific mass of 1.5 t/m³ and that no side of the deck reaches the water. The effect of liquefied cargo shall be taken into account.

2. The provisions of Articles 4.01 and 4.02 shall apply *mutatis mutandis* to worksite craft not covered by section 1. The inspection body may determine values departing from the above for safety clearance and freeboard.

Article 18.05
Ship’s boats

Worksite craft shall not be required to have a ship’s boat where:
(a) they are not self-propelled or
(b) a ship’s boat is available elsewhere on the worksite.
That derogation shall be entered on the Community certificate.

CHAPTER 19

SPECIFIC REQUIREMENTS APPLICABLE TO HISTORIC VESSELS

(Left void)
CHAPTER 19a

SPECIFIC REQUIREMENTS APPLICABLE TO CANAL BARGES

(Left void)

CHAPTER 19b

SPECIFIC REQUIREMENTS APPLICABLE TO VESSELS NAVIGATING ON ZONE 4 WATERWAYS

Article 19b.01

Application of Chapter 4

1. By way of derogation from Article 4.01, sections 1 and 2, the safety clearance of doors and openings other than hold hatches for vessels navigating on Zone 4 waterways is reduced as follows:
   (a) for openings which can be closed spray-proof and weathertight, to 150 mm;
   (b) for openings which cannot be closed spray-proof and weathertight, to 200 mm.

2. By way of derogation from Article 4.02, the minimum freeboard of vessels navigating on Zone 4 waterways is 0 mm, if the safety clearance according to section 1 is respected.

CHAPTER 20

SPECIFIC REQUIREMENTS APPLICABLE TO SEA-GOING VESSELS

(Left void)

CHAPTER 21

SPECIFIC REQUIREMENTS APPLICABLE TO RECREATIONAL CRAFT

Article 21.01

General

Only Articles 21.02 and 21.03 shall apply to the construction and equipment of recreational craft.

Article 21.02

Application of Part II

1. Recreational craft shall meet the following requirements:
   (a) from Chapter 3:
       Article 3.01, Article 3.02, sections 1(a) and 2, Article 3.03, sections 1(a) and 6, and Article 3.04, section 1;
   (b) Chapter 5;
   (c) from Chapter 6:
       Article 6.01, section 1, and Article 6.08;
   (d) from Chapter 7:
       Article 7.01, sections 1 and 2, Article 7.02, Article 7.03, sections 1 and 2, Article 7.04, section 1, Article 7.05, section 2, Article 7.13 if there is a wheelhouse designed for radar navigation by one person;
2. For recreational craft subject to Directive 94/25/EC of the European Parliament and of the Council of 16 June 1994 on the approximation of laws, regulations and administrative provisions of the Member States relating to recreational craft (1), first inspection and periodical inspections only extend to:

(a) Article 6.08, if there is a rate-of-turn indicator;
(b) Article 7.01, section 2, Article 7.02, Article 7.03, section 1, and Article 7.13, if there is a wheelhouse designed for radar navigation by one person;
(c) Article 8.01, section 2, Article 8.02, section 1, Article 8.03, section 3, Article 8.05, section 5, Article 8.08, section 2, and Article 8.10;
(d) Article 10.01, sections 2, 3, 6 and 14, Article 10.02, sections 1(b) and (c), 2(a) and (e) to (h), Article 10.03, sections 1(b) and (d) and 2 to 6, and Article 10.07;
(e) Chapter 13;
(f) from Chapter 14:
   (aa) Article 14.12;
   (bb) Article 14.13; the acceptance test after putting into service of the liquefied gas installation shall be carried out in accordance with the requirements of Directive 94/25/EC, and an acceptance report shall be submitted to the inspection body;
   (cc) Articles 14.14 and 14.15; the liquefied gas installation shall be in accordance with the requirements of Directive 94/25/EC;
   (dd) Chapter 14 entirely, if the liquefied gas installation is fitted after placing on the market of the recreational craft.

1. The provisions of this Chapter shall apply to vessels carrying containers where stability documents are required according to the applicable navigational authority regulations in force in the Member States.

Stability documents shall be checked, or submitted elsewhere for checking, and duly stamped by an inspection body.

2. Stability documents shall provide the boatmaster with comprehensible information on vessel stability for each loading condition.

Stability documents shall include at least the following:

(a) information on the permissible stability coefficients, the permissible KG - values or the permissible heights for the centre of gravity of the cargo;

(b) data concerning spaces that can be filled with ballast water;

(c) forms for checking stability;

(d) instructions for use or an example of a calculation for use by the boatmaster.

3. For vessels where it is optional whether containers are carried non-secured or secured, separate calculation methods shall be provided for confirmation of stability both for transport of non-secured and secured cargoes of containers.

4. A cargo of containers shall only be considered to be secured if each individual container is firmly attached to the hull of the vessel by means of container guides or securing equipment and its position cannot alter during the voyage.

**Article 22.02**

*Limit conditions and method of calculation for confirmation of stability for the transport of non-secured containers*

1. All methods of calculating vessel stability in the case of non-secured containers shall meet the following limit conditions:

   (a) Metacentric height $\overline{MG}$ shall be not less than 1.00 m.

   (b) Under the joint action of the centrifugal force resulting from the vessel's turning, wind pressure and the free surfaces of liquids the heeling angle shall not exceed 5° and the edge of the deck shall not be immersed.

   (c) The heeling lever resulting from the centrifugal force caused by the vessel's turning shall be determined in accordance with the following formula:

   $$h_{KZ} = c_{KZ} \cdot \frac{v^2}{LWL} \cdot \left( \frac{KG}{2} - \frac{T'}{2} \right) [m]$$

   where:

   \[ c_{KZ} \text{ parameter (} c_{KZ} = 0.04) [s^2/m]; \]

   \[ v \text{ the maximum speed of the vessel in relation to the water [m/s];} \]

   \[ KG \text{ height of centre of gravity of the laden vessel above its base [m];} \]

   \[ T' \text{ draught of the laden vessel [m].} \]

   (d) The heeling lever resulting from the wind pressure shall be determined in accordance with the following formula:

   $$h_{KW} = c_{KW} \cdot \frac{A'}{D} \cdot \left( l_w + \frac{T'}{2} \right) [m]$$
where:

- $c_{kW}$ parameter ($c_{kW} = 0.025$) [t/m²];
- $A'$ lateral plane above the respective plane of draught with the vessel laden [m²];
- $D'$ displacement of the laden vessel [t];
- $l_w$ height of the centre of gravity of the lateral plane $A'$ above the respective plane of draught [m];
- $T'$ draught of the laden vessel [m].

(e) The heeling lever resulting from the free surfaces of rainwater and residual water within the hold or the double bottom shall be determined in accordance with the following formula:

$$ h_{kO} = \frac{c_{kO}}{D'} \cdot \sum (b \cdot 1 \cdot (b - 0.55 \sqrt{b})) \ [m] $$

where:

- $c_{kO}$ parameter ($c_{kO} = 0.015$) [t/m²]
- $b$ width of hold or section of the hold in question [m] (*);
- $l$ length of hold or section of the hold in question [m] (*);
- $D'$ displacement of the laden vessel [t].

(f) Half of the fuel and fresh water supply shall be taken into account for each load condition.

2. The stability of a vessel carrying non-secured containers shall be considered to be sufficient if the effective $K_G$ does not exceed the $K_{Gzd}$ resulting from the following formulae. The $K_{Gzd}$ shall be calculated for various displacements covering the entire range of draughts.

(a) $K_{Gzd} = \frac{K_M + \frac{B_{wl}}{2F} \cdot Z \cdot T_m}{\frac{B_{wl}}{2F} \cdot Z + 1} \ [m]$

No value less than 11.5 (11.5 = 1/tan5°) shall be taken for $\frac{B_{wl}}{2F}$.

(b) $K_{Gzd} = K_M - 1.00 \ [m]$

The lowest value of $K_{Gzd}$ in accordance with formula (a) or (b) shall be decisive.

Within the formulae:

- $K_{Gzd}$ maximum permissible height of the laden vessel's centre of gravity above its base [m];
- $K_M$ height of the metacentre above the base [m] in accordance with the approximation formula in section 3;
- $F$ respective effective freeboard at 1/2 L [m];
- $Z$ parameter for the centrifugal force resulting from turning

$$ Z = \frac{(0.7 \cdot v)^2}{9.81 \cdot 1.25 \cdot l_{wl}} = 0.04 \cdot \frac{v^2}{l_{wl}} \ [-] $$

$v$ maximum speed of the vessel in relation to the water [m/s];

- $T_m$ respective average draught [m];
- $h_{KW}$ heeling lever resulting from lateral wind pressure according to section 1(d) [m];
- $h_{kO}$ sum of the heeling levers resulting from the free surfaces of liquids according to section 1(e) [m].

(*) The hold sections providing free surfaces that are exposed to water arise from the longitudinal and/or transverse water-tight compartmentalisation that forms independent sections.
3. Approximation formula for $KM$

Where no sheet of hydrostatic curves is available the value $KM$ for the calculation in accordance with section 2 and Article 22.03, section 2, may be determined by the following approximation formulae:

(a) for vessels in the shape of a pontoon

$$KM = \frac{B^2}{(12.5 - \frac{Lm}{W}) \cdot Tm} + \frac{Tm}{2} [m]$$

(b) for other vessels

$$KM = \frac{B^2}{(12.7 - 1.2 \cdot \frac{Lm}{W}) \cdot Tm} + \frac{Tm}{2} [m]$$

Article 22.03

Limit conditions and method of calculation for confirmation of stability for the transport of secured containers

1. All methods of calculating vessel stability in the case of secured containers shall meet the following limit conditions:

(a) Metacentric height $MG$ shall be not less than 0.50 m.

(b) No hull opening shall be immersed by the joint action of the centrifugal force resulting from the turning of the vessel, the wind pressure and the free surfaces of liquids.

(c) The heeling levers resulting from the centrifugal force due to the vessel’s turning, the wind pressure and the free surfaces of liquids shall be determined in accordance with the formulae referred to in Article 22.02, section 1(c) to (e).

(d) Half of the fuel and fresh water supply shall be taken into account for each load condition.

2. The stability of a vessel carrying secured containers shall be considered to be sufficient if the effective $KG$ does not exceed the $KG_{zul}$ resulting from the following formulae that has been calculated for various displacements covering the entire range of draughts.

(a) $KG_{zul} = KM - 0.50 [m]$  

$$KG_{zul} = \frac{1 - \frac{i}{2}}{1 - 1.5 \cdot \frac{F}{F}} + 0.75 \frac{B^2}{F} \left( \frac{Z \cdot Tm}{2} - h_{kro} - h_{w} \right) [m]$$

No value less than 6.6 shall be taken for $\frac{B^2}{F}$ and

no value less than 0 for $\frac{1 - \frac{i}{2}}{1 - 1.5 \cdot \frac{F}{F}}$.

(b) $KG_{zul} = KM - 0.50 [m]$

The lowest value for $KG_{zul}$ in accordance with formula (a) or (b) shall be decisive.

Within these formulae, apart from the terms defined previously:

1. transverse moment of inertia of water line area at $Tm$ [m$^4$] (for the approximation formula see section 3);

i. transverse moment of inertia of the water line area parallel to the base, at height $Tm + \frac{2}{3} F$ [m$^4$]

$\forall$ water displacement of the vessel at $Tm$ [m$^3$]:
\[ F' \text{ ideal freeboard } F' = H' - T_m \text{ [m]} \text{ or } F' = \frac{a \cdot BWL}{2 \cdot b} \text{ [m]}, \text{ the lowest value shall be decisive; } \]

\[ a \text{ the vertical distance between the lower edge of the opening that is first immersed in the event of heeling and the water line in the vessel's upright position [m]; } \]

\[ b \text{ distance from that same opening from the centre of the vessel [m]; } \]

\[ H' \text{ ideal side height } H' = H + \frac{q}{0.9 \cdot L \cdot BWL} \text{ [m]}; \]

\[ q \text{ sum of the volumes of the deckhouses, hatches, trunk decks and other superstructures up to a maximum height of 1.0 m above } H \text{ or up to the lowest aperture in the volume under consideration, the lowest value being decisive. Parts of volumes located within a range of 0.05 } L \text{ from the extremities of the vessel shall not be taken into account [m}^3]. \]

3. Approximation formula for \( I \)

Where there is no sheet of hydrostatic curves available the value for the transverse moment of inertia \( I \) of the water line area may be calculated by the following approximation formulae:

(a) for vessels in the shape of a pontoon

\[ I = \frac{B^2 \cdot T_m}{12.5 \cdot \frac{H}{T_m}} \text{ [m}^4]. \]

(b) for other vessels

\[ I = \frac{B'_{WV} \cdot q}{12.7 - 1.2 \cdot \frac{T_m}{H}} \cdot T_m \text{ [m}^4]. \]

Article 22.04

Procedure for assessing stability on board

The procedure for assessing stability may be determined by the documents referred to in Article 22.01, section 2.

CHAPTER 22a

SPECIFIC REQUIREMENTS APPLICABLE TO CRAFT LONGER THAN 110 M

Article 22a.01

Application of Part I

In addition to the requirements set out in Article 2.03, section 3, the inspection body which is subsequently to issue the Community certificate shall be informed by the owner or his representative before building of craft longer than 110 m, except sea-going ships, begins (building of a new vessel or extension of a vessel already in service). That inspection body shall conduct inspections during the building stage. It may dispense with inspections during the building stage if a certificate is produced before building begins to show that an approved classification society declares that it is to supervise that building.

Article 22a.02

Application of Part II

In addition to Part II, Articles 22a.03 to 22a.05 shall apply to craft that are longer than 110 m.
Article 22a.03

Strength

Sufficient hull strength in accordance with Article 3.02, section 1(a) (longitudinal, lateral and local strength) shall be verified by a certificate issued by an approved classification society.

Article 22a.04

Buoyancy and stability

1. Sections 2 to 9 shall apply to craft that are longer than 110 m, with the exception of passenger vessels.

2. The proof of sufficient stability, including stability after damage, shall be verified for the most unfavourable loading condition.

   The basic values for the stability calculation — the vessel's lightweight and the location of the centre of gravity — shall be determined:

   — either by means of a heeling experiment, or

   — by detailed mass and moment calculation, in which case the lightweight of the vessel shall be verified by checking the draught, with a tolerance limit of $\pm 5\%$ between the mass determined by calculation and the displacement determined by the draught readings.

3. The proof of buoyancy after damage shall be verified for the fully laden craft.

   For this purpose, calculated proof of sufficient stability shall be established for the critical intermediate stages of flooding and for the final stage of flooding. Negative values of stability in intermediate stages of flooding may be accepted by the competent authority if sufficient stability in subsequent intermediate stages is verified.

4. The following assumptions shall be taken into consideration for the damaged condition:

   (a) Extent of side damage:

      longitudinal extent: at least 0,10 L,

      transverse extent: 0,59 m,

      vertical extent: from the base line upwards without limit.

   (b) Extent of bottom damage:

      longitudinal extent: at least 0,10 L,

      transverse extent: 3,00 m,

      vertical extent: from the base 0,39 m upwards, the sump excepted.

   (c) Any bulkheads within the damaged area shall be assumed damaged, which means that the subdivision shall be chosen so that the vessel remains afloat after the flooding of two or more adjacent compartments in the longitudinal direction.

      For the main engine room only the one-compartment standard need be taken into account, i.e. the end bulkheads of the engine room shall be assumed as not damaged.

      For bottom damage, adjacent athwartship compartments shall also be assumed as flooded.
(d) Permeability

Permeability shall be assumed to be 95 %. By way of derogation from this assumption, the following permeability may be assumed:

- engine and operation rooms: 85 %
- double bottoms, fuel tanks, ballast tanks, etc. depending on whether, according to their function, they have to be assumed as full or empty for the vessel floating at the maximum permissible draught: 0 or 95 %.

If a calculation proves that the average permeability of any compartment is lower, the calculated value may be used.

(e) The lower edge of any non-watertight openings (e.g. doors, windows, access hatches) shall, at the final stage of flooding, be not less than 100 mm above the damaged waterline.

5. The stability after damage shall be sufficient if, on the basis of the assumptions in section 4:

(a) at the final stage of flooding a safety clearance of not less than 100 mm remains and the heeling angle of the craft does not exceed 5°; or
(b) calculations in accordance with the procedure for calculation of damaged stability specified in Part 9 of the ADNR produce a positive result.

6. When cross- or down-flooding openings are provided for reduction of asymmetrical flooding, the time for equalisation shall not exceed 15 minutes, if during the intermediate stages of flooding sufficient damaged stability has been verified.

7. If openings through which undamaged compartments may additionally become flooded are capable of being closed watertight, the closing appliances shall be marked according to their operating instructions.

8. The proof by calculation in accordance with sections 2 to 5 shall be considered to have been provided if damaged stability calculations in accordance with Part 9 of the ADNR, are produced with a positive result.

9. Where necessary in order to meet the requirements in sections 2 or 3, the plane of maximum draught shall be re-established.

Article 22a.05

Additional requirements

1. Craft longer than 110 m shall:

(a) be fitted with a multi-propeller propulsion system, with at least two independent engines of equal power and a bow thruster that is controlled from the wheelhouse and is also effective when the craft is in an unladen state; or

- have a single-propeller propulsion system and a bow thruster that is controlled from the wheelhouse with its own power supply and which is also effective when the craft is in an unladen state and makes it possible for the craft to proceed under its own power in the event of a breakdown of the main propulsion system;

(b) be fitted with a radar navigation system, together with a rate-of-turn indicator in accordance with Article 7.06, section 1;

(c) have a permanently-installed bilge pumping system in accordance with Article 8.08;

(d) meet the requirements of Article 23.09, section 1.1.

2. For craft, except passenger ships, with a length of more than 110 m, which in addition to section 1

(a) are capable of being separated, in the event of an accident, in the middle third of the vessel without the use of heavy salvage equipment while the separated parts of the vessel shall remain afloat after separation;

(b) are provided with a certificate that shall be carried on board and which is issued by an approved classification society regarding the buoyancy, trim position and stability of the separate parts of the vessel, indicating the degree of loading above which buoyancy of the two parts is no longer ensured;
(c) are built as double-hull vessels in accordance with the ADNR, where for motor vessels sections 9.1.0.91 to 9.1.0.95, and for tank vessels sections 9.3.2.11.7 and 9.3.2.13 to 9.3.2.15 of Part 9 of the ADNR shall apply;

(d) are fitted with a multi-screw propulsion system in accordance with section 1(a), first half sentence;

it shall be entered in item 52 of the Community certificate that they comply with all the requirements of points (a) to (d).

3. For passenger vessels with a length of more than 110 m which in addition to section 1

(a) are built or converted for their highest class under the supervision of an approved classification society, in which case compliance shall be confirmed by means of a certificate issued by the classification society while current class is not necessary;

(b) either

have a double bottom with a height of at least 600 mm and subdivision to ensure that, in the event of flooding of any two adjacent watertight compartments, the vessel does not immerse lower than the margin line and a residual safety clearance of 100 mm remains

or

have a double bottom with a height of at least 600 mm and a double hull with a distance of at least 800 mm between the side wall of the vessel and the longitudinal bulkhead;

(c) be fitted with a multi-screw propulsion system with at least two independent engines of equal power and a bow thruster system which can be operated from the wheelhouse and which operates longitudinally as well as transversely;

(d) allow the stern anchor to be operated directly from the wheelhouse;

it shall be entered in item 52 of the Community certificate that they comply with all the requirements of points (a) to (d).

Article 22a.06
Application of Part IV in the event of conversion

The inspection body may apply Chapter 24 to craft converted to a length of more than 110 m only on the basis of specific recommendations by the Committee.

CHAPTER 22b

SPECIFIC REQUIREMENTS APPLICABLE TO HIGH-SPEED VESSELS

Article 22b.01

General

1. High-speed vessels shall not be constructed as cabin vessels.

2. The following installations are prohibited on board high-speed vessels:

(a) appliances fitted with wick burners according to Article 13.02;

(b) vaporising oil burner stoves according to Articles 13.03 and 13.04;

(c) solid-fuel heating appliances according Article 13.07;

(d) liquefied gas installations according to Chapter 14.
Article 22b.02
Application of Part I

1. In addition to the provisions of Article 2.03, high-speed vessels shall be constructed and classified under the supervision and in accordance with the applicable rules of an approved classification society which has special rules for high-speed vessels. The class shall be maintained.

2. By way of derogation from Article 2.06, Community certificates issued in accordance with the provisions of this Chapter shall be valid for a maximum of five years.

Article 22b.03
Application of Part II

1. Notwithstanding section 2 and Article 22b.02, section 2, Chapters 3 to 15 shall apply to high-speed vessels, with the exception of the following provisions:
   (a) Article 3.04, section 6, second paragraph;
   (b) Article 8.08, section 2, second sentence;
   (c) Article 11.02, section 4, second and third sentences;
   (d) Article 12.02, section 4, second sentence;
   (e) Article 15.06, section 3(a), second sentence.

2. By way of derogation from Article 15.02, section 9, and Article 15.15, section 7, all doors in watertight bulkheads shall be capable of being remote controlled.

3. By way of derogation from Article 6.02, section 1, in case of failure or malfunctioning of the steering apparatus drive unit a second independent steering apparatus drive unit or a manually operated drive unit shall come into operation without time delay.

4. In addition to the requirements of Part II, high-speed vessels shall meet the requirements of Articles 22b.04 to 22b.12.

Article 22b.04
Seats and safety belts

Seats shall be available for the maximum number of passengers permitted on board. Seats shall be fitted with safety belts. Safety belts may be dispensed with where suitable impact protection is provided or where they are not required under Chapter 4, part 6, of the HSC Code 2000.

Article 22b.05
Freeboard

By way of derogation from Articles 4.02 and 4.03, the freeboard shall be at least 500 mm.

Article 22b.06
Buoyancy, stability and subdivision

For high-speed vessels, proper documentation shall be provided for:
   (a) buoyancy and stability characteristics adequate for safety where the craft is operated in the displacement mode, both when intact and when damaged;
   (b) stability characteristics and stabilising systems ensuring the safety of the craft when used in the dynamic buoyancy phase and the transition phase;
   (c) stability characteristics in the non-displacement and transitional modes adequate to transfer the craft safely to displacement mode in case of any system malfunction.
1. Arrangement

(a) By way of derogation from Article 7.01, section 1, wheelhouses shall be arranged in such a way that the helmsman and a second member of the crew may at all times perform their tasks while the vessel is under way.

(b) The steering position shall be arranged so as to accommodate workstations for the persons mentioned in (a). The instruments for navigation, manoeuvring, monitoring and communication and other important operating controls shall be sufficiently close together to allow a second member of the crew as well as the helmsman to obtain the necessary information and to operate the controls and installations as necessary while seated. The following requirements shall apply in all cases:

(aa) the steering position for the helmsman shall be arranged so as to allow radar navigation by one person

(bb) the second member of the crew shall have his own radar screen (slave) at his workstation and shall be able to intervene from his workstation to transmit information and control the propulsion of the vessel.

(c) The persons mentioned in (a) shall be able to operate the installations mentioned in (b) without any hindrance, including when safety belts are properly worn.

2. Unobstructed view

(a) By way of derogation from Article 7.02, section 2, the area of obstructed view forward of the bow for the helmsman in a seated position shall not be more than one vessel length irrespective of the amount of cargo.

(b) By way of derogation from Article 7.02, section 3, the total arc of blind sectors from right ahead to 22.5° abaft the beam on either side shall not exceed 20°. Each individual blind sector shall not exceed 5°. The clear sector between two blind sectors shall not be less than 10°.

3. Instruments

Instrument panels for operating and monitoring the installations mentioned in Article 22b.11 shall be in separate and clearly marked positions in the wheelhouse. This shall also apply, where appropriate, to controls for launching collective lifesaving equipment.

4. Lighting

Red light shall be used for areas or pieces of equipment which shall be lit during use.

5. Windows

Reflections shall be avoided. A means for avoiding dazzle by sunlight shall be provided.

6. Surface materials

The use of reflective surface materials in the wheelhouse shall be avoided.

Article 22b.08

Additional equipment

High-speed craft shall have the following equipment:

(a) a radar installation and rate-of-turn indicator according to Article 7.06, section 1,

(b) readily accessible individual lifesaving equipment conforming to European Standard EN 395:1998 for the maximum number of persons permitted on board.
Article 22b.09

Closed areas

1. General

Public spaces and accommodation and the equipment they contain shall be designed so that any person making proper use of those facilities will not suffer injury during a normal and emergency start or stop, or during manoeuvring in normal cruise and in failure or malfunction conditions.

2. Communication

(a) For the purpose of informing passengers of safety measures, all passenger vessels shall be fitted with acoustic and visual installations visible and audible to everyone on board.

(b) The installations described under (a) shall enable the boatmaster to give instructions to passengers.

(c) Every passenger shall have access to instructions for emergency situations close to their seat, including a plan of the vessel showing all exits, escape routes, emergency equipment, lifesaving equipment and instructions for the use of lifejackets.

Article 22b.10

Exits and escape routes

Escape and evacuation routes shall satisfy the following requirements:

(a) there shall be easy, safe and quick access from the steering position to spaces and accommodation accessible to the public;

(b) escape routes leading to emergency exits shall be clearly and permanently marked;

(c) all exits shall be properly marked. The operation of the opening mechanism shall be obvious from the outside and the inside;

(d) the escape routes and emergency exits shall have a suitable safety guidance system;

(e) sufficient space for a member of the crew shall be left next to exits.

Article 22b.11

Fire protection and fire-fighting

1. Corridors, rooms and accommodation accessible to the public and also galleys and engine rooms shall be connected to an appropriate fire alarm system. Any fire and its location shall be indicated automatically in a place permanently manned by crew.

2. Engine rooms shall be equipped with a permanently installed fire-fighting system according to Article 10.03b.

3. Rooms and accommodation accessible to the public and their escape routes shall be equipped with a pressurised water sprinkler system according to Article 10.03a. It shall be possible to drain the used water rapidly and directly to the outside.

Article 22b.12

Transitional provisions

High-speed vessels according to Article 1.01, section 22 which have a valid Community certificate on 31 March 2003 shall meet the following provisions of this Chapter:

(a) Articles 22b.01, 22b.04, 22b.08, 22b.09, 22b.10, 22b.11, section 1 when the Community certificate is renewed;
Wednesday, 5 July 2006

(b) on 1 April 2013,
Article 22b.07, sections 1, 3, 4, 5 and 6;
(c) on 1 January 2023
all other provisions.

PART III

CHAPTER 23

EQUIPMENT OF VESSELS WITH REGARD TO MANNING

Article 23.01
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Article 23.02
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Article 23.03
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Article 23.04
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Article 23.05
(Left void)

Article 23.06
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Article 23.07
(Left void)

Article 23.08
(Left void)

Article 23.09
Vessels’ equipment

1. For motor vessels, pushers, pushed convoys and passenger vessels, compliance with, or failure to comply with, the provisions of sections 1.1 or 1.2 shall be entered in item 47 of the Community certificate by the inspection body.

1.1 Standard S1

(a) The propulsion systems shall be arranged in such a way that speed can be changed and the direction of the propeller thrust reversed from the steering position.
It shall be possible for the auxiliary engines needed for operational purposes to be switched on or off from the steering position, unless this is done automatically or the engines run continuously during each voyage.

(b) In the danger areas of
— the temperature of the main-engine cooling water,
— the lubricating-oil pressure for the main engines and transmissions,
— the oil and air pressure of the main-engine reversing units, reversible transmissions or propellers,

— the bilge levels in the main engine room

there shall be monitoring by means of instruments which set off acoustic and visual signals in the wheelhouse in the event of malfunction. The acoustic alarm signals may be combined in one audible warning device. They may be switched off as soon as the malfunction has been acknowledged. The visual alarm signals may only be switched off when the malfunctions which set them off have been corrected.

(c) The fuel shall be supplied and the main engine cooled automatically.

(d) The steering system shall be able to be operated by one person, even in maximum draught, without requiring particular force.

(e) It shall be possible to give the visual and acoustic signals required under national or international navigational authority regulations, as appropriate, from the steering position.

(f) Where there is no direct communication between the steering position and the foresection, the aft, the accommodation and the engine rooms, a voice communication system shall be provided. For communication with the engine rooms, this may be in the form of an optical or acoustic signal.

(g) The required ship's boat shall be capable of being released by one crew member alone and in an appropriate amount of time.

(h) There shall be a searchlight which can be operated from the steering position.

(i) The operation of cranks and similar revolving parts of lifting devices shall not require a force of more than 160 N.

(k) The towing winches entered in the Community certificate shall be motorised.

(l) The bilge and deck-wash pumps shall be motorised.

(m) The principal control units and monitoring instruments shall be ergonomically arranged.

(n) The equipment required under Article 6.01, section 1, shall be capable of being remotely operated from the steering position.

1.2 Standard S2

(a) For motor vessels operating separately:

standard S1 and additionally equipped with a bow thruster which can be operated from the steering position;

(b) For motor vessels propelling in side-by-side formation:

standard S1 and additionally equipped with a bow thruster which can be operated from the steering position;

(c) For motor vessels propelling pushed convoys made up of the motor vessel itself and a craft in front:

standard S1 and additionally equipped with hydraulic or electrically operated coupling winches. This equipment is, however, not required if the foremost vehicle in the pushed convoy is equipped with a bow thruster which can be operated from the steering position of the pushing motor vessel;

(d) For pushers propelling a pushed convoy:

standard S1 and additionally equipped with hydraulic or electric coupling winches. This equipment is, however, not required if the foremost craft in the pushed convoy is equipped with a bow thruster which can be operated from the steering position of the pusher;
For passenger vessels:
standard S1 and additionally equipped with a bow thruster which can be operated from the steering position. This equipment is, however, not required if the propulsion system and steering system of the passenger vessel guarantee equal manoeuvrability.

Article 23.10
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Article 23.11
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Article 23.12
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Article 23.13
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Article 23.14
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Article 23.15
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PART IV
CHAPTER 24
TRANSITIONAL AND FINAL PROVISIONS

Article 24.01
Applicability of transitional provisions to craft which are already in service

1. The provisions of Articles 24.02 to 24.04 apply only to craft carrying on … (*) a valid vessel certificate according to the Rhine Vessel Inspection Regulation in force on 31 December 1994, or which were under construction or undergoing conversion on 31 December 1994.

2. For craft not covered by section 1, the provisions of Article 24.06 apply.

Article 24.02
Derogations for craft which are already in service

1. Without prejudice to Articles 24.03 and 24.04, craft which do not fully comply with the provisions of this Directive must
   (a) be adapted to comply with those provisions in accordance with the transitional provisions listed in the table below, and
   (b) until their adaptation, comply with the Rhine Vessel Inspection Regulation in force on 31 December 1994.

(*) 2 years after the date of entry into force of this Directive.
2. The following definitions apply in the table below:

— ‘N.R.C.’: The provision does not apply to craft which are already operating, unless the parts concerned are replaced or converted, i.e. the provision applies only to newly-built craft and to the replacement or conversion of the parts or areas concerned. If existing parts are replaced by replacement parts using the same technology and of the same type, this does not constitute replacement (‘R’) within the meaning of the transitional provisions.

— ‘Issue or renewal of the Community certificate’: The provision must be complied with the time of the next issue or renewal of the Community certificate after the date indicated.

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(1) 1. Permanent CO₂-fire-fighting systems installed before 1 October 1980 may remain in use until the issue or renewal of the Community certificate after 1 January 2035, if they comply with the requirements of Article 7.03 sec. 5 of the Rhine Vessel Inspection Regulation (1975-I-23), in force on 1 April 1976.
2. Permanent CO₂-fire-fighting systems installed between 1 April 1992 and 31 December 1994 may remain in use until the issue or renewal of the Community certificate after 1 January 2035, if they comply with the requirements of Article 7.03 sec. 5 of the Rhine Vessel Inspection Regulation in force on 31 December 1994.
3. Recommendations of the CCNR issued between 1 April 1992 and 31 December 1994 with regard to Article 7.03 sec. 5 of the Rhine Vessel Inspection Regulation in force on 31 December 1994 remain valid until the issue or renewal of the Community certificate after 1 January 2035.
4. Article 10.03b, sec. 2(a) is only applicable until the issue or renewal of the Community certificate after 1 January 2035 if those installations have been installed in vessels laid down after 1 October 1992.
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(1) The provison applies to vessels laid down after 31.12.1994 and to vessels in service with the following proviso:
The requirements of Article 11.04 must be complied with where the entire hold area is renewed.
Where a conversion modifying the clear width of the side deck covers the entire length of the side decks,
a) Article 11.04 must be complied with, if the clear width of the side deck before the conversion to a height of 0.90 m, or if the clear width above that height is to be reduced.
b) the clear width of the side deck before the conversion to a height of 0.90 m, or the clear width above that height must not be lower than the measurements indicated in Article 11.04.
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### Article 24.03

_Derogations for craft which were laid down on or before 1 April 1976_

1. In addition to the provisions of Article 24.02, the following provisions may be applied to craft which were laid down on or before 1 April 1976.

The following definitions apply in the table below:

- ‘R.C.: The provision does not apply to craft which are already operating, unless the parts concerned are replaced or converted, i.e. the provision applies only to the Replacement or Conversion of the parts or areas concerned. If existing parts are replaced by replacement parts using the same technology and of the same type, this does not constitute replacement (R) within the meaning of the transitional provisions.

- ‘Issue or renewal of the Community certificate: The provision must be complied with by the time of the next issue or renewal of the Community certificate after the date indicated.
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2. Article 15.11, section 3(a), applies to day-trip vessels laid down on or before 1 April 1976 until the first issue or renewal of the Community certificate after 1.1.2045, with the proviso that only paints, varnishes, coatings and other materials used on surfaces facing escape routes and other materials for the surface treatment of panels must be fire-resistant and that smoke or toxic vapours may not develop to any dangerous extent.

3. Article 15.11, section 12, applies to day-trip vessels laid down on or before 1 April 1976 until the first issue or renewal of the Community certificate after 1.1.2045, with the proviso that it is sufficient if, instead of stairs in the form of a load-bearing steel assembly, the stairs serving as an escape route are designed in such a way that they remain useable, in the event of a fire, for about the same time as stairs in the form of a load-bearing steel assembly.

Article 24.04
Other derogations

1. For craft the minimum freeboard of which was determined in accordance with Article 4.04 of the Rhine Vessel Inspection Regulation as applicable on 31 March 1983, the inspection body may, at the request of the owner, determine the freeboard in accordance with Article 4.03 of the Rhine Vessel Inspection Regulation as applicable on 1 January 1995.

2. Craft laid down before 1 July 1983 do not need to conform to Chapter 9, but must at least conform to Chapter 6 of the Rhine Vessel Inspection Regulation as applicable on 31 March 1983.

3. Article 15.06, section 3, (a) to (e), and Article 15.12, section 3 (a), with regard to the rule concerning a single hose length apply only to craft laid down after 30 September 1984, and to conversions of the areas concerned, at the latest when the Community certificate is renewed after 1 January 2045.

4. If it is difficult in practical terms to apply the provisions set out in this Chapter following the expiry of the transitional provisions, or if their application gives rise to unreasonably high costs, the inspection body may allow derogations from these provisions subject to recommendations by the Committee. These derogations must be entered in the Community certificate.

5. Where this provision refers, with regard to equipment design requirements, to a European or an international standard, such equipment may, after any revision of the standard, continue to be used for a further 20 years following the revision of the standard.

Article 24.05
(Left void)

Article 24.06
Derogations for craft not covered by Article 24.01

1. The following provisions apply

(a) to craft for which a vessel certificate in accordance with the Rhine Vessel Inspection Regulation was issued for the first time between 1 January 1995 and … (*) provided they were not under construction or undergoing conversion on 31 December 1994

(b) to craft which have obtained another traffic licence between 1 January 1995 and … (*)

2. It must be proved that those craft comply with the Rhine Vessel Inspection Regulation as applicable on the date on which the vessel certificate or the other traffic licence is granted.

3. The craft must be adapted to comply with provisions which enter into force following the first issue of the vessel certificate or other traffic licence in accordance with the transitional provisions set out in the table below.

4. Article 24.04, sections 4 and 5, apply mutatis mutandis.

(*) 2 years after the date of entry into force of this Directive.
5. The following definitions apply in the table below:

- ‘N.R.C.’: The provision does not apply to craft which are already operating, unless the parts concerned are replaced or converted, i.e. the provision applies only to Newly-built craft and to the Replacement or Conversion of the parts or areas concerned. If existing parts are replaced by replacement parts using the same technology and of the same type, this does not constitute replacement (R) within the meaning of the transitional provisions.

- ‘Issue or renewal of the Community certificate’: The provision must be complied with by the time of the next issue or renewal of the Community certificate after the date indicated.

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The transitional provisions on Chapter 8a of the Rhine Vessel Inspection Regulation apply.

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(1) 1. Permanent CO₂-fire-fighting systems installed between 1 January 1995 and 31 March 2003 remain authorised until the issue or renewal of the Community certificate after 1.1.2035 if they comply with Article 10.03, section 5, of the Rhine Vessel Inspection Regulation as applicable on 31 March 2002.
2. Recommendations of the Central Commission for Navigation on the Rhine issued between 1 January 1995 and 31 March 2002 regarding Article 10.03, section 5, of the Rhine Vessel Inspection Regulation as applicable on 31 March 2002 remain valid until the issue or renewal of the Community certificate after 1.1.2035.
3. Article 10.03, section 2(a), is applicable until the issue or renewal of the Community certificate after 1.1.2035 only if those systems have been installed in vessels laid down after 1 October 1992.
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**Article 24.07**

*(Left void)*

**CHAPTER 24a**

**ADDITIONAL TRANSITIONAL PROVISIONS FOR CRAFT NOT NAVIGATING ON ZONE R WATERWAYS**

**Article 24a.01**

*Application of transitional provisions to craft already in service and validity of previous Community certificates*

1. The following provisions apply
   (a) to craft for which a Community certificate was issued for the first time before … (•), and
   (b) to craft which obtained another traffic licence before … (•)
   not navigating a Zone R waterway.

2. It must be proved that those craft comply with the provisions of Chapters 1 to 12 of Annex II of Directive 82/714/EEC on the date on which the Community certificate or the other traffic licence is issued.

3. Community certificates delivered before … (•) remain valid until the date of expiry indicated on the certificate. Article 2.09 section 2, remains applicable.

**Article 24a.02**

*Derogations for craft already in service*

1. Without prejudice to Articles 24a.03 and 24a.04, craft which do not fully comply with the provisions of this Directive must be adapted to comply with provisions which enter into force after the first issue of their Community certificate or other traffic licence in accordance with the transitional provisions listed in the table below.

2. The following definitions apply in the table below:
   — ‘N.R.C.’: The provision does not apply to craft which are already operating, unless the parts concerned are replaced or converted, i.e. the provision applies only to Newly-built craft and to the Replacement or Conversion of the parts or areas concerned. If existing parts are replaced by replacement parts using the same technology and of the same type, this does not constitute replacement (R) within the meaning of the transitional provisions.
   — ‘Issue or renewal of the Community certificate’: The provision must be complied with by the time of the issue or next renewal of the Community certificate after … (•), if the certificate expires between … (•) and the day before … (••), that requirement is, however, only mandatory from … (••).

(•) 2 years after the date of entry into force of this Directive.
(••) 3 years after the date of entry into force of this Directive.
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(*) 23 years after the date of entry into force of this Directive.
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<td>Effective ventilation when accumulators are installed in a closed compartment, cabinet or chest</td>
<td>N.R.C., at the latest on issue or renewal of the Community certificate</td>
</tr>
</tbody>
</table>

(*) 23 years after the date of entry into force of this Directive.
(**) 18 years after the date of entry into force of this Directive.
(***) 43 years after the date of entry into force of this Directive.
<table>
<thead>
<tr>
<th>Article and Section</th>
<th>Content</th>
<th>Deadline and comments</th>
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</thead>
<tbody>
<tr>
<td>9.12</td>
<td>Switch-gear installations</td>
<td>N.R.C., at the latest on issue or renewal of the Community certificate after ... (***)</td>
</tr>
<tr>
<td>9.12 sec. 3(b)</td>
<td>Earth detection device capable of giving both visual and audible alarm</td>
<td>N.R.C., at the latest on issue or renewal of the Community certificate after ... (*)</td>
</tr>
<tr>
<td>9.13</td>
<td>Emergency circuit breakers</td>
<td>N.R.C., at the latest on issue or renewal of the Community certificate after ... (***)</td>
</tr>
<tr>
<td>9.14</td>
<td>Installation fittings</td>
<td>N.R.C., at the latest on issue or renewal of the Community certificate after ... (***)</td>
</tr>
<tr>
<td>9.14 sec. 3, 2nd sentence</td>
<td>Prohibition of single-pole switches in laundries, bathrooms, washrooms and other rooms with wet facilities</td>
<td>N.R.C., at the latest on issue or renewal of the Community certificate after ... (***)</td>
</tr>
<tr>
<td>9.15 sec. 2</td>
<td>Minimum cross-section of 1.5 mm² per cable</td>
<td>N.R.C., at the latest on issue or renewal of the Community certificate after ... (***)</td>
</tr>
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<td>Cables connected to retractable wheelhouses</td>
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<tr>
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<td>Second circuit</td>
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</tr>
<tr>
<td>9.19</td>
<td>Alarm and safety systems for mechanical equipment</td>
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<td>9.20</td>
<td>Electronic equipment</td>
<td>N.R.C., at the latest on issue or renewal of the Community certificate after ... (***)</td>
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<tr>
<td>9.21</td>
<td>Electromagnetic compatibility</td>
<td>N.R.C., at the latest on issue or renewal of the Community certificate after ... (***)</td>
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<tr>
<td>CHAPTER 10</td>
<td>Anchor equipment</td>
<td>N.R.C., at the latest on issue or renewal of the Community certificate after ... (*)</td>
</tr>
</tbody>
</table>
| 10.02 sec. 2(a)     | Certificate for mooring and other cables | First cable to be replaced on the vessel: N.R.C., at the latest on issue or renewal of the Community certificate after ... (***)  
Second and third cables: ... (***) |
| 10.03 sec. 1        | European standard | At replacement, at the latest ... (*) |
| sec. 2              | Suitability for Class A, B and C fires | At replacement, at the latest ... (*) |
| sec. 4              | Relation of CO₂ content and size of room | At replacement, at the latest ... (*) |
| 10.03a              | Permanently installed fire-fighting systems in accommodation spaces, wheelhouses and passenger spaces | N.R.C., at the latest on issue or renewal of the Community certificate after ... (*) |
| 10.03b              | Permanently installed fire-fighting systems in engine rooms, boiler rooms and pump rooms | CO₂-fire-fighting systems permanently installed before 1 October 1985 may remain in use until the issue or renewal of the Community certificate after ... (*) if they comply with the requirements of Article 13.03 of Annex II of Directive 82/714/EEC. |
| 10.04               | Application of the European standard to dinghies | N.R.C., at the latest on issue or renewal of the Community certificate after ... (***) |
| 10.05 sec. 2        | Inflatable life jackets | N.R.C., at the latest on issue or renewal of the Community certificate after ... (***)  
Life jackets which are on board on the day before (***) can be used until renewal of the Community certificate after... (***) |

(*) 23 years after the date of entry into force of this Directive.  
(**) 18 years after the date of entry into force of this Directive.  
(***) 43 years after the date of entry into force of this Directive.  
(****) 2 years after the date of entry into force of this Directive.
<table>
<thead>
<tr>
<th>Article and Section</th>
<th>Content</th>
<th>Deadline and comments</th>
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</thead>
<tbody>
<tr>
<td>11.02 sec. 4</td>
<td>Equipment of outer edges of decks, side decks and work stations</td>
<td>N.R.C., at the latest on issue or renewal of the Community certificate after … (***)</td>
</tr>
<tr>
<td>11.04</td>
<td>Side decks</td>
<td>(* First issue or renewal of the Community certificate after … (*) where width exceeds 7.30 m</td>
</tr>
<tr>
<td>11.05 sec. 1</td>
<td>Access to workplaces</td>
<td>N.R.C., at the latest on issue or renewal of the Community certificate after … (*)</td>
</tr>
<tr>
<td>secs. 2 and 3</td>
<td>Doors and accesses, exits and passageways where there is more than a 0,30 m difference in floor level</td>
<td>N.R.C., at the latest on issue or renewal of the Community certificate</td>
</tr>
<tr>
<td>sec. 4</td>
<td>Stairs in working spaces which are manned continuously</td>
<td>N.R.C., at the latest on issue or renewal of the Community certificate after … (*)</td>
</tr>
<tr>
<td>11.06 sec. 2</td>
<td>Exits and emergency exits</td>
<td>N.R.C., at the latest on issue or renewal of the Community certificate after … (*)</td>
</tr>
<tr>
<td>11.07 sec. 1, 2nd sentence</td>
<td>Ladders, steps and similar devices</td>
<td>N.R.C., at the latest on issue or renewal of the Community certificate after … (*)</td>
</tr>
<tr>
<td>secs. 2 and 3</td>
<td>N.R.C., at the latest on issue or renewal of the Community certificate</td>
<td></td>
</tr>
<tr>
<td>11.10</td>
<td>Hatch covers</td>
<td>N.R.C., at the latest on issue or renewal of the Community certificate after … (***)</td>
</tr>
<tr>
<td>11.11</td>
<td>Winches</td>
<td>N.R.C., at the latest on issue or renewal of the Community certificate after … (***)</td>
</tr>
<tr>
<td>11.12 sec. 2 to 6 and 8 to 10</td>
<td>Cranes: manufacturer's plate, maximum permissible loadings, protection devices, calculation test, inspection by experts, certificates on board</td>
<td>N.R.C., at the latest on issue or renewal of the Community certificate after … (***)</td>
</tr>
<tr>
<td>11.13</td>
<td>Storing of flammable liquids</td>
<td>N.R.C., at the latest on issue or renewal of the Community certificate</td>
</tr>
<tr>
<td>12.01 sec. 1</td>
<td>Accommodation for the persons lodging habitually on board</td>
<td>N.R.C., at the latest on issue or renewal of the Community certificate after … (*)</td>
</tr>
<tr>
<td>12.02 sec. 3</td>
<td>Situation of floors</td>
<td>N.R.C., at the latest on issue or renewal of the Community certificate after … (*)</td>
</tr>
<tr>
<td>sec. 4</td>
<td>Living and sleeping quarters</td>
<td>N.R.C., at the latest on issue or renewal of the Community certificate after … (*)</td>
</tr>
<tr>
<td>12.02 sec. 5</td>
<td>Noise and vibration in accommodations</td>
<td>N.R.C., at the latest on issue or renewal of the Community certificate after … (***)</td>
</tr>
<tr>
<td>sec. 6</td>
<td>Headroom in accommodations</td>
<td>N.R.C., at the latest on issue or renewal of the Community certificate after … (*)</td>
</tr>
<tr>
<td>sec. 8</td>
<td>Free floor area of communal living quarters</td>
<td>N.R.C., at the latest on issue or renewal of the Community certificate after … (*)</td>
</tr>
<tr>
<td>sec. 9</td>
<td>Cubic capacity of rooms</td>
<td>N.R.C., at the latest on issue or renewal of the Community certificate after … (*)</td>
</tr>
<tr>
<td>sec. 10</td>
<td>Volume of airspace per person</td>
<td>N.R.C., at the latest on issue or renewal of the Community certificate after … (*)</td>
</tr>
</tbody>
</table>

(*) 23 years after the date of entry into force of this Directive.
(**) 18 years after the date of entry into force of this Directive.
(***) 43 years after the date of entry into force of this Directive.

The requirement of Article 11.04 must be complied with where the entire hold area is renewed.
Where a conversion modifying the clear width of the side deck covers the entire length of the side decks,
(a) Article 11.04 must be complied with if the clear width of the side deck before the conversion to a height of 0,90 m, or the clear width above that height is to be reduced.
(b) the clear width of the side deck before the conversion, to a height of 0,90 m, or the clear width above that height must not be lower than the measurements indicated in Article 11.04.
<table>
<thead>
<tr>
<th>Article and Section</th>
<th>Content</th>
<th>Deadline and comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>sec. 11</td>
<td>Size of doors</td>
<td>N.R.C., at the latest on issue or renewal of the Community certificate after … (*)</td>
</tr>
<tr>
<td>sec. 12(a) and (b)</td>
<td>Situation of stairs</td>
<td>N.R.C., at the latest on issue or renewal of the Community certificate after … (*)</td>
</tr>
<tr>
<td>sec. 13</td>
<td>Pipes carrying dangerous gases or liquids</td>
<td>N.R.C., at the latest on issue or renewal of the Community certificate after … (*)</td>
</tr>
<tr>
<td>12.03</td>
<td>Sanitary installations</td>
<td>N.R.C., at the latest on issue or renewal of the Community certificate after … (*)</td>
</tr>
<tr>
<td>12.04</td>
<td>Galley</td>
<td>N.R.C., at the latest on issue or renewal of the Community certificate after … (*)</td>
</tr>
<tr>
<td>12.05</td>
<td>Potable water</td>
<td>N.R.C., at the latest on issue or renewal of the Community certificate</td>
</tr>
<tr>
<td>12.06</td>
<td>Heating and ventilation</td>
<td>N.R.C., at the latest on issue or renewal of the Community certificate after … (*)</td>
</tr>
<tr>
<td>12.07 sec. 1, 2nd sentence</td>
<td>Other accommodation installations</td>
<td>N.R.C., at the latest on issue or renewal of the Community certificate after … (*)</td>
</tr>
<tr>
<td>CHAPTER 15</td>
<td>Passenger vessels</td>
<td>see Art. 8 of this Directive</td>
</tr>
<tr>
<td>CHAPTER 15a</td>
<td>Passenger sailing vessels</td>
<td>see Art. 8 of this Directive</td>
</tr>
<tr>
<td>16.01 sec. 2</td>
<td>Special winches or equivalent coupling devices</td>
<td>N.R.C., at the latest on issue or renewal of the Community certificate after … (*)</td>
</tr>
<tr>
<td>sec. 3, last sentence</td>
<td>Requirements for drive units</td>
<td>N.R.C., at the latest on issue or renewal of the Community certificate after … (*)</td>
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<tr>
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<td>Floating equipment</td>
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<td>Recreational craft</td>
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</tr>
<tr>
<td>22b.03</td>
<td>Second independent steering apparatus drive unit</td>
<td>N.R.C., at the latest on issue or renewal of the Community certificate after (*)</td>
</tr>
</tbody>
</table>

**Article 24a.03**

*Derogations for craft which were laid down before 1 January 1985*

1. In addition to the provisions in Article 24a.02, craft which were laid down before 1 January 1985 may be exempted from the following provisions, under the conditions described in column 3 of the table below, provided the safety of the vessel and its crew is ensured in an appropriate manner:

2. The following definitions apply in the table below:

   — ‘N.R.C.: The provision does not apply to craft which are already operating, unless the parts concerned are replaced or converted, i.e. the provision only applies to Newly-built craft and to the Replacement or Conversion of the parts or areas concerned. If existing parts are replaced by replacement parts using the same technology and of the same type, this does not constitute replacement (R) within the meaning of these transitional provisions.

(*) 23 years after the date of entry into force of this Directive.
(**) 43 years after the date of entry into force of this Directive.
‘Issue or renewal of the Community certificate’: The provision must be complied with by the time of the first issue or next renewal of the Community certificate after … (*). If the certificate expires between … (*) and the day before … (**), that requirement is, however, only mandatory from … (**).

<table>
<thead>
<tr>
<th>Article and Section</th>
<th>Content</th>
<th>Deadline and comments</th>
</tr>
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<tbody>
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<tr>
<td>3.03 sec. 1</td>
<td>Watertight collision bulkheads</td>
<td>N.R.C.</td>
</tr>
<tr>
<td>3.03 sec. 2</td>
<td>Accommodations, safety installations</td>
<td>N.R.C.</td>
</tr>
<tr>
<td>3.03 sec. 5</td>
<td>Openings in watertight bulkheads</td>
<td>N.R.C.</td>
</tr>
<tr>
<td>3.04 sec. 2</td>
<td>Surfaces of bunkers</td>
<td>N.R.C.</td>
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<tr>
<td>3.04 sec. 7</td>
<td>Maximum permissible sound pressure level in engine rooms</td>
<td>N.R.C.</td>
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</tr>
<tr>
<td>4.01</td>
<td>Safety clearance</td>
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<tr>
<td>4.02</td>
<td>Freeboard</td>
<td>N.R.C.</td>
</tr>
<tr>
<td>CHAPTER 6</td>
<td></td>
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<tr>
<td>6.01 sec. 3</td>
<td>Requirements of steering system</td>
<td>N.R.C.</td>
</tr>
<tr>
<td>CHAPTER 7</td>
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</tr>
<tr>
<td>7.01 sec. 2</td>
<td>Maximum permissible sound pressure level in wheelhouse</td>
<td>N.R.C.</td>
</tr>
<tr>
<td>7.05 sec. 2</td>
<td>Monitoring of navigation lights</td>
<td>N.R.C.</td>
</tr>
<tr>
<td>7.12</td>
<td>Retractable wheelhouses</td>
<td>N.R.C.</td>
</tr>
<tr>
<td>CHAPTER 8</td>
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<td></td>
</tr>
<tr>
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<td>Prohibition of certain liquid fuels</td>
<td>N.R.C.</td>
</tr>
<tr>
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<td>Engine exhaust system</td>
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</tr>
<tr>
<td>8.05 sec. 13</td>
<td>Alarm device for level of fuel filling</td>
<td>N.R.C.</td>
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<tr>
<td>8.08 sec. 2</td>
<td>Equipment with bilge pumps</td>
<td>N.R.C.</td>
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<tr>
<td>8.08 secs. 3 and 4</td>
<td>Diameter and minimum pumping capacity of bilge pumps</td>
<td>N.R.C.</td>
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<tr>
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<td>Self-priming bilge pumps</td>
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<tr>
<td>8.08 sec. 7</td>
<td>Automatically closable fitting for aft peak</td>
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<tr>
<td>8.10 sec. 2</td>
<td>Noise emitted by craft</td>
<td>N.R.C.</td>
</tr>
<tr>
<td>CHAPTER 9</td>
<td></td>
<td></td>
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<tr>
<td>9.01 sec. 2</td>
<td>Certificates for electrical equipment</td>
<td>N.R.C.</td>
</tr>
<tr>
<td>9.01 sec. 3</td>
<td>Installation of electrical equipment</td>
<td>N.R.C.</td>
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<tr>
<td>9.06</td>
<td>Maximum permissible voltages</td>
<td>N.R.C.</td>
</tr>
<tr>
<td>9.10</td>
<td>Generators and motors</td>
<td>N.R.C.</td>
</tr>
<tr>
<td>9.11 sec. 2</td>
<td>Accumulators</td>
<td>N.R.C., at the latest on issue or renewal of the Community certificate after … (****)</td>
</tr>
<tr>
<td>9.12 sec. 2</td>
<td>Switches, protective devices</td>
<td>N.R.C., at the latest on issue or renewal of the Community certificate after … (****)</td>
</tr>
</tbody>
</table>

(*) 2 years after the date of entry into force of this Directive.
(**) 3 years after the date of entry into force of this Directive.
(****) 13 years after the date of entry into force of this Directive.
If it is difficult in practical terms to apply the provisions set out in this Chapter following the expiry of the transitional provisions, or if their application gives rise to unreasonably high costs, the inspection body may allow derogations from these provisions subject to recommendations by the Committee. These derogations must be entered in the Community certificate.
### SAFETY SIGNS

<table>
<thead>
<tr>
<th>Figure 1</th>
<th>No entry for unauthorised persons</th>
<th>Colour: red/white/black</th>
</tr>
</thead>
<tbody>
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<td>Figure 2</td>
<td>Fire, naked flame and smoking prohibited</td>
<td>Colour: red/white/black</td>
</tr>
<tr>
<td>Figure 3</td>
<td>Fire extinguisher</td>
<td>Colour: red/white</td>
</tr>
<tr>
<td>Figure 4</td>
<td>General danger warning</td>
<td>Colour: black/yellow</td>
</tr>
<tr>
<td>Figure 5</td>
<td>Extinguisher hose</td>
<td>Colour: red/white</td>
</tr>
<tr>
<td>Figure 6</td>
<td>Fire-fighting installation</td>
<td>Colour: red/white</td>
</tr>
<tr>
<td>Figure 7</td>
<td>Wear acoustic protection device</td>
<td>Colour: blue/white</td>
</tr>
<tr>
<td>Figure 8</td>
<td>First-aid kit</td>
<td>Colour: green/white</td>
</tr>
</tbody>
</table>

The symbols actually used may slightly differ from or be more detailed than the graphical representations in this Appendix, provided the meaning is not changed and differences and modifications do not render the meaning incomprehensible.
Appendix II

ADMINISTRATIVE INSTRUCTIONS

No 1: Requirements relating to the capacity for evasive action and turning
No 2: Requirements concerning prescribed minimum speed, stopping capacity and capacity for going astern
No 3: Requirements for coupling systems and coupling devices for craft pushing or being pushed in a rigid assembly
No 4: Noise measurements
No 5: Special reduced mass anchors
No 6: Strength of watertight side-scuttles
No 7: Requirements for automatic pressurised-water spraying systems
No 8: Issue of the ship certificate
No 9: Fuel tanks on floating craft
No 10: Minimum hull thickness for barges
No 11: Used-oil collection facilities
No 12: Vessel movement under its own power
No 13: Appropriate fire alarm system
No 14: Proof of buoyancy, trim and stability of the separate parts of a vessel
No 15: Equipment for vessels which are to be operated with a minimum crew
No 16: Electric Cables
No 17: Wheelhouse visibility

ANNEX III

SUBJECTS FOR POSSIBLE ADDITIONAL TECHNICAL REQUIREMENTS APPLICABLE TO VESSELS ON INLAND WATERWAYS OF ZONES 1 AND 2

Any additional technical requirements adopted by a Member State under Article 5(1) of this Directive for vessels operating on Zones 1 and/or 2 of that Member State’s territory are limited to the following subjects:

1. Definitions
   — Necessary for understanding the additional requirements
2. Stability
   — Structure reinforcement
   — Certificate/attestation by an approved Classification Society
3. Safety clearance and freeboard
   — Freeboard
   — Safety clearance
4. Watertightness of hull openings and superstructures
   — Superstructures
   — Doors
Windows and skylights
— Hold hatches
— Other openings (ventilation pipes, exhaust pipes, etc.)

5. Equipment
— Anchors and anchor chains
— Navigation lights
— Sound signals
— Compass
— Radar
— Transmitting and receiving installations
— Life-saving equipment
— Availability of nautical charts

6. Additional provisions for passenger vessels
— Stability (wind strength, criteria)
— Life-saving equipment
— Freeboard
— Safety clearance
— Wheelhouse visibility

7. Convoys and container transport
— Pusher connection craft-lighter
— Stability of craft or lighters carrying containers

ANNEX IV

SUBJECTS FOR POSSIBLE REDUCTIONS OF THE TECHNICAL REQUIREMENTS APPLICABLE TO VESSELS ON INLAND WATERWAYS OF ZONES 3 AND 4

Any reduced technical requirements allowed by a Member State under Article 5(7) of this Directive for vessels operating exclusively on Zone 3 or Zone 4 waterways on the territory of that Member State are restricted to the following subjects:

Zone 3
— Anchor equipment, including length of anchor chains
— (Forward) speed
— Collective life-saving appliances
— 2-compartment status
— Wheelhouse visibility

Zone 4
— Anchor equipment, including length of anchor chains
— (Forward) speed
— Life-saving appliances
— 2-compartment status
— Wheelhouse visibility
— Second independent propulsion system
ANNEX V

MODEL COMMUNITY INLAND NAVIGATION CERTIFICATES

PART I

MODEL COMMUNITY INLAND NAVIGATION CERTIFICATE

COMMUNITY INLAND NAVIGATION CERTIFICATE

(Reserved for State emblem)

NAME OF STATE

CERTIFICATE No ........................................................................................................................................

Place, date ...........................................................................................................................................

Seal

Inspection Body

........................................................................................................................................

(Signature)

Remarks:
The craft may be used for navigation by virtue of this certificate only while in the condition herein described.

In the event of major alterations or repairs, the craft must undergo a special inspection before any new voyage.

The owner of the craft, or his representative, must inform an Inspection Body of any change in the name or ownership of the craft, any remeasurement and any change in the official number, registration number or home port, and send it the inspection certificate for amendment.
**Certificate No** ………………………………………………………………………………………………………. **Inspection Body**

<table>
<thead>
<tr>
<th>1. Name of craft</th>
<th>2. Type of craft</th>
<th>3. Official number</th>
</tr>
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</table>

<table>
<thead>
<tr>
<th>4. Name and address of owner</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>5. Place of registration and registration number</th>
<th>6. Home port</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>7. Year of construction</th>
<th>8. Name and location of shipyard</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>9. This certificate replaces Certificate No ………………………………………………. issued on …………………………………………</th>
</tr>
</thead>
<tbody>
<tr>
<td>by the …………………………………………………………………………………………….. Inspeeciton Body</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>10. The abovementioned craft,</th>
</tr>
</thead>
<tbody>
<tr>
<td>subsequent to the inspection carried out on (*) ………………………………………………………………</td>
</tr>
<tr>
<td>on presentation of the certificate issued on (*) ………………………………………………………………</td>
</tr>
<tr>
<td>by the approved classification society ………………………………………………………………………</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>is acknowledged as fit to operate</th>
</tr>
</thead>
<tbody>
<tr>
<td>— on Community waterways in Zone(s) (*)</td>
</tr>
<tr>
<td>— on the waterways in Zone(s) (*)</td>
</tr>
<tr>
<td>in …………………………………………………… (Names of States (*)) …………………………………………</td>
</tr>
<tr>
<td>except for: …………………………………………………………………………………………………………</td>
</tr>
<tr>
<td>— on the following waterways in: …………………………… (Name of the State (*)) ……………………………………</td>
</tr>
<tr>
<td>— on the following waterways in: …………………………… (Names of States (*)) ………………………………………</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>at the maximum authorised draught and with the equipment and crew specified below.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>11. The validity of this certificate expires on ..................................................</th>
</tr>
</thead>
</table>

(*) Amendment to item(s): ……………………………………………………………………………………

New text: …………………………………………………………………………………………………………

(*) This page has been replaced.

Place, date …………………………………………………………………………………………………………

Seal

__________________________
Inspection Body

(Signature)

(*) Delete as appropriate
12. The certificate number (1), official number (2), registration number (3) and measurement number (4) are affixed with the corresponding signs at the following locations on the craft:
   1. 
   2. 
   3. 
   4. 

13. The maximum authorised draught is indicated on each side of the craft:
   — by two — ........................................ — draught marks (*).
   — by the upper measurement plates (*).

   Two draught scales have been applied (*).

   The rear measurement scales serve as draught scales: they have been supplemented for that purpose by figures indicating the draughts (*).

14. Without prejudice to the restrictions (*) mentioned in items 15 and 52, the craft is fit to:
   1. push (*)
   1.1 in rigid formation (*)
   1.2 with controlled articulation (*)
   2. be pushed (*)
   2.1 in rigid formation (*)
   2.2 at the head of a rigid formation (*)
   2.3 with controlled articulation (*)
   3. propel a side-by-side formation (*)
   4. be propelled in a side-by-side formation (*)
   5. tow (*)
   5.1 craft having no motive power of their own (*)
   5.2 motorised craft (*)
   5.3 upstream only (*)
   6. be towed (*)
   6.1 as a motorised craft (*)
   6.2 as a craft with no motive power of its own (*)

(*) Amendment to item(s): .................................................................

New text: .................................................................
.................................................................
.................................................................

(*) This page has been replaced.

Place, date .................................................................


.................................................................

Inspection Body

.................................................................

(Signature)

(*) Delete as appropriate
15. Authorised formations

1. The craft is authorised to propel the following formations:

<table>
<thead>
<tr>
<th>Formation figure</th>
<th>Restrictions resulting from chapters 5 and 16</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Max. dimensions</td>
</tr>
<tr>
<td></td>
<td>m</td>
</tr>
<tr>
<td>No.</td>
<td>length</td>
</tr>
</tbody>
</table>

Other formations:

Key to symbols:
- pusher
- Self-propelled craft
- lighter

2. Couplings:

Type of coupling: .................................................. Number of couplings per side: ........................................
Number of coupling cables: ..................................... Length of each coupling cable: .....................................
Tensile strength per longitudinal coupling: ................. kN Number of cable windings: .....................................
Tensile strength per coupling cable: ........................... kN

(*) Amendment to item(s): .................................................................

New text: ..........................................................................................
.................................................................................................
.................................................................................................
.................................................................................................
.................................................................................................

(*) This page has been replaced.

Place, date: .........................................................................................

Seal

................................................................. Inspection Body

(Signature)

(*) Delete as appropriate
<table>
<thead>
<tr>
<th>Certificate No</th>
<th>of the</th>
<th>Measurement Office dated</th>
</tr>
</thead>
</table>

16. Measurement certificate No 
17 a. Length overall m | 18 a. Breadth overall m | 19. Maximum draught m | 20. Freeboard cm |
17 b. Length L m | 18 b. Breadth B m |

21. Dead weight/Displacement (*) t/m^3 (*)
22. Number of passengers:
23. Number of passenger berths:
24. Number of watertight compartments
25. Number of holds
26. Type of hatch cover
27. Number of main propulsion engines
28. Total power rating of main means of propulsion kW
29. Number of main propellers
30. Number of bow windlasses of which .......... powered
31. Number of stern windlasses of which .......... powered
32. Number of towing hooks of which ................. powered
33. Number of towing winches of which ................. powered

34. Steering gear
   Number of rudder blades on main rudder
   Main rudder drive: — manual (*) — electric/ hydraulic (*)
   — electric (*) — hydraulic (*)
   Other installations: yes/no (*) Type:
   Flanking rudder: yes/no (*)
   Flanking rudder drive: — manual (*) — electric/ hydraulic (*)
   — electric (*) — hydraulic (*)
   Bow rudder installation yes/no (*)
   — bow rudder (*) — bow thruster (*)
   — other installation (*) — Remote control yes/no (*)
   — Remote activation yes/no (*)

35. Pumping equipment
   Total calculated capacity l/min
   Number of power-driven pumps
   Flow rate l/min
   Number of hand pumps

(*) Amendment to item(s): .................................................................

New text: ..............................................................................................................
..............................................................................................................................
..............................................................................................................................

(*) This page has been replaced.
Place, date ..............................................................................................................

Seal

Inspection Body

(*) Delete as appropriate
### Number and position of closures referred to in Article 8.08, sections 10 and 11

<table>
<thead>
<tr>
<th>Number of bow anchors</th>
<th>Total mass of bow anchors</th>
<th>Number of stern anchors</th>
<th>Total mass of stern anchors</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Anchors

<table>
<thead>
<tr>
<th>Number of bow anchor chains</th>
<th>Length of each chain</th>
<th>Tensile strength of each chain</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Number of stern anchor chains</th>
<th>Length of each chain</th>
<th>Tensile strength of each chain</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Anchor chains

<table>
<thead>
<tr>
<th>Number of 1st bow anchor chain</th>
<th>Length of 1st chain</th>
<th>Tensile strength of 1st chain</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Number of 2nd bow anchor chain</th>
<th>Length of 2nd chain</th>
<th>Tensile strength of 2nd chain</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Number of 3rd bow anchor chain</th>
<th>Length of 3rd chain</th>
<th>Tensile strength of 3rd chain</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Mooring cables

<table>
<thead>
<tr>
<th>1st cable</th>
<th>Length</th>
<th>Tensile strength</th>
</tr>
</thead>
<tbody>
<tr>
<td>m</td>
<td></td>
<td>kN</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2nd cable</th>
<th>Length</th>
<th>Tensile strength</th>
</tr>
</thead>
<tbody>
<tr>
<td>m</td>
<td></td>
<td>kN</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3rd cable</th>
<th>Length</th>
<th>Tensile strength</th>
</tr>
</thead>
<tbody>
<tr>
<td>m</td>
<td></td>
<td>kN</td>
</tr>
</tbody>
</table>

### Towing cables

<table>
<thead>
<tr>
<th>Length</th>
<th>Tensile strength</th>
</tr>
</thead>
<tbody>
<tr>
<td>m</td>
<td>kN</td>
</tr>
</tbody>
</table>

### Visual and audible signals

The lights, flags, balls, floats and audible warning devices used for signalling and to emit the visual and audible signals prescribed by the navigational authority regulations in force in the Member States are carried on board, as are the stand-alone emergency mooring lights prescribed by the navigational authority regulations in force in the Member States.

(*) Amendment to item(s):

New text:

(*) This page has been replaced.

Place, date

[Seal]

Inspection Body

(Signature)

(*) Delete as appropriate
**Certificate No**

<table>
<thead>
<tr>
<th>No.</th>
<th>Equipment</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>42.</td>
<td>Voice communication system</td>
<td>— alternative two-way (<em>) — simultaneous two-way/telephone (</em>)</td>
</tr>
<tr>
<td></td>
<td>Radio-telephone installation</td>
<td>— vessel-to-vessel service — nautical information service</td>
</tr>
<tr>
<td></td>
<td>Cranes</td>
<td>— vessel-port authority service — in accordance with Article 11.12, section 9 (*)</td>
</tr>
</tbody>
</table>

**Fire-fighting appliances**

<table>
<thead>
<tr>
<th>Number of portable</th>
<th>Fixed sprinkler system(s)</th>
<th>No/Number (*)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other fixed fire-fighting system(s)</td>
<td>No/Number (*)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Number of fire pumps</th>
<th>Number of hydrants</th>
<th>Number of hoses</th>
</tr>
</thead>
</table>

The powered drainage pump replaces a fire pump: Yes/No (*)

**Life-saving equipment**

<table>
<thead>
<tr>
<th>Number of lifebuoys</th>
</tr>
</thead>
<tbody>
<tr>
<td>A life-jacket for each person regularly on board.</td>
</tr>
<tr>
<td>Other life-saving equipment on passenger vessels (*)</td>
</tr>
<tr>
<td>A ship’s boat with a set of oars, one mooring line and a bailer (*)</td>
</tr>
<tr>
<td>Collective life-saving equipment on passenger vessels (*)</td>
</tr>
</tbody>
</table>

**Special wheelhouse arrangements for radar navigation by one person:**

The vessel has a wheelhouse designed for radar navigation by one person (*).

(*) Amendment to item(s): .................................................................

New text: ............................................................................................

.................................................................

(*) This page has been replaced.

Place, date: .....................................................................................

.................................................................

Inspection Body

(Signature)

(*) Delete as appropriate
Wednesday, 5 July 2006

Certificate No .................................. of the ............................................................... Inspection Body

| 46. Operating modes meeting the requirements of national or international law concerning the crew (**) |
| 47. Vessel equipment in accordance with Article 23.09 |
| The vessel (complies) (*)/(does not comply) (*) with Article 23.09, section 1.1 (*)/(Article 23.09, section 1.2 (*) |

<table>
<thead>
<tr>
<th>Space for entering the minimum crew meeting the requirements of national or international law (**)</th>
<th>Space for entering the operating modes according to item 46.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| 48. Space for entering the minimum crew for vessels that are not covered by general minimum crew prescriptions in national or international requirements (**) |
|                                                                                                   | Space for entering the operating modes (**) |
|                                                                                                                                                     |                                          |
|                                                                                                                                                     |                                          |
|                                                                                                                                                     |                                          |

Observations and special conditions:

......................................................................................................................................................
......................................................................................................................................................
......................................................................................................................................................
......................................................................................................................................................
......................................................................................................................................................
......................................................................................................................................................

(*) Amendment to item(s): ............................................................................................................

New text: ..........................................................................................................................................
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......................................................................................................................................................

(*) This page has been replaced.

Place, date ........................................................................................................................................

............................................................. Inspection Body

............................................................. (Signature)

(*) Delete as appropriate

(**) Requirements of national or international law which a Member State may choose to apply, or have no requirements
Certificate No: ........................................ of the ................................................................. Inspection Body

49. Extension/confirmation (*) of certificate validity (*) Periodical/special (*) inspection
The Inspection Body inspected the vessel on ......................................................... (*)
A certificate dated ........................................... from the ................................................. approved classification society
was presented to the Inspection Body (*).
Reason for the inspection/certificate (*):

..................................................................................................................................................

In view of the inspection result/certificate (*), the period of validity of the certificate is maintained/extended (*)
until .........................................................................................................................

........................................................................................................................................

(Place)................................................................................................................................
(date)................................................................................................................................

........................................................................................................................................

Seal:.................................................................................................................................

........................................................................................................................................

Inspection Body:..............................................................................................................

........................................................................................................................................

(Signature)........................................................................................................................

(*) Delete as appropriate

49. Extension/confirmation (*) of certificate validity (*) Periodical/special (*) inspection
The Inspection Body inspected the vessel on ......................................................... (*)
A certificate dated ........................................... from the ................................................. approved classification society
was presented to the Inspection Body (*).
Reason for the inspection/certificate (*):

..................................................................................................................................................

In view of the inspection result/certificate (*), the period of validity of the certificate is maintained/extended (*)
until .........................................................................................................................

........................................................................................................................................

(Place)................................................................................................................................
(date)................................................................................................................................

........................................................................................................................................

Seal:.................................................................................................................................

........................................................................................................................................

Inspection Body:..............................................................................................................

........................................................................................................................................

(Signature)........................................................................................................................

(*) Delete as appropriate

49. Extension/confirmation (*) of certificate validity (*) Periodical/special (*) inspection
The Inspection Body inspected the vessel on ......................................................... (*)
A certificate dated ........................................... from the ................................................. approved classification society
was presented to the Inspection Body (*).
Reason for the inspection/certificate (*):

..................................................................................................................................................

In view of the inspection result/certificate (*), the period of validity of the certificate is maintained/extended (*)
until .........................................................................................................................

........................................................................................................................................

(Place)................................................................................................................................
(date)................................................................................................................................

........................................................................................................................................

Seal:.................................................................................................................................

........................................................................................................................................

Inspection Body:..............................................................................................................

........................................................................................................................................

(Signature)........................................................................................................................

(*) Delete as appropriate
49. Extension/confirmation (*) of certificate validity (*) Periodical/special (*) inspection

The Inspection Body inspected the vessel on ............................................ (*)
A certificate dated ......................................................... from the ................................................. approved classification society
was presented to the Inspection Body (*).
Reason for the inspection/certificate (*):

In view of the inspection result/certificate (*), the period of validity of the certificate is maintained/extended (*)
until .................................................................

(Place) (date)

Seal

Inspection Body

(Signature)

(*) Delete as appropriate
50. Attestation relating to liquefied gas installation(s)

The liquefied gas installation(s) on board the craft has/have been inspected by the authorised officer (*) ……………………………...

and according to his acceptance report dated …………………. (*) fulfil(s) the conditions laid down.

The plant(s) include(s) the following gas-consuming appliances:

<table>
<thead>
<tr>
<th>Plant</th>
<th>Serial No</th>
<th>Model</th>
<th>Make</th>
<th>Type</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

This attestation is valid until ………………………………………………………………………………………………………………………………………

…………………………………………………, ……………………………………………………………………..

(Place) (Date)

……………………………………………………………………………………………………………………………………

Authorised officer (*)

Inspection Body

(*) Seal

(*) Amendment to item(s): ………………………………………………………………………………………………………………………………………

New text: ……………………………………………………………………………………………………………………………………………………..

…………………………………………………………………………………………………………………………………………………..

(*) This page has been replaced.

Place, date …………………………………………………………………………………………………………………………………………………..

…………………………………………………………………………………………………………………………………………………..

Inspection Body

(*) Seal

(*) Delete as appropriate
51. Extension of the attestation relating to liquefied gas installation(s)

The period covered by the attestation relating to liquefied gas installation(s) dated ................................. is extended until .................................................................

— following the periodical inspection by the authorised officer ........................................................................

— on presentation of the acceptance report dated ...........................................................................................

.................................................................................................................. ..................................................

(Place) (Date)

.................................................................

.................................................................

Inspection Body

.................................................................

.................................................................

(Signature)

Seal
# PART II

## MODEL SUPPLEMENTARY COMMUNITY INLAND NAVIGATION CERTIFICATE

Annex to inspection certificate for the Rhine No ............................................................... Page 1

### SUPPLEMENTARY COMMUNITY INLAND NAVIGATION CERTIFICATE

(Reserved for State emblem)

**NAME OF STATE**

Name and address of the competent authority issuing the supplementary certificate

1. Name of vessel: .......................................................................................................................
2. Official number: ....................................................................................................................
3. Place of registration and registration number: .................................................................
4. Country of registration and/or home port (*1)*: ...............................................................
5. Having regard to the inspection certificate for the Rhine No: ...........................................
    dated .................................................................................................................................
    valid until .......................................................................................................................
6. Having regard to the result of the inspection: .................................................................
    .................................................................................................................................
    on ..............................................................................................................................
7. the abovementioned vessel is deemed fit to operate on the Community waterways of Zone(s)
    ...........................................................................................................................................
8. This supplementary certificate expires on: ....................................................................... 
9. Issued in ................................................................. on ......................................................
10. ........................................................................................................................................

*Stamp*

______________________________
(Competent authority)

______________________________
(Signature)

(*1) Delete where inapplicable.
11. | Zone and / or waterways (1) |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Freeboard(cm)</td>
<td>with hold closed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>with hold open</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

12. Derogations from inspection certificate for the Rhine No

13. The entries concerning the number of crew members in the inspection certificate for the Rhine do not apply.

14. Having regard to inspection certificate for the Rhine No dated valid until 

Having regard to the result of the inspection on 

This supplementary certificate is extended/renewed (1) until 

(Place) (Date) (Competent authority) (Signature) (1) Delete where inapplicable.
PART III
MODEL PROVISIONAL COMMUNITY INLAND NAVIGATION CERTIFICATE

Provisional Community certificate (*)/Provisional certificate of approval (*)

No ..............

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Name of craft</td>
<td>2. Type of craft</td>
</tr>
<tr>
<td>4.</td>
<td>Name and domicile of owner</td>
<td></td>
</tr>
</tbody>
</table>
| 5.| Length L/LWL (*) ........................................... Number of passengers .............................................
   | Number of berths (*) ..................................... |   |   |
| 6.| Space for information about the crew |   |   |
| 6.1| Operating modes meeting the requirements of national or international law (**) |   |   |
| 6.2| Vessel equipment in accordance with Article 23.09: The vessel (complies) (*) / (does not comply) (*) with Article 23.09, section 1.1 (*) / (Article 23.09, section 1.2 (*)
   | Space for entering the minimum crew meeting the requirements of national or international law (**) | Space for entering the operating modes according to 6.1 |
| 6.3.| Space for entering the minimum crew for vessels that are not covered by general minimum crew prescriptions in national or international requirements (**) ................................................................. |   |   |
| 7.| Liquefied gas installation(s) |   |   |
| 8.| Attestation valid until ................................................................. |   |   |
| 8.| Special conditions |   |   |
| 9.| Carriage of dangerous goods, see separate box (*) |   |   |
| 10.| Validity |   |   |
|   | Provisional certificate (*)/provisional certificate of approval (*) valid until ................................................................. (Date) |   |   |
|   | The abovementioned craft is acknowledged as fit to operate |   |   |
|   | — on Community waterways in Zone(s) (*) ................................................................. |   |   |
|   | — on the waterways in Zone(s) (*) ................................................................. |   |   |
|   | — in (Names of States (*)) ................................................................. |   |   |
|   | — except for: ................................................................. |   |   |
|   | — on the following waterways in (Name of State (*)) ................................................................. |   |   |
9. Carriage of dangerous goods

(Indicate whether the vessel meets the requirements of national and international law, if any.)
ANNEX VI

MODEL REGISTER OF COMMUNITY INLAND NAVIGATION CERTIFICATES

Competent authority/Inspection body ..........................................................

Register of Community inland navigation certificates

Year ..............................
<table>
<thead>
<tr>
<th>Community inland navigation certificate</th>
<th>Name of vessel</th>
<th>Official number of vessel</th>
<th>Owner</th>
<th>Vessel register</th>
<th>Type of vessel</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Day Month</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Name</td>
<td>Address</td>
<td>Place</td>
<td>No</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(Left-hand page)
<table>
<thead>
<tr>
<th>Date of tonnage certificate</th>
<th>Tonnage mark</th>
<th>t/m³</th>
<th>from</th>
<th>to</th>
<th>Endorsements concerning supplementary or special inspections, withdrawal and annulment of the certificate</th>
<th>Community inland navigation certificate valid until</th>
<th>Other comments</th>
</tr>
</thead>
</table>

(*) If no tonnage certificate is available, estimate the deadweight or displacement.
ANNEX VII

CLASSIFICATION SOCIETIES

CONTENTS

Part I: Criteria for the approval of classification societies
Part II: Procedure for the approval of classification societies
Part III: List of approved classification societies

PART I

CRITERIA FOR THE APPROVAL OF CLASSIFICATION SOCIETIES

Classification societies seeking approval under Article 10 of this Directive shall meet all the following criteria:

(1) The classification society shall be able to document extensive experience in assessing the design and construction of inland waterway vessels, including vessels for the carriage of dangerous goods. The classification society shall have comprehensive rules and regulations for the design, construction and periodic inspection of inland waterway vessels, including vessels for the carriage of dangerous goods, which shall be published at least in Dutch, English, French or German and shall be continuously updated and improved through research and development programmes. The rules and regulations must not conflict with the provisions of Community law or with international agreements in force.

(2) The classification society shall publish its register of vessels annually.

(3) The classification society shall not be controlled by shipowners or shipbuilders or by others engaged commercially in the design, manufacture, fitting-out, repair, operation or insurance of ships. The classification society shall not be dependent on a single commercial enterprise for its revenue.

(4) The headquarters of the classification society or a branch authorised to give a ruling and to act in all areas incumbent on it under the regulations governing inland waterway transport shall be located in one of the Member States.

(5) The classification society and its experts shall have a good reputation in inland waterway transport; the experts shall be able to provide proof of their professional abilities. They shall act on the responsibility of the classification society.

(6) The classification society shall have a significant technical, managerial, support, inspection and research staff, in proportion to the tasks and the vessels classified and catering also for developing capability and updating the regulations. It shall have inspectors in at least one Member State.

(7) The classification society shall be governed by a Code of Ethics.

(8) The classification society shall be managed and administered in such a way as to ensure the confidentiality of information required by a Member State.

(9) The classification society shall be prepared to provide relevant information to a Member State.

(10) The classification society's management shall have defined and documented its policy and objectives for, and commitment to, quality and ensured that this policy is understood, implemented and maintained at all levels in the classification society.

(11) The classification society shall have prepared and implemented and shall maintain an effective internal quality system based on the relevant parts of internationally recognised quality standards and complying with the EN 45004 (inspection bodies) and EN 29001 standards, as interpreted by the IACS Quality System Certification Scheme Requirements. The quality system must be certified by an independent body of auditors recognised by the administration of the State in which the classification society has its headquarters or branch, as provided for in paragraph 4, and which, inter alia, ensures that:

(a) the classification society's rules and regulations are established and maintained in a systematic manner;
(b) the classification society’s rules and regulations are complied with;

(c) the requirements of the statutory work for which the classification society is authorised are satisfied;

(d) the responsibilities, powers and interrelation of personnel whose work affects the quality of the classification society’s services are defined and documented;

(e) all work is carried out under controlled conditions;

(f) a supervisory system is in place which monitors the actions and work carried out by surveyors and technical and administrative staff employed directly by the classification society;

(g) the requirements of major statutory work for which the classification society is authorised are only carried out or directly supervised by its exclusive surveyors or by exclusive surveyors of other approved classification societies;

(h) a system for qualification of surveyors and continuous updating of their knowledge is implemented;

(i) records are maintained, demonstrating achievement of the required standards in the items covered by the services performed, as well as the effective operation of the quality system; and

(j) a comprehensive system of planned and documented internal audits of quality-related activities exists in all locations.

(12) The quality system must be certified by an independent body of auditors recognised by the administration of the State in which the classification society has its headquarters or branch, as provided for in section 4.

(13) The classification society shall undertake to bring its requirements into line with the appropriate European Union directives and to provide the Committee with all relevant information in good time.

(14) The classification society shall undertake periodically to consult with the classification societies already approved in order to guarantee the equivalence of their technical standards and of implementation thereof, and should allow participation in the development of its rules and regulations by representatives of a Member State and other parties concerned.

PART II

PROCEDURE FOR THE APPROVAL OF CLASSIFICATION SOCIETIES

A decision to approve a classification society under Article 10 of this Directive is to be taken by the Commission according to the procedure referred to in Article 19(2) of this Directive. In addition, the following procedure must be observed:

(1) An application for approval shall be submitted to the Commission by the representatives of the State in which the classification society has its headquarters or a branch authorised to give a ruling and act in all areas incumbent on it under the regulations governing inland waterway vessels. Furthermore, the representatives of this State shall send all information and documentation needed to check that the criteria for approval are met.

(2) Any Committee member can demand a hearing with the classification society concerned or that further information or documentation be provided.

(3) Approval shall be withdrawn in a similar way. Any Committee member can ask for approval to be withdrawn. The representatives of the State asking for the withdrawal shall submit the information and documentation supporting their application.

(4) When making its decisions, the Commission shall take account of decisions made by the Central Commission for Navigation on the Rhine regarding approval of the classification society concerned. Before approving a classification society which has not been approved by the Central Commission for Navigation on the Rhine, the Commission shall consult the Secretariat of the Central Commission.

(5) Following each decision on approval of a classification society or the withdrawal of approval, the list of approved societies shall be amended.

(6) The Commission shall inform the classification societies concerned of the Commission’s decisions.
PART III
LIST OF APPROVED CLASSIFICATION SOCIETIES

On the basis of the criteria set out in Parts I and II, the following classification societies are currently approved under Article 10 of this Directive:

(1) Bureau Veritas
(2) Germanischer Lloyd
(3) Lloyd's Register of Shipping.

Until their approval under Parts I and II, classification societies which are recognised and approved and authorised by a Member State in accordance with Council Directive 94/57/EC of 22 November 1994 on common rules and standards for ship inspection and survey organisations and for the relevant activities of maritime administrations (1) are currently approved in accordance with Article 10 of this Directive only in respect of vessels which operate exclusively on waterways of that Member State.


ANNEX VIII
RULES OF PROCEDURE FOR THE CARRYING OUT OF INSPECTIONS

Article 1

If the authorities find upon inspection that the certificate carried on the vessel is invalid, or that the vessel does not satisfy the requirements set out in the certificate, but that such invalidity or failure to satisfy the requirements does not constitute a manifest danger, the owner of the vessel or his representative shall take all necessary measures to remedy the situation. The authority which issued the certificate or which last renewed it shall be informed within seven days.

Article 2

If, upon making the inspection referred to in Article 1, the authorities find that the certificate is not being carried or that the vessel constitutes a manifest danger, they may prevent the vessel from proceeding until the necessary steps have been taken to remedy the situation.

They may also prescribe measures which will enable the vessel to proceed safely, where appropriate on termination of its transport operations, to a place where it will be either inspected or repaired. The authority which issued or last renewed the certificate shall be informed within seven days.

Article 3

A Member State which has prevented a vessel from proceeding, or has notified the owner of its intention to do so if the defects found are not corrected, shall inform the authority in the Member State which issued or last renewed the certificate, within seven days, of the decision which it has taken or intends to take.

Article 4

Any decision to interrupt the passage of a vessel taken pursuant to measures adopted in implementation of this Directive shall state in detail the reasons on which it is based. It shall be notified without delay to the party concerned, who shall at the same time be informed of the appeal procedures available to him under the laws in force in the Member States and of their time limits.
ANNEX IX

REQUIREMENTS APPLICABLE TO SIGNAL LIGHTS, RADAR INSTALLATIONS AND RATE-OF-TURN INDICATORS

Part I: Requirements concerning the colour and intensity of lights and the approval of signal lanterns for inland waterway vessels

Part II: Requirements concerning the conditions for testing and approval of signal lanterns for inland waterway vessels

Part III: Minimum requirements and test conditions for radar installations used for navigation in inland waterway vessels

Part IV: Minimum requirements and test conditions for rate-of-turn indicators used in inland waterway vessels

Part V: Requirements for installation and performance tests for radar equipment and rate-of-turn indicators used in inland waterway vessels

Part VI: Model list of test institutes, approved equipment and approved installation firms

PART I

REQUIREMENTS CONCERNING THE COLOUR AND INTENSITY OF LIGHTS AND THE APPROVAL OF SIGNAL LANTERNS FOR INLAND WATERWAY VESSELS

Contents

Chapter 1 Definitions

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1.02 Signal lights

1.03 Light sources

1.04 Optic

1.05 Filter

1.06 Relation between \( I_0 \), \( I_a \) and \( t \)

Chapter 2 Requirements for signal lights

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2.02 Luminous intensity and range of signal lights

2.03 Signal light dispersion

Chapter 3 Requirements for signal lanterns

Article 3.01 Technical requirements

Chapter 4 Tests, approval and markings

Article 4.01 Type tests

4.02 Test procedure

4.03 Approval certificate

4.04 Spot checks

4.05 Markings

Appendix

Model approval certificate for signal lanterns for inland waterway vessels
Chapter 1
Definitions

Article 1.01
Signal lanterns

1. 'Lantern' means a device for distributing the flux from an artificial light source; it also includes the components needed to filter, refract or reflect the light, and to hold or operate the light source.

2. Lanterns intended to give signals on board a vessel are called signal lanterns.

Article 1.02
Signal lights

1. 'Signal lights' means the light signals emitted by signal lanterns.

2. 'Mast-head light' means a white light, visible throughout a horizontal arc of 225° and projecting a uniform uninterrupted beam over 112°30′ on each side, i.e. from the bow to 22°30′ abaft the beam on each side.

3. 'Side lights' means a green light to starboard and a red light to port; each of these lights shall be visible throughout a horizontal arc of 112°30′ and project a uniform uninterrupted beam, i.e. from the bow to 22°30′ abaft the beam.

4. 'Stern light' means a white light, visible throughout a horizontal arc of 135° and projecting a uniform uninterrupted beam over a sector of 67°30′ along each side from the stern.

5. 'Yellow stern light' means a yellow light, visible throughout a horizontal arc of 135° and projecting a uniform uninterrupted beam over a sector of 67°30′ along each side from the stern.

6. 'Light visible from all directions' means a light visible throughout a horizontal arc of 360° and projecting a uniform uninterrupted beam.

7. (a) 'Scintillating light' means a light flashing at a rate of 40 to 60 light periods per minute.

(b) 'Rapidly scintillating light' means a light flashing at a rate of 100 to 120 light periods per minute.

A scintillating light is a series of regular light periods per unit time.

8. Signal lights are classified according to their luminous intensity as:
   — ordinary lights,
   — bright lights,
   — strong lights.

Article 1.03
Light sources

'Light sources' means electrical or non-electrical devices designed to produce light fluxes in signal lanterns.

Article 1.04
Optic

1. 'Optic' means a device comprising refracting, reflecting, or refracting and reflecting components, including their holders. The function of these components is to direct the rays from a light source in new specific directions.

2. 'Coloured optic' means an optic which modifies the colour and intensity of the light transmitted.

3. 'Neutral optic' means an optic which modifies the intensity of the light transmitted.
Article 1.05
Filter

1. ‘Coloured filter’ means a selective filter which modifies the colour and intensity of the light transmitted.
2. ‘Neutral filter’ means a non-selective component which modifies the intensity of the light transmitted.

Article 1.06
Relation between \( I_0 \), \( I_b \) and \( t \)

\( I_0 \) means the photometric luminous intensity in candela (cd) measured at normal voltage for electric lights.
\( I_b \) means the operational luminous intensity in candela (cd).
\( t \) means the range in kilometres (km).

Taking into account, for example, the ageing of the light source, the degree of dirtiness of the optic and variations in the voltage of the on-board grid, \( I_b \) is taken as 25 per cent less than \( I_0 \).

Consequently:

\[ I_b = 0.75 \cdot I_0 \]

The relation between \( I_b \) and \( t \) of signal lights is given by the following equation:

\[ I_b = 0.2 \cdot t^2 \cdot q^{-1} \]

The atmospheric transmission coefficient \( q \) is taken as 0.76, corresponding to a meteorological visibility of 14.3 km.

Chapter 2
Requirements for signal lights

Article 2.01
Colour of signal lights

1. A five-colour signal system shall apply to the lights, comprising the following colours:
   — white,
   — red,
   — green,
   — yellow,
   — blue.

   This system shall conform to the recommendations of the International Commission on Illumination, ‘Colours of Signal Lights’, IEC publication No 2.2. (TC-1.6) 1975.

   The colours shall apply to the light fluxes emitted by the signal lantern.

2. The colour boundaries of signal lights shall be demarcated by the coordinates of the intersecting points of the chromatic diagram in IEC publication No 2.2 (TC-1.6) 1975 (see chromaticity diagram) as follows:

<table>
<thead>
<tr>
<th>Colour of signal light</th>
<th>Coordinates of the intersecting points</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>x 0.310, y 0.443</td>
</tr>
<tr>
<td></td>
<td>x 0.383, y 0.382</td>
</tr>
<tr>
<td></td>
<td>x 0.382, y 0.382</td>
</tr>
<tr>
<td></td>
<td>x 0.440, y 0.440</td>
</tr>
<tr>
<td></td>
<td>x 0.310, y 0.348</td>
</tr>
<tr>
<td>Red</td>
<td>x 0.690, y 0.710</td>
</tr>
<tr>
<td></td>
<td>x 0.680, y 0.660</td>
</tr>
<tr>
<td></td>
<td>x 0.660, y 0.630</td>
</tr>
<tr>
<td>Green</td>
<td>x 0.009, y 0.284</td>
</tr>
<tr>
<td></td>
<td>x 0.207, y 0.013</td>
</tr>
<tr>
<td></td>
<td>x 0.382, y 0.425</td>
</tr>
<tr>
<td>Yellow</td>
<td>x 0.612, y 0.618</td>
</tr>
<tr>
<td></td>
<td>x 0.575, y 0.575</td>
</tr>
<tr>
<td></td>
<td>x 0.406, y 0.406</td>
</tr>
<tr>
<td>Blue</td>
<td>x 0.136, y 0.218</td>
</tr>
<tr>
<td></td>
<td>x 0.185, y 0.102</td>
</tr>
<tr>
<td></td>
<td>x 0.105, y 0.105</td>
</tr>
</tbody>
</table>
IEC chromaticity diagram

where 2 930 K corresponds to the light of a vacuum filament lamp.
2 856 K corresponds to the light of a gas-filled filament lamp.

**Article 2.02**

*Intensity and range of the signal lights*

The table set out below contains the permitted limits for \(I_0\), \(I_h\) and \(t\) (daytime and nighttime use) according to the nature of the signal lights. The values indicated shall apply to the light flux emitted by the signal lanterns.

\(I_0\) and \(I_h\) are given in cd and \(t\) in km.
Maximum and minimum values

<table>
<thead>
<tr>
<th>Nature of the signal lights</th>
<th>Colour of signal light</th>
<th>White</th>
<th>Green/red</th>
<th>Yellow</th>
<th>Blue</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>min.</td>
<td>max.</td>
<td>min.</td>
<td>max.</td>
<td>min.</td>
</tr>
<tr>
<td>ordinary</td>
<td>I_o</td>
<td>2.7</td>
<td>10.0</td>
<td>1.2</td>
<td>4.7</td>
</tr>
<tr>
<td></td>
<td>I_b</td>
<td>2.0</td>
<td>7.5</td>
<td>0.9</td>
<td>3.5</td>
</tr>
<tr>
<td></td>
<td>t</td>
<td>2.3</td>
<td>3.7</td>
<td>1.7</td>
<td>2.8</td>
</tr>
<tr>
<td>bright</td>
<td>I_o</td>
<td>12.0</td>
<td>33.0</td>
<td>6.7</td>
<td>27.0</td>
</tr>
<tr>
<td></td>
<td>I_b</td>
<td>9.0</td>
<td>25.0</td>
<td>5.0</td>
<td>20.0</td>
</tr>
<tr>
<td></td>
<td>t</td>
<td>3.9</td>
<td>5.3</td>
<td>3.2</td>
<td>5.0</td>
</tr>
<tr>
<td>strong</td>
<td>I_o</td>
<td>47.0</td>
<td>133.0</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>I_b</td>
<td>35.0</td>
<td>100.0</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>t</td>
<td>5.9</td>
<td>8.0</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

However, for daytime use of the yellow scintillating lights a minimum luminous intensity (I_o) of 900 cd shall apply.

**Article 2.03**

Signal light dispersion

1. Horizontal dispersion of the luminous intensity

1.1 The luminous intensities indicated in Article 2.02 shall apply to all directions of the horizontal plane passing through the focus of the optic or the luminous centre of gravity of the correctly adjusted light source of a vertically positioned signal lantern.

1.2 For the masthead lights, stern lights and side lights, the luminous intensities prescribed shall be maintained throughout the horizontal arc within the sector prescribed at least up to within 5° of the limits. As from 5° within the sector prescribed up to the limit, the luminous intensity may decrease by 50 per cent; it shall subsequently decrease gradually in such a way that, as from 5° beyond the limits of the sector, only a negligible amount of light remains.

1.3 The side lights shall have the prescribed luminous intensity in the direction parallel to the axis of the vessel forward. The intensities shall decrease practically to zero between 1° and 3° beyond the limits of the prescribed sector.

1.4 For bi-coloured or tri-coloured lanterns, the dispersion of the luminous intensity shall be uniform so that 3° on either side of the prescribed sector limits, the maximum permitted intensity is not exceeded and the minimum prescribed intensity is reached.

1.5 The horizontal dispersion of the luminous intensity of the lanterns shall be uniform throughout the sector, so that the minimum and maximum values observed for the photometric luminous intensity do not differ by more than a factor of 1.5.

2. Vertical dispersion of the luminous intensity

In the event of heeling of up to ± 5° or ± 7.5° from the horizontal, the luminous intensity shall remain at least equal to 80 % in the first case, and 60 % in the second case, of the luminous intensity corresponding to 0° heeling, although it shall not exceed it by more than 1.2 times.
Chapter 3
Requirements for signal lanterns

Article 3.01
Technical requirements

1. The construction of and materials of signal lanterns and light sources shall be such as to ensure their safety and durability.

2. The components of the lanterns (for example, the cross braces) shall not impair the intensity, colours or dispersion of the light.

3. It shall be possible to install the signal lanterns on board simply and in the correct position.

4. It shall be easy to replace the light source.

Chapter 4
Tests, approval and markings

Article 4.01
Type tests

The type test according to the ‘Conditions for testing and approval of signal lanterns in inland waterway vessels’ is intended to ascertain whether the signal lanterns and their light source meet these requirements.

Article 4.02
Test procedure

1. An application for a type test shall be submitted to the competent testing authority, with at least two copies of the plans and two specimens of the lantern as well as the light sources required.

2. If the test does not give rise to objections, one copy of the plans accompanying the application, with the approval entered on it, and one of the approved specimen lanterns shall be returned to the applicant. The second copy and second specimen lantern shall be kept by the testing authority.

3. The manufacturer shall declare to the testing authority that all the components of the series-produced lantern conform to those of the type-tested lantern.

Article 4.03
Approval certificate

1. If the type test shows that these requirements have been met, the signal lantern type shall be approved and an approval certificate based on the model in the Appendix and bearing the markings referred to in Article 4.05 shall be issued to the applicant.

2. The holder of the approval certificate:

   — shall be authorised to affix the markings referred to in Article 4.05 to the various parts;

   — may undertake manufacture only in conformity with the plans approved by the testing authority and according to the technique used for the type-tested lanterns;

   — may modify the approved plans and lantern models only with the approval of the testing authority. The latter shall also decide whether the approval certificate issued only requires additions to be made to it or whether a new application for approval is needed.
Article 4.04
Spot checks

1. The testing authority shall be empowered to take samples of signal lanterns from the production series for testing.

2. If the test reveals serious shortcomings, the approval may be withdrawn.

Article 4.05
Markings

1. Approved signal lanterns, optics and light sources shall be marked as indicated below:

   
   `\( \text{e} \cdot \text{X} \cdot \text{YY} \cdot \text{nnn} \)`

   where `\( \text{e} \)` is the approval mark,

   `\( \text{X} \)` indicates the country of approval, where:

   1 = Germany  
   2 = France  
   3 = Italy  
   4 = Netherlands  
   5 = Sweden  
   6 = Belgium  
   7 = Hungary  
   8 = Czech Republic  
   9 = Spain  
   11 = United Kingdom  
   12 = Austria  
   13 = Luxembourg  
   17 = Finland  
   18 = Denmark  
   20 = Poland  
   21 = Portugal  
   23 = Greece  
   24 = Ireland  
   26 = Slovenia  
   27 = Slovakia  
   29 = Estonia  
   32 = Latvia  
   36 = Lithuania  
   49 = Cyprus  
   50 = Malta

   `\( \text{YY} \)` are the last two figures of the year of approval, and

   `\( \text{nnn} \)` is the approval number assigned by the testing authority.

2. The markings shall be clearly legible and shall be indelibly affixed.

3. Markings on the housing shall be such that the signal lantern does not need to be dismantled in order to find them on board. If the optic and housing are inseparable, a marking on the housing shall suffice.

4. Only approved signal lanterns, optics and light sources may bear the markings indicated in paragraph 1 above.

5. The testing authority shall immediately inform the Committee of the marking assigned.
Appendix

Model approval certificate for signal lanterns for inland waterway vessels

The signal lantern .................................................................

(Description of type, model, and trademark)


It has been assigned. No ..............................................................

The components of the lantern shall be marked in conformity with Article 4.05 of Part I of Annex IX of Directive .../.../EC (**).

The holder of the approval shall guarantee, in conformity with Article 4.03 of Part I of Annex IX of Directive .../.../EC (**), that manufacture is undertaken only in conformity with the plans approved by the testing authority and in accordance with the technique used for the type-tested lanterns.

Modifications are permitted only with the approval of the testing authority.

Special comments:

........................................................................................................
........................................................................................................
........................................................................................................
........................................................................................................
........................................................................................................
........................................................................................................
........................................................................................................
........................................................................................................

(Place) ................................................................................ (Date)
............................................................................................

(Testing authority)................................................................

(Signature)...........................................................................

(*) OJ: Note to OJ: Fill in the number and date of this Directive.
(**) OJ: Fill in the number of this Directive.
PART II

REQUIREMENTS CONCERNING THE CONDITIONS FOR TESTING AND APPROVAL OF SIGNAL LANTERNS FOR INLAND WATERWAY VESSELS

Contents

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1.03  Mounting
1.04  Photometric requirements
1.05  Components
1.06  Maintenance
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1.08  Accessories
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1.10  Double lanterns

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2.02  Colorimetric requirements

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Chapter 1

General provisions

Article 1.01

Standard voltages

The standard voltages for signal lanterns for inland waterway vessels shall be 230 V, 115 V, 110 V, 24 V and 12 V. Wherever possible, 24 V appliances should be used.
**Article 1.02**  
*Operating requirements*

The normal operation of signal lanterns and their accessories shall not be hindered by routine on-board operations. In particular, all the optical components used and major parts for mounting and adjusting them shall be so manufactured that their position, once established, cannot be modified during operation.

**Article 1.03**  
*Mounting*

The parts for mounting signal lanterns on board shall be so made that, once they have been adjusted, the position of the lanterns, when fixed, cannot be modified during operation.

**Article 1.04**  
*Photometric requirements*

Signal lanterns shall produce the prescribed dispersion of luminous intensity; the identifying colour of the light and the prescribed intensity shall be obtained as soon as the light is turned on.

**Article 1.05**  
*Components*

Only components manufactured for the purpose shall be used in signal lanterns.

**Article 1.06**  
*Maintenance*

The method of construction of signal lanterns and their accessories shall permit their regular maintenance and, if necessary, enable light sources to be changed easily, even in darkness.

**Article 1.07**  
*Safety requirements*

Signal lanterns and their accessories shall be so manufactured and proportioned that they can be operated, controlled and monitored without danger to persons.

**Article 1.08**  
*Accessories*

Lantern accessories shall be so designed and manufactured that their arrangement, mounting and connection shall not hinder the normal use and proper functioning of the lanterns.

**Article 1.09**  
*Non-electric signal lanterns*

Non-electric lanterns shall be designed and manufactured in conformity with Articles 1.02 to 1.08 of this Chapter and so as to meet the requirements of Chapter 3. The requirements contained in Chapter 2 of these testing and approval conditions shall apply mutatis mutandis.
Article 1.10
Double lanterns

It shall be possible to use two lanterns mounted one above the other in one housing (double lantern) as a single lantern. Under no circumstances shall the two light sources of a double lantern be used simultaneously.

Chapter 2
Photometric and colorimetric requirements

Article 2.01
Photometric requirements

1. The photometric specifications for signal lanterns are set out in Part I.
2. The construction of signal lanterns shall guarantee that the light cannot be reflected or interrupted. The use of reflectors shall not be permitted.
3. In the case of two-colour or three-colour lights, the projection of light of a colour beyond the sector limits prescribed for that colour shall be effectively prevented, including inside the glass.
4. These requirements shall apply mutatis mutandis to non-electric lights.

Article 2.02
Colorimetric requirements

1. The colorimetric specifications for signal lanterns are set out in Part I.
2. The colour of the light emitted by signal lanterns shall be situated, for the temperature of the colour used by the light source, in the appropriate chromatic position established in Part I.
3. The colour of signal lights shall come only from filters (optics, glasses) and optical glasses coloured throughout if the chromatic points of the transmitted light do not diverge by more than 0,01 from their coordinates in the IEC chromaticity diagram. Coloured bulbs shall not be permitted.
4. The transparency of coloured glasses (filters) shall be such that, at the temperature of the light source colour used, the luminous intensity prescribed shall be reached.
5. The reflection of the source light on the parts of the signal lantern shall not be selective, i.e. the trichromatic coordinates x and y of the source used in the signal lantern shall, at the temperature of the colour used, not deviate by more than 0,01 following reflection.
6. Colourless glass shall not, at the temperature of the colour used, selectively influence the light emitted. Similarly, following an extensive operating period, the trichromatic coordinates x and y of the light source used in the signal lantern shall not deviate by more than 0,01, once the light has passed through the glass.
7. The colour of the light of non-electric signal lanterns, at the temperature of the light source used, shall be located in the appropriate chromatic position established in Part I.
8. The colour of the light from non-electric coloured signal lanterns shall come only from silicate glass, coloured throughout. For coloured non-electric lanterns, all the coloured silicate glass shall be such that at the colour temperature nearest the non-electric light source the prescribed luminous intensity shall be reached.

Chapter 3
Manufacturing requirements

Article 3.01
Electric signal lanterns

1. All the parts of the lanterns shall withstand the particular operational stresses resulting from movement of the vessel, vibrations, corrosion, temperature variations, impacts during loading and navigation in ice and other influences which may be exerted on board.
2. The construction, the materials and the workmanship of the lantern shall guarantee stability and ensure that, after mechanical and thermal stresses and exposure to ultraviolet rays in accordance with these requirements, its performance is unchanged; in particular, the photometric and colorimetric properties shall be preserved.

3. The components exposed to corrosion shall be made of corrosion-resistant materials or be provided with effective protection against corrosion.

4. The materials used shall not be hygroscopic where this would be detrimental to the operation of the installations, appliances and accessories.

5. The materials used shall be highly fire-resistant.

6. The testing authority may grant exemptions concerning the properties of the materials used provided that safety is guaranteed by the manufacture.

7. Signal lanterns shall be tested to ensure their suitability for use on board.
   The tests shall be divided between environmental and operating requirements.

8. Environmental requirements:
   
   (a) Classes of environment
   
   — Classes of climate:
     
     X Appliances intended for use in places exposed to weather conditions.
     
     S Appliances intended for submersion or for prolonged contact with salt water.
   
   — Classes of vibration:
     
     V Appliances and devices intended for installation on masts and at other points particularly exposed to vibrations.

   — Classes of hardness:
     
     Ambient conditions are divided into three classes of hardness:

     (1) Normal ambient conditions:
     
     These may regularly obtain on board during a long period.

     (2) Extreme ambient conditions:
     
     These may exceptionally obtain on board in special cases.

     (3) Transport ambient conditions:
     
     These may obtain during transport and immobilisation other than during the operation of the installations, appliances and accessories.

     Tests under normal ambient conditions are described as ‘normal ambient tests’, tests under extreme ambient conditions as ‘extreme ambient tests’ and tests under transport ambient conditions as ‘transport ambient tests’.

   (b) Requirements

   Signal lanterns and their accessories shall be suited to lengthy operation under the influence of the motion of the sea, and of the vibrations, humidity and temperature variations which must be expected on board ship.

   Signal lanterns and their accessories shall, on exposure to the ambient conditions listed in the Appendix, meet the requirements of their class of environment, as defined in paragraph 8(a).
9. Suitability for operation

(a) Power supply: during fluctuations in the voltages and frequencies of the supply current from their rated values (1) within the limits specified in the table set out below and oscillations of 5 % in the alternating supply voltage, signal lanterns and their accessories shall operate within the permitted tolerances for on-board operation applicable to them on the basis of the test and approval conditions. Theoretically, the supply voltage for the lanterns shall not deviate by more than ± 5 % from the rated voltage selected.

<table>
<thead>
<tr>
<th>Supply (Rated voltage)</th>
<th>Fluctuations in voltage and frequency of the supply current of lanterns and their accessories</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Fluctuations in voltage</td>
</tr>
<tr>
<td>Direct current of more than 48 V and alternating current</td>
<td>± 10 %</td>
</tr>
<tr>
<td>Direct current up to and including 48 V</td>
<td>± 10 %</td>
</tr>
</tbody>
</table>

Voltage peaks of up to ± 1 200 V with a rise time of between 2 and 10 µs and a maximum duration of 20 µs and the reversal of the supply voltage shall not cause damage to the signal lanterns and their accessories. After their occurrence, when safety devices may have cut in, the signal lanterns and their accessories shall operate within the permitted tolerances for on-board operation on the basis of the test and approval conditions.

(b) Electromagnetic compatibility: all reasonable and practical measures shall be taken to eliminate or reduce the reciprocal electromagnetic effects of lanterns and their accessories and of other installations and appliances forming part of the vessels’ equipment.

10. Ambient conditions on board vessels

The normal, extreme and transport ambient conditions referred to in paragraph 8(a) are based on the proposed additions to IEC publications 92-101 and 92-504. Other values deviating from them are marked with *.

<table>
<thead>
<tr>
<th>Ambient conditions</th>
<th>Normal</th>
<th>Extreme</th>
<th>Transport</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Ambient air temperature:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Classes of climate:</td>
<td>− 25 to</td>
<td>− 25 to</td>
<td>− 25 to</td>
</tr>
<tr>
<td>Climate classes X and S according to paragraph 8(a)</td>
<td>+ 55 °C*</td>
<td>+ 55 °C*</td>
<td>+ 70 °C*</td>
</tr>
<tr>
<td>b) Ambient air humidity:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant temperature</td>
<td>+ 20 °C</td>
<td>+ 35 °C</td>
<td>+ 45 °C</td>
</tr>
<tr>
<td>Maximum relative humidity</td>
<td>95 %</td>
<td>75 %</td>
<td>65 %</td>
</tr>
<tr>
<td>Change of temperature</td>
<td></td>
<td></td>
<td>Possibly reaching dewpoint</td>
</tr>
<tr>
<td>c) Weather conditions on deck:</td>
<td></td>
<td>1 120 W/m²</td>
<td></td>
</tr>
<tr>
<td>Sunlight</td>
<td>1 120 W/m²</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wind</td>
<td>50 m/s</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rainfall</td>
<td>15 mm/min</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Speed of the water during movement (waves)</td>
<td>10 m/s</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water salinity</td>
<td>30 kg/m³</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(1) The rated voltage and frequency are those indicated by the manufacturer. Ranges of voltage and/or frequency may also be indicated.
11. Signal lanterns must pass the environment tests set out in the Appendix.

12. Lantern components made of organic materials shall not be sensitive to ultraviolet radiation.

   After testing for 720 hours in conformity with section 6 of the Appendix, there shall be no deterioration in quality and the trichromatic coordinates x and y shall not deviate by more than 0.01 from those for transparent parts which have been exposed neither to radiation nor to water.

13. The transparent parts and screens of the lanterns shall be so designed and manufactured that, given normal on-board requirements, extended operation with an excess voltage of 10% and an ambient temperature of +45 °C, they are not deformed, altered or destroyed.

14. With extended operation and an excess voltage of 10% and an ambient temperature of +60 °C, lanterns shall remain intact on their holders when subjected to a force of 1 000 N (Newton) for eight hours.

15. Lanterns shall be resistant to temporary submersion. During extended operation with an excess voltage of 10% and an ambient temperature of +45 °C, they shall not be affected by drenching with the contents of a receptacle containing 10 litres of water at a temperature of +15° to +20 °C.

16. The durability of the materials used shall be ensured under operating conditions; in particular, the materials shall be capable of withstanding, during operation, their highest continuous use temperatures.

17. If the lanterns include non-metallic components, their continuous use temperature under on-board conditions at an ambient temperature of +45 °C shall be determined.

   If the continuous use temperature of the non-metallic materials as so determined exceeds the maximum temperatures indicated in Tables X and XI in IEC publication 598, part 1, special examinations shall be carried out to determine the resistance to continuous mechanical, thermal and climatic stresses on these parts of the lanterns.

18. For the non-deformability tests of parts at continuous use temperature, the lantern shall be placed in operating position in a slight constant air flow (v = approximately 0.5 m/s) in an ambient temperature of +45 °C and under on-board conditions. While they are being brought to temperature, and once the operating temperature is reached, the non-metallic parts shall be subjected to a mechanical stress in keeping with their purpose or with possible manipulation thereof. The transparent parts of the lanterns of materials other than silicate glass shall be subjected to the action of a 5 mm × 6 mm metallic punch exerting a continuous force of 6.5 N (equivalent to finger pressure) half way between the upper and lower sides of the transparent part.

   The part shall not suffer any permanent deformation as a result of such mechanical stresses.
19. For the test of the resistance of the components to atmospheric agents, lanterns with non-metallic components exposed to the elements shall be placed in a climatic chamber, for 12 consecutive hours alternately in an atmosphere of 45 °C and 95% relative humidity and an atmosphere of –20 °C, and operated intermittently under on-board conditions, so that they are exposed to hot-humid and cold cycles and to changes from low to high temperatures for periods corresponding to their operating times.

The total duration of this test shall be at least 720 hours. The test shall not affect the operational capacity of the non-metallic parts of the lantern.

20. The parts of lanterns within easy reach shall not, in an ambient temperature of +45 °C, reach temperatures higher than +70 °C when they are made of metal or +85 °C if they are not made of metal.

21. Lanterns shall be designed and manufactured according to accepted standards and comply, in particular, with IEC publication 598, part 1, 'Ships, lights — General specifications and tests'. The requirements of the following sections shall be met:

- Protection of connections (No 7.2),
- Protection against electric shocks (No 8.2),
- Insulation resistance and voltage stability (No 10.2 and No 10.3),
- Ground and overhead lines (No 11.2),
- Durability and heating (No 12.1, Tables X, XI and XII),
- Resistance to heat, fire and to stray currents (No 13.2, No 13.3 and No 13.4),
- Threaded connections (No 14.2, No 14.3 and No 14.4).

22. Electric wiring shall normally have a cross-section of not less than 1.5 mm². The wire used for the connection shall be at least of type HO 7 RN-F or equivalent.

23. The type of lantern protection for explosion danger zones shall be established and certified for the purpose by the competent testing authorities.

24. The method of manufacture of the lanterns shall make provision for:

(1) Ease of cleaning, including inside the lantern, and ease of changing the light source, even in darkness,
(2) Prevention of the accumulation of condensation,
(3) Use of durable elastic fittings only to ensure that demountable parts are leakproof,
(4) Ensuring that no light of any colour other than that provided for can escape from the lantern.

25. All lanterns to be installed shall be accompanied by positioning and installation instructions indicating where the light is to be mounted, and the purpose and the type of interchangeable parts. It shall be possible to position movable lanterns easily and safely.

26. The required mounts shall be such that, in its intended position, the horizontal plane of symmetry of the lantern is parallel to the water line of the vessel.

27. The following marks shall be placed clearly and durably on each lantern, at a point remaining visible after installation on board:

(1) The rated power of the source, in so far as different rated powers may give different ranges,
(2) The type of lantern for sector lights,
The zero-direction reference, on sector lights, using a mark immediately above or below the transparent section,

(4) The type of light, e.g. ‘strong’;

(5) The trademark,

(6) The place for the approval mark, for example .F.91.235.

Article 3.02
Filters and optical glasses

1. Filters (optics and glasses) and optical glasses may be made of organic glass (synthetic glass) or inorganic glass (silicate glass).

Filters and optical glasses of silicate glass shall be made of a glass at least of the class IV hydrolytic type referred to in ISO standard 719 guaranteeing durable resistance to water.

Filters and optical glasses of synthetic glass shall have a durable resistance to water comparable with those made of silicate glass.

Optical glasses shall be manufactured in glass with low internal stress.

2. Filters and optical glasses shall as far as possible be free of blisters, bubbles and impurities. There shall be no surface defects such as unpolished (matt) sections, deep scratches, etc.

3. Filters and optical glasses shall meet the requirements of Article 3.01. Their photometric and colorimetric properties shall not be affected by those conditions.

4. The red and green optical glasses of the side lights shall not be interchangeable.

5. In addition to the manufacturer’s mark, the approval number and the type description shall be legibly and durably marked on filters and optical glasses at a point remaining visible once they have been placed in the lanterns.

These markings shall not result in values below the minimum photometric and colorimetric requirements.

Article 3.03
Electric light sources

1. Only filament lamps manufactured for the purpose shall be used in signal lanterns. They shall be available in the standard voltages. Exceptions may be permitted in special cases.

2. It shall be possible to install filament lamps only in the intended position in signal lanterns. A maximum of two unequivocal positions shall be permitted in signal lanterns. Incorrect and intermediate positions shall not be possible. For the test, the less favourable position shall be selected.

3. Filament lamps shall have no special features which adversely affect their efficiency, such as scratches or stains on the bulk or faulty positioning of the filament.

4. The operating colour temperature of filament lamps shall not be less than 2 360 K.

5. The mountings and lamp holders used shall meet the special requirements of the optical system and withstand the mechanical stresses of on-board operations.

6. The cap of the filament lamp shall be strong and solidly attached to the bulk so that after operating for 100 hours at an excess voltage of 10% it withstands uniform rotation with a moment of 25 kgcm.

7. The trademark, the rated voltage and the power rating and/or the rated luminous intensity as well as the approval number shall be marked legibly and durably on the bulk or on the cap of filament lamps.

8. Filament lamps shall meet the following tolerances:

(a) Filament lamps for the rated voltages of 230 V, 115 V, 110 V and 24 V
Comments:

(1) Light-centre-length tolerance of the 24 V/40 W lamp: ± 1,5 mm.

(2) L: the broad lug of the P 28 S cap is on the left when the lamp is upright, seen against the direction of emission.

(3) Before measurement of the values at the start of the test, filament lamps shall have already been in service at the rated voltage for 60 minutes.

(4) These limits shall be respected in an area extending ± 10° on either side of the horizontal line passing through the median point of the body of the lantern when the lamp is rotated through 360° on its axis.

(b) Filament lamps for the rated voltages 24 V and 12 V
<table>
<thead>
<tr>
<th>Rated voltage V</th>
<th>Rated output W</th>
<th>Max. power noted (W)</th>
<th>Rated life h</th>
<th>Test values measured ((1))</th>
<th>Body of lantern mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>10</td>
<td></td>
<td>12</td>
<td>10 to 17</td>
<td>9 to 13</td>
</tr>
<tr>
<td>24</td>
<td></td>
<td></td>
<td>1 000</td>
<td>2 360 to 2 856</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>25</td>
<td></td>
<td>30 to 48</td>
<td></td>
<td>9 to 13</td>
</tr>
<tr>
<td>24</td>
<td>26.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Comments:

(!) Before measurement of the values at the start of the test, filament lamps shall have already been in service at the rated voltage for 60 minutes.

(\(?)\) These limits shall be respected in an area extending ± 30° on either side of the horizontal line passing through the median point of the body of the lantern when the lamp is rotated through 360° on its axis.

(c) The filament lamps shall be marked on the cap with an indication of the corresponding sizes. If these marks are on the bulb, the operation of the lamp shall not be affected.

(d) If discharge lamps are used instead of filament lamps, the same requirements as for filament lamps shall be applicable.

Chapter 4
Test and approval procedure

Article 4.01
General rules of procedure

Part I shall be applicable for the test and approval procedure.

Article 4.02
Application

1. The following data and documents as well as samples of the lanterns and of their accessories, if any, shall be attached to the application for approval submitted by the manufacturer or his authorised representative:

(a) The type of light (e.g. ‘strong’);

(b) The trade name and the description of the lantern type, its light source and accessories if any;

(c) For electric signal lanterns, the on-board voltage supply required by the lanterns depending on their purpose;

(d) Specifications of all characteristics and capacities;

(e) A brief technical description indicating the materials of which the sample lantern is made and a wiring diagram with a brief technical description if accessories of the lantern likely to influence operation are included;

(f) For sample lanterns and, where relevant, their accessories, two copies of:

(i) Adjustment or mounting instructions with data concerning the light source and the mounting or holding device;

(ii) Sketch with dimensions and type names and descriptions needed to identify the test sample and lanterns installed on board and their accessories, if any;
Other documents such as drawings, lists of parts, wiring diagrams, operating instructions and photographs which concern or may concern all the important details referred to in Chapters 1 to 3 of these test and approval conditions, in so far as they are necessary for verifying the conformity of the lanterns to be manufactured with the test sample. The following data and drawings are particularly relevant:

(iii) A longitudinal section showing the details of the structure of the filter and the profile of the light source (filament lamp), as well as the positioning and the mount;

— A cross-section of the lantern halfway up the filter showing details of the layout of the light source, filter, the optical glass, if any, and the horizontal dispersion angle for sector lights;

— A view from the rear for sector lights, with details of the holder or mount;

— A view of circular lights with details of the holder or mount.

(iv) Data concerning dimensional tolerances in mass produced light sources, filters, optical glasses, mounting or holding devices and of the light source placed in the lantern in relation to the filter;

(v) Data concerning the horizontal luminous intensity of mass-produced sources at the rated voltage;

(vi) Data concerning mass-production tolerances for coloured glasses with regard to the colour and transparency of a standard illuminant A (2 856 K) or the type of light from the intended light source.

2. Two samples ready for use shall be supplied with the application, each with ten light sources of each rated voltage and, where relevant, five coloured filters of each signal colour, together with the mounting or positioning device.

The specific additional accessories required for the approval tests shall also be made available on request.

3. The sample shall correspond in all respects to the production models envisaged. It shall be fitted with all the accessories required for mounting and positioning it in the normal operating position in which it is to be used on board in accordance with its purpose. Some accessories may be omitted if the competent testing authority agrees.

4. Additional samples, documents and data shall be supplied on request.

5. The documents shall be submitted in the language of the country of the testing and approval authority.

6. If an application for approval is submitted for an additional device, paragraphs 1 to 5 shall apply mutatis mutandis, on the understanding that the additional parts may be approved only in combination with the approved lanterns.

7. Sector lights shall in principle be submitted as a complete set.

Article 4.03

Test

1. For tests on a new or amended version of an approved lantern or accessory, it shall be ascertained whether the sample meets the requirements of these test and approval conditions and corresponds to the documents referred to in Article 4.02(1)(f).

2. The approval test shall be based on the conditions occurring on board the vessels. The test shall cover all light sources, optical glasses and accessories which must be provided and which are intended for the signal lanterns.
3. The photometric and colorimetric test shall be carried out at the rated voltage. The evaluation of the lantern shall take into account the horizontal operating luminous intensity $I_h$ and the operating colour temperature.

4. Parts or accessories shall be tested only with the type of lantern for which they are intended.

5. Tests done by other competent authorities may be accepted as proof of conformity with the requirements of Chapter 3, provided that they have been confirmed as equivalent to the tests set out in the Appendix.

Article 4.04
Approval

1. Approval of signal lanterns shall be based on Articles 4.01 to 4.05 of Part I.

2. For lanterns and accessories which are or will be mass-produced, the approval may be issued to the applicant following a test at the applicant’s expense if the applicant guarantees that proper use will be made of the rights resulting from the approval.

3. In the event of approval, the approval certificate referred to in Article 4.03 of Part I shall be issued for the corresponding lantern type and an approval marking in accordance with Article 4.05 of Part I shall be allocated. The approval marking and the serial number shall be legibly and durably affixed to each lantern manufactured in accordance with the sample, at a point which remains fully visible after installation on board. Original markings and type descriptions shall be clearly legible and shall be indelibly affixed. Marks liable to be confused with approval markings shall not be affixed to lanterns.

4. Approval may be granted for a limited period and subject to conditions.

5. Modifications of an approved lantern and additions to approved lanterns shall be subject to the agreement of the testing authority.

6. If approval of a lantern is withdrawn, the applicant shall be informed directly.

7. One sample of each type of lantern approved shall be left with the testing authority which approved it.

Article 4.05
Cessation of validity of the approval

1. The approval shall cease to be valid on the expiry of the prescribed period, or if it is revoked or withdrawn.

2. The approval may be revoked if:
   — subsequently and conclusively, the conditions for its issue no longer exist,
   — the test and approval conditions are no longer met,
   — a lantern does not correspond to the approved sample,
   — the conditions imposed are not complied with, or
   — the holder of the approval proves unreliable.

   It shall be withdrawn if the conditions laid down when it was issued have not been met.

3. If manufacture of an approved signal lantern type is discontinued, the testing authority which issued the approval shall be informed immediately.

4. Withdrawal or revocation of approval shall mean that use of the approval number allocated is prohibited.

5. Once the approval ceases to be valid the certificate shall be submitted for annulment to the testing authority which issued it.
Appendix

Environment tests

1. Test concerning protection against splashing water and dust

1.1. The type of lantern protection shall be guaranteed in accordance with classification IP 55 of the IEC publication — Part 598-1.

The test concerning protection of the sample against splashing water and against dust, and the evaluation of the results, shall be carried out in conformity with IEC publication 529, classification IP 55.

The first ‘5’ stands for protection against dust. This means: full dust-proof protection of live components and protection against harmful deposits of dust.

The penetration of dust is not completely prevented.

The second ‘5’ stands for protection against splashing water. This means that a water jet aimed at the lantern from all directions shall have no damaging effect.

1.2. The protection of the sample against water is evaluated as follows: the protection is considered to be adequate if any water which has entered has no detrimental effect on operation of the sample.

No water deposits shall have formed on the insulating materials, if this means that minimum vanishing point values could not be achieved. Live components shall not be wetted and shall not be affected by any water accumulating inside the lantern.

2. Humid atmosphere test

2.1. Purpose and application

This test is to determine the action of humid heat and of humidity during a change of temperature, as described in Article 3.01(10)(b), during operation or during transport or storage, on nautical installations, appliances and instruments, given that they could experience surface humidity from condensation.

This condensation is similar in the case of non-enclosed components to the action of a dust deposit or of a hygroscopic salt film forming during operation.

The following specification is based on IEC publication 68, Part 2-30 in conjunction with Article 3.01(10)(a) and (b). Additional information can be found in the publication.

Components and groups of components submitted non-enclosed for approval as type models shall be tested in that non-enclosed state or, if this is not possible given the nature of the components, by providing them with the minimum protection devices which the applicant considers necessary for use on board.

2.2. Execution

(1) The test is conducted in a test chamber in which, if necessary by means of an air circulation device, the temperature and level of humidity are practically the same at all points. The movement of the air shall not noticeably cool the sample being tested, but should be sufficient to ensure that the prescribed values for air temperature and humidity are maintained in its immediate vicinity.

Condensate shall be continuously evacuated from the test chamber. No condensate shall drip on to the sample. Condensate may only be reused for humidification following reprocessing, in particular once chemicals from the sample have been eliminated.

(2) The sample shall not be exposed to heat radiation from the heating of the chamber.
(3) The sample shall have been out of service immediately prior to the test long enough for all its parts to be at ambient temperature.

(4) The sample is placed in a test chamber at an ambient temperature of +25 ± 10 °C corresponding to its normal use on board.

(5) The chamber is closed. The air temperature is set at −25 ± 3 °C and the relative humidity at 45 % to 75 % and those conditions are maintained until the sample has reached the same temperature.

(6) The relative humidity of the air is raised to not less than 95 % in a maximum time of one hour, the air temperature remaining unchanged. This increase may take place during the last hour of temperature conditioning of the sample.

(7) The air temperature in the chamber is increased progressively to +40 ± 2 °C over a period of 3 h ± 0,5 h. As the temperature rises, the relative humidity of the air is maintained at not less than 95 %, and at not less than 90 % during the last 15 minutes. During this temperature rise, the sample becomes damp.

(8) The air temperature is maintained at +40 ± 2 °C for a time period of 12 h ± 0,5 h measured from the start of phase (7), with a relative air humidity of 93 % ± 3 %. During the first 15 and the last 15 minutes of the period during which the temperature is +40 ± 2 °C, relative air humidity may be between 90 % and 100 %.

(9) The air temperature is reduced to +25 ± 3 °C over a period of three to six hours. The relative humidity of the air must be constantly maintained at over 80 %.

(10) The air temperature is maintained at +25 ± 3 °C for a period of 24 hours from the start of phase (7), relative air humidity remaining constantly above 95 %.

(11) Phase (7) is repeated.

(12) Phase (8) is repeated.

(13) Not earlier than 10 hours after the start of phase (12) the air conditioning equipment of the sample is switched on. When the climatic data indicated by the manufacturer for the sample have been obtained, the sample is put into operation in accordance with the manufacturer's instructions and at the rated voltage of the on-board network, with a tolerance of ± 3 %.

(14) After the time necessary to achieve normal operation in accordance with the manufacturer's instructions has elapsed, the functions are checked and the operating data of importance for use on board recorded and noted. If the chamber needs to be opened for this purpose, it shall be reclosed as quickly as possible.

If more than 30 minutes are required to reach normal operation, this phase shall be extended sufficiently so that, once the operating state has been reached, at least 30 minutes are available to monitor the functions and measure the operating data.

(15) Within a period of 1 to 3 hours, with the sample again in service, the air temperature is lowered to ambient temperature, with a tolerance of ± 3 °C, and the relative humidity of the air to under 75 %.

(16) The chamber is opened and the sample exposed to the normal temperature and humidity of the ambient air.

(17) After 3 hours, and when all humidity visible on the sample has evaporated, the functions of the sample are monitored again, and operating data of importance for use on board recorded and noted.

(18) The sample is subjected to a visual inspection. The body of the lantern is opened and the interior examined for any effects of the climatic test and for residual condensate.
2.3. Results to be obtained

2.3.1. The sample shall function normally under the conditions stipulated in phases (12) to (18). No deterioration shall be observed.

2.3.2. The operating data for phases (12) and (18) shall be within the tolerances permitted for the sample on the basis of these test and approval conditions.

2.3.3. There shall be no corrosion or no residual condensate inside the lantern which, as a result of the long-term action of high atmospheric humidity, might cause it to malfunction.

3. Cold test

3.1. Purpose

This test is to determine the action of cold during operation or during transport and storage, in accordance with Article 3.01(8) and (10). Additional information may be found in IEC publication 68, Part 3-1.

3.2. Execution

(1) The test is carried out in a test chamber in which, if necessary by means of an air circulation device, the temperature is practically the same at all points. The air humidity must be low enough to ensure that the sample is not wetted by condensation during any of the phases.

(2) The sample is placed in a test chamber at an ambient temperature of +25 ± 10 °C corresponding to its normal use on board.

(3) The temperature in the chamber is lowered to −25 ± 3 °C at a rate of not more than 45 °C/h.

(4) The temperature in the chamber is maintained at −25 ± 3 °C until the sample has reached temperature equilibrium, plus at least a further 2 hours.

(5) The temperature in the chamber is raised to 0 ± 2 °C at a rate of not more than 45 °C/h.

For all samples referred to in Article 3.01(10)(a), the following also applies:

(6) During the last hour of phase (4) in climate class X, the sample is put into operation in accordance with the manufacturer’s instructions, at the rated voltage of the on-board network, with a tolerance of ± 3%. The heat sources contained in the sample must be in operation.

After the time necessary to achieve normal operation has elapsed, the functions are checked and the operating data of importance for use on board recorded and noted.

(7) The temperature in the chamber is raised to ambient temperature at a rate of not more than 45 °C/h.

(8) Once the sample has reached temperature equilibrium, the chamber is opened.

(9) The functions of the sample are checked again and the operating data of importance for use on board recorded and noted.

3.3. Results to be obtained

The sample shall function normally under the conditions stipulated in phases (7), (8) and (9). No deterioration shall be observed.

The operating data for phases (7) and (9) shall be within the tolerances permitted for the sample on the basis of these test and approval conditions.
4. Heat test

4.1. Purpose and application

This test is to determine the action of heat during operation, transport and storage, in accordance with Article 3.01(8)(a) and (10)(a). The following specification is based on IEC publication 68, Part 2-2 in conjunction with Article 3.01(10)(a). Additional information can be found in the IEC publication.

<table>
<thead>
<tr>
<th>Environment tests</th>
<th>Normal</th>
<th>Extreme</th>
</tr>
</thead>
<tbody>
<tr>
<td>Climate classes X and S + 55 °C</td>
<td>+ 70 °C</td>
<td></td>
</tr>
<tr>
<td>Permissible tolerance ± 2 °C</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The test under extreme ambient conditions shall, in principle, be performed first. If the operating data are within the tolerances applicable under normal ambient conditions, the normal ambient test may be dispensed with.

4.2. Execution

(1) The test is conducted in a test chamber in which, if necessary by means of an air circulation device, the temperature is practically the same at all points. The movement of the air shall not noticeably cool the sample being tested. The sample shall not be exposed to heat radiation from the heating of the chamber. The air humidity must be low enough to ensure that the sample is not wetted by condensation during any of the phases.

(2) The sample is placed in a test chamber at a temperature of + 25 ± 10 °C corresponding to its normal use on board. The sample is put into operation in accordance with the manufacturer’s instructions at the rated voltage of the on-board network with a tolerance of ± 3 %.

After the time necessary to achieve normal operation has elapsed, the functions are checked and the operating data of importance for use on board recorded and noted.

(3) The air temperature in the chamber is raised to the test temperature referred to in Article 3.01(10)(a) at a rate of not more than 45 °C/h.

(4) The air temperature is maintained at the test temperature until the sample reaches temperature equilibrium plus a further two hours.

During the last two hours, the functions are checked again and the operating data recorded and noted.

(5) The temperature is lowered to ambient temperature over a period of not less than one hour. The chamber is then opened.

After bringing the sample to ambient temperature, the functions are again checked and the operating data of importance for use on board recorded and noted.

4.3. Results to be obtained

The sample shall function normally under the conditions stipulated in all phases of the test. No deterioration shall be observed. The operating data for phases (2), (4) and (5) shall be within the tolerances permitted for the sample for normal ambient environment tests on the basis of these test and approval conditions.

5. Vibration test

5.1. Purpose and application

This test is to determine the functional and structural effects of the vibrations referred to in Article 3.01(10)(e). Structural effects concern the performance of the mechanical components, particularly vibrations by resonance and stress on materials leading to fatigue without necessarily producing direct effects on operation or changes in operating data.
The functional effects directly concern the operation and operating data of the sample. They may be linked to structural effects.

The following specification is based on IEC publication 68, Part 2-6 in conjunction with Article 3.01(10)(e). Values deviating from those in the abovementioned provisions are indicated by *. Additional information may be found in IEC publication 68, Part 2-6.

Test requirements:

The test shall be conducted with sinusoidal vibrations using the following frequencies with the amplitudes indicated:

<table>
<thead>
<tr>
<th></th>
<th>Normal</th>
<th>Extreme</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Environment tests</strong></td>
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<tr>
<td>Vibration class V:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequencies</td>
<td>2 to 10 Hz</td>
<td>2 to 13.2 Hz*</td>
</tr>
<tr>
<td>Amplitude</td>
<td>± 1.6 mm</td>
<td>± 1.6 mm</td>
</tr>
<tr>
<td>Frequencies</td>
<td>10 to 100 Hz</td>
<td>13.2 to 100 Hz*</td>
</tr>
<tr>
<td>Acceleration amplitude</td>
<td>± 7 m/s²</td>
<td>± 11 m/s²</td>
</tr>
</tbody>
</table>

The test under extreme ambient conditions shall, in principle, be performed first. If the operating data are within the tolerances applicable under normal ambient conditions, the normal ambient test may be dispensed with. Samples intended to be used with shock-absorbing devices shall be tested with those devices. If, in exceptional cases, it is not possible to test with the shock-absorbers intended for normal operation, the appliances shall be tested without shock-absorbers and the stress modified to take account of the action of the shock-absorber.

A test without shock-absorbers is also acceptable for the determination of characteristic frequencies.

The vibration test shall be conducted in three main directions perpendicular to each other. For samples which on account of their construction may be subject to special stresses from vibrations at an oblique angle to the main directions, the test shall also be performed in the directions of special sensitivity.

5.2. Execution

(1) Test apparatus

The test is conducted using a vibrating device known as a vibrating table, which enables the sample to be subjected to mechanical vibrations in accordance with the following conditions:

— The basic movement shall be sinusoidal and such that the mounting points of the sample basically move in phase and along parallel lines.

— The maximum amplitude of vibration of the lateral movement of any mounting point shall not exceed 25 % of the specified amplitude of the basic movement.

— The relative importance of the spurious vibration, expressed by the formula

\[ d = \frac{\sqrt{a_{tot}^2 - a_i^2}}{a_i} \cdot 100 \text{ (in %)} \]

where \( a_i \) is the effective value of the acceleration produced by the frequency applied,

and where \( a_{tot} \) is the effective value of the total acceleration, including \( a_i \), measured in the frequencies \( \leq 3000 \text{ Hz} \),

shall not exceed 25 % at the mounting point taken as the point of reference for measurement of the acceleration.
— The vibration amplitude shall not differ from its theoretical value by more than:
  ± 15 % at the mounting point taken as the point of reference and
  ± 25 % at any other mounting point.

In order to determine the characteristic frequencies, it must be possible to adjust the vibration amplitude in small steps between zero and the theoretical value.

— The vibration frequency shall not differ from its theoretical value by more than
  ± 0,05 Hz for frequencies up to 0,25 Hz,
  ± 20 % for frequencies higher than 0,25 Hz and up to 5 Hz,
  ± 1 Hz for frequencies higher than 5 Hz and up to 50 Hz,
  ± 2 % for frequencies higher than 50 Hz,

In order to compare the characteristic frequencies, it must be possible to adjust them at the beginning and end of the vibration test to within:

  ± 0,05 Hz for frequencies up to 0,5 Hz,
  ± 10 % ± 0,5 Hz for frequencies up to 5 Hz,
  ± 0,5 Hz for frequencies higher than 5 Hz and up to 100 Hz,
  ± 0,5 % for frequencies higher than 100 Hz.

In order to scan the frequencies, it should be possible for the vibration frequency to vary continuously and exponentially in both directions between the lower and upper limits of the frequency ranges indicated in section 5.1, with a scanning speed of 1 octave/minute ± 10 %.

In order to determine the characteristic frequencies, it must be possible to slow the speed of variation of the vibration frequency as desired.

— The intensity of the magnetic field created by the vibration device in the vicinity of the sample should not exceed 20 kA/m. The testing authority may require lower permissible values for some samples.

(2) First inspection, mounting and putting into service

The sample is inspected visually to verify that it is in impeccable condition as far as is apparent, and that the assembly is impeccable from the point of view of the construction of all the components and groups of components.

The sample is mounted on the vibrating table in accordance with the type of mount provided for on-board installation. Samples, the operation and performance of which under the influence of vibrations depend on their position in relation to the vertical, shall be tested in their normal operating position. The mounts and devices used for the mounting shall not noticeably modify the amplitude and the movements of the sample in the range of frequencies used in the test.

The sample is put into operation in accordance with the manufacturer’s instructions at the rated voltage of the on-board network with a tolerance of ± 3 %.

After the time necessary to achieve normal operation has elapsed, the functions are checked and the operating data of importance for use on board recorded and noted.

(3) Preliminary inspection of performance when subjected to vibrations

This test phase shall be conducted for all samples. For samples which may be used for different purposes with varying vibratory effects, the test shall be conducted for all or some of the various uses.
A frequency cycle is effected with the vibrating table so that the frequency range indicated in section 5.1, with its corresponding amplitudes, is covered from the lowest frequency to the highest and conversely, at a rate of one octave per minute. The sample is observed during this operation using the appropriate means of measurement and visually, if necessary using a stroboscope, to check thoroughly for any operating problems, modifications of operating data and mechanical phenomena such as vibrations by resonance and rattling noises occurring in specific frequencies. These frequencies are described as ‘characteristic’.

If necessary, in order to determine characteristic frequencies and vibration effects, the frequency variation is slowed down, stopped or reversed and the amplitude of the vibrations reduced. During the gradual modification of the operating data, it is necessary to wait until the final value is reached while maintaining the vibration frequency, although not more than five minutes.

During the frequency scan, at least the frequencies and operating data of importance for use on board are recorded, and all characteristic frequencies are noted, with their effects, for subsequent comparison during phase (7).

If the response of the sample to mechanical vibrations cannot be adequately determined during operation, an additional vibration response test shall be performed without connecting the sample.

If during the frequency scan the operational data noticeably exceed the permissible tolerances, the operation is unacceptably disrupted or if the structural resonance vibrations are likely to cause destruction should the vibration test be continued, the test may be interrupted.

(4) Test of switching functions

This test phase shall be conducted for all samples where vibratory stress may influence switching functions, for example relays.

The sample is subjected to vibrations in the frequency ranges indicated in section 5.1 with frequency variation steps in accordance with the E-12 series (1) and the corresponding amplitudes. At each frequency step, all switching functions which may be sensitive to vibration, if necessary including switching-on and switching-off, are carried out at least twice.

Switching functions may also be tested at frequencies occurring between the E-12 series values.

(5) Extended test

This test phase shall be conducted for all samples. For samples which may be used for different purposes with varying vibratory effects, the first part of this phase (when the sample is in service) may be conducted several times, for all or some of the various uses.

When the sample is in service as described in phase (2) above, it is subjected to five cycles during which the frequency range indicated as stress producing in section 5.1, with the corresponding amplitudes, is covered each time from the lowest to the highest frequency and conversely, at a rate of one octave per minute.

After the fifth cycle, the vibrating table may be stopped, the functions are tested and the operating data of importance for on-board use recorded and noted.

(6) Fixed frequency extended test

This test phase shall be conducted if, on examining vibratory performance during phase (3) above, mechanical resonances are observed during the scan of the frequency range above 5 Hz, which are acceptable for extended use on board according to the manufacturer or his authorised representative, but for which the strength of the parts concerned cannot be taken for granted. In particular, this phase concerns appliances fitted with shock absorbers with a resonance frequency within the frequency range indicated in section 5.1 and higher than 5 Hz.

(1) Fundamental values of the E-12 IEC series: 1,0; 1,2; 1,5; 1,8; 2,2; 2,7; 3,3; 3,9; 4,7; 5,6; 6,8; 8,2.
When the sample is in service as described in phase (2) above, for each resonance frequency concerned, it is subjected for two hours to vibrations at the amplitude provided for in the extreme ambient test and at the corresponding frequency as referred to in section 5.1, the direction of vibration being that which in normal use exerts the maximum stress on the parts in question. If necessary, the frequency applied must be rectified so that the resonance vibrations continue at not less than 70 % of their maximum amplitude, or the frequency must be made to vary continuously between two values 2 % below and 2 % above the resonance frequency initially observed, at a rate of at least 0,1 but not more than 1 octave per minute. During the vibratory stress, the functions of the sample are monitored until malfunctions begin to occur, as a result of mechanical parts becoming detached or displaced or of a break in the electrical connection or of a short-circuit.

Samples for which the execution of this test phase is relevant when switched off may be tested in that state, provided the mechanical stress on the parts concerned is not less than in normal use.

(7) Final inspection of performance when subjected to vibration

This test phase must be effected as necessary.

The inspection of performance when subjected to vibrations referred to in phase (3) is repeated using the frequencies and amplitudes applied in that phase. The characteristic frequencies observed and the observed effects of vibration stress are compared with the results of phase (3) in order to determine any changes which occurred during the vibration test.

(8) Conclusions of the inspection

Once the vibrating table has stopped and the time necessary to arrive at an operating state without vibratory stress has elapsed, the functions are tested and the operating data of importance for on-board use recorded and noted.

Lastly, the sample is inspected visually to verify that it is in impeccable condition.

5.3. Results to be obtained

The sample and its components and groups of components should not show any mechanical resonance vibrations in the frequency ranges indicated in section 5.1. When resonance vibrations of this type are unavoidable, construction measures must be taken to ensure that the sample, its components and groups of components suffer no damage.

During and following the vibration test, no perceptible effect of vibratory stress shall occur, and in particular no difference between the characteristic frequencies observed in phase (7) and the values determined in phase (3) and no damage or malfunction as a result of extended vibration shall be observed.

In the case of the normal ambient test, the operating data recorded in phases (3) to (8) shall remain within the tolerances permitted on the basis of these test and approval conditions.

During the switching functions test in phase (4), no switching malfunction or breakdown shall occur.

6. Accelerated weather resistance test

6.1. Purpose and application

The accelerated weather resistance test (simulation of exposure to the elements through exposure to radiation from xenon lamps with filters and by sprinkling) is conducted in accordance with Parts 2-3, 2-5 and 2-9 of IEC publication 68 plus the following additions:

According to this publication, the accelerated weather resistance test aims at simulating natural weather conditions by means of a test apparatus under specific reproducible conditions, so as to provoke rapid changes in the properties of the materials.
The accelerated test is carried out in a test apparatus with filtered radiation from xenon lamps and intermittent sprinkling. Following exposure to the elements, measured by the product of the intensity of radiation and its duration, the agreed properties of the samples are compared with those of samples of the same origin which have not been exposed to the elements. First to be specified are the properties crucial for practical use, such as colour, surface quality, shock resistance, tensile strength and solidity.

In order to compare the results with those of exposure to natural weather conditions, it is assumed that the alteration of properties by the elements is caused in particular by natural radiation and the simultaneous action of oxygen, water and heat on the materials.

For the accelerated test, particular account must be taken of the fact that the radiation in the appliance is very close to natural radiation (see the IEC publication).

The radiation from the xenon lamp with a special filter simulates natural radiation.

Experience has shown that, under the test conditions indicated, there is a strong correlation between resistance to weather in the accelerated test and resistance to natural weather conditions. The accelerated test, which is independent of place, climate and season, has the advantage over natural weather conditions of being reproducible and of making it possible to shorten the duration of the test as it is independent of the alternation of day and night and of the seasons.

6.2. Number of samples

For the weather-resistance test, unless otherwise agreed, an adequate number of samples is used. An adequate number of samples not subjected to weather conditions is required for the purposes of comparison.

6.3. Preparation of samples

The samples are subjected to the tests in the state in which they are delivered, unless otherwise agreed. The samples to be used for comparison are kept in the dark at ambient temperature throughout the tests.

6.4. Test apparatus

The test apparatus consists basically of a ventilated test chamber with the radiation source in the centre. Optical filters are placed round the radiation source. The sample mounts are rotated around the longitudinal axis of the system at the required distance from the source and the filters to reach the intensity of radiation prescribed in section 6.4.1.

The intensity of the radiation on any component of the total sample surfaces exposed shall not differ by more than ±10% from the arithmetical mean of radiation intensity on the various surfaces.

6.4.1. Radiation source

A xenon lamp is used as the radiation source. The radiation flux shall be selected so that the intensity of radiation on the sample surface is 1 000 ± 200 W·m⁻² in the 300 to 830 nm waveband (see section 6.9 for the apparatus for measuring irradiation).

If air-cooled xenon lamps are used, the air already used containing ozone must not enter the test chamber and must be evacuated separately.

The experimental values show that the radiation flux from xenon lamps drops to 80% of its initial value after approximately 1 500 hours of operation; after this period, the proportion of ultra-violet radiation is also reduced noticeably compared with other forms of radiation. The xenon lamp must therefore be replaced after this period (see also the data supplied by the xenon lamp manufacturer).

6.4.2. Optical filters

Optical filters must be positioned between the radiation source and the sample mounts so that the filtered radiation from the xenon lamps is as close as possible to natural radiation (see IEC publication 68, Parts 2 to 9).

All glass filters must be cleaned regularly to avoid any undesirable decrease in radiation intensity. The filters must be replaced if the similarity to natural radiation can no longer be achieved.
With regard to appropriate optical filters, the data supplied by the manufacturer of the test apparatus must be complied with. On delivery of test apparatus, the manufacturer must guarantee that it meets the requirements set out in section 6.4.

6.5. **Sprinkling and air humidifying device**

The sample shall be wetted in such a way that the action is the same as that of natural rain and dew. The sample sprinkling device shall be so constructed that during sprinkling all the external surfaces of the samples are wetted. It must be controlled in such a way that the sprinkling/dry-period cycle prescribed in section 6.10.3 is complied with. The air in the test chamber must be humidified so as to maintain the relative humidity prescribed in section 6.10.3. The water used for sprinkling and for humidifying the air must be distilled water or fully desalinated water (conductivity ≤ 5 µS/cm).

The tanks, pipes and sprayers for distilled or fully desalinated water must be of corrosion-resistant materials. The relative humidity of the air in the test chamber is measured using a hygrometer protected against sprinkling and direct radiation and is adjusted by means of the hygrometer.

When fully desalinated water or water in a closed circuit is used the risk exists (as in the varnish test) of the formation of a deposit on the surface of the samples or of wear on the surface by substances in suspension.

6.6. **Ventilation device**

The temperature of the black panel prescribed in section 6.10.2 is maintained in the test chamber by the circulation of clean, filtered, humidified and, if necessary, temperature-controlled air over the samples. The flow and speed of the air shall be selected so as to ensure uniform tempering of all external surfaces of the mounts of the samples in the system.

6.7. **Sample mounts**

Any mounts in stainless steel enabling the samples to be mounted as set out in section 6.10.1 may be used.

6.8. **Blackpanel thermometer**

In order to measure the temperature of the black panel during the dry period of the cycle, a blackpanel thermometer is used. This thermometer consists of a stainless steel panel thermally insulated from its mounts, the same size as the sample mounts and 0.9 ± 0.1 mm thick. The two sides of the panel are covered with shiny black varnish which is highly weather-resistant and has a maximum reflecting power of 5% at wave-lengths of more than 780 nm. The temperature of the panel is measured using a bimetallic thermometer the sensor of which is placed in the middle of the panel with a good thermal contact.

It is not advisable to leave the thermometer in the apparatus throughout the test referred to in section 6.10. It is sufficient for it to be inserted into the test apparatus every 250 hours, for 30 minutes or so, and for the temperature of the black panel to be taken during the dry period.

6.9. **Irradiation measuring apparatus**

Irradiation (unit of measurement: W·s m⁻²) is the product of the intensity of irradiation (unit: W·m⁻²) and duration of irradiation (unit: s). The irradiation of the surfaces of the sample in the test apparatus is measured with an appropriate irradiation measuring apparatus, adapted to the radiation function of the system consisting of the radiation source and the filter. The irradiation measuring apparatus shall be graduated or calibrated so that infra-red radiation over 830 nm is not taken into account.

The capacity of the irradiation measuring apparatus depends basically on whether its sensor is highly resistant to weather and to ageing and has adequate spectral sensitivity to natural radiation.

The irradiation measuring apparatus may include the following parts, for example:

(a) a silicon photo-electric cell as radiation sensor;

(b) an optical filter placed in front of the photo-electric cell; and
a coulometer which measures the product (unit: C = A · s) of the intensity of the current produced in the photo-electric cell in proportion to radiation intensity (unit: A) and the duration of radiation (unit: s).

The scale of the irradiation measuring apparatus shall be calibrated. The calibration shall be checked after being used for a year and corrected if necessary.

The intensity of irradiation on the surface of samples depends on the distance from the radiation source. Sample surfaces shall therefore, as far as possible, be at the same distance from the source as the sensor of the irradiation measuring apparatus. If this is not possible, the irradiation reading on the measuring apparatus shall be multiplied by a correction factor.

6.10. Execution

6.10.1. The samples are placed in mounts so that water cannot collect on the rear surface. The sample mounts must cause only the smallest possible amount of mechanical stress. In order to ensure irradiation and sprinkling are as evenly distributed as possible, the samples are rotated during the test at a rate of one to five revolutions per minute round the source-filter system and the sprinkling device. Normally, a single side of the sample is exposed to the weather conditions. Depending on the applicable provisions of the IEC publication, or as otherwise agreed, the front and back surfaces of a single sample may also be exposed. In this case, each surface is exposed to the same radiation and the same sprinkling.

The exposure of the front and back surfaces of a given sample to the same radiation and sprinkling may be produced by the periodic rotation of the sample. This can be done automatically using rotating appliances if the mount is in the form of an open frame.

6.10.2. The temperature of the black panel at the point where the samples are placed during the dry period is set and regulated in accordance with the IEC publications applicable to the equipment in question. Unless otherwise agreed, the average temperature of the black panel must be kept at +45 °C. Average temperature of the black panel means the arithmetic mean of the black panel temperature reached at the end of the dry period. During the dry period, a local difference of ± 5 °C is permissible, and ± 3 °C in borderline cases.

In order to maintain the required temperature of the black panel and, when necessary, ensure radiation of equal intensity on the front and back surfaces of the sample (see section 6.10.1), the samples may be turned automatically through 180° after each revolution. In this case, the black panel thermometer and the irradiation measuring apparatus shall be included in the rotation movement.

6.10.3. Samples installed in mounts and the sensor of the irradiation measuring apparatus referred to in section 6.9 are evenly exposed to radiation and sprinkled according to the cycle defined below, which is repeated successively:

Sprinkling: 3 minutes
Dry period: 17 minutes

The relative humidity of the air must be 60 to 80% during the dry period.

6.11. Test duration and procedure

The test follows procedure B in IEC publication 68, Part 2-9. The test duration is 720 hours, with the sprinkling cycle defined in section 6.10.3.

It is recommended that the weather-resistance test should be carried out with one and the same sample (in the case of a non-destructive test of the modification of the properties to be considered, such as the weather-resistance test, for example) or with several samples (in the case of a destructive test, as for shock-resistance, for example) at various degrees of irradiation, to be agreed upon. The development of the modification of the properties of a piece of equipment throughout the weather test can therefore be determined.

6.12. Assessment

After the exposure to bad weather is completed, the sample is kept for at least 24 hours in darkness in an air temperature of +23 °C, a dew point of +12 °C, a relative air humidity of 50%, an air circulation speed of 1 m/s and an atmospheric pressure of 860 to 1 060 hPa. (The permissible difference may be ± 2 °C for the air temperature and ± 6% for the relative humidity.)
These samples and those used for the comparison referred to in sections 6.2 and 6.3 are inspected to determine properties in accordance with the requirements indicated in Article 2.01(1) and (2) and in Article 3.01(12).

7. Salt water and weather-resistance test

(sea-fog test)

7.1. Purpose and application

This test is to determine the action of salt water and a saline atmosphere during operation and during transport and storage in accordance with Article 3.01.

It may be restricted to the sample or to specimens of the materials used.

The following specifications are based on IEC publication 68, Part 2-52. Additional information can be found in the publication.

7.2. Execution

(1) Test apparatus

The test is conducted in a test chamber using an atomiser and a saline solution meeting the following conditions:

— The materials of the test chamber and the atomiser must not influence the corrosive action of the salt mist.

— A fine, homogeneous, wet, thick mist must be diffused inside the test chamber; the distribution must not be affected by eddies or by the presence of the sample. The jet must not touch the sample directly. Drops forming on the inside of the chamber must not be able to fall on the sample.

— The test chamber must be adequately ventilated and the ventilation outlet protected against sudden changes in the movement of the air, so as to prevent the formation of a strong air current in the chamber.

— The saline solution used must consist, by mass, of 5 ± 1 parts of pure sodium chloride — with a maximum of 0.1% sodium iodide and 0.3% impurities, in the dry state — to 95 ± 1 parts of distilled or fully desalinated water. Its pH must be between 6.5 and 7.2 at a temperature of +20 ± 2 °C and be kept within these limits during the operation. Solution once sprayed must not be reused.

— The compressed air used for spraying must be free of impurities such as oil or dust and shall have a humidity level of at least 85% in order to avoid blockage of the nozzle.

— The mist diffused in the chamber must have a density such that, in a clean receptacle with an open horizontal surface area of 80 cm², placed anywhere in the chamber, the average precipitation over the whole time is between 1.0 ml and 2.0 ml per hour. In order to monitor the density of the mist, at least two receptacles shall be placed in the chamber in such a way as not to be covered by the sample and not to receive drops of condensation. In order to calibrate the quantity of solution sprayed, the duration of spraying shall be at least 8 hours.

The period of humidity between phases of spraying is spent in an air-conditioned chamber in which the air can be kept at a temperature of +40 ± 2 °C and at a relative humidity of 93 ± 3%.

(2) Preliminary inspection

The sample is inspected visually to verify that it is in impeccable condition, and in particular that it is correctly assembled and that all openings close properly. External surfaces soiled with grease, oil or mud are cleaned. All controls and moving parts are manipulated and checked for proper operation. The mobility of all closures, covers and moving parts intended to be detached or moved during operation or maintenance must be inspected for mobility and correctly replaced.
The sample is put into operation in accordance with the manufacturer's instructions at the rated voltage of the on-board network with a tolerance of ± 3 %.

After the time required to reach normal operation has elapsed, the functions are tested and the operating data of importance for on-board use and for assessing the action of the salt mist atmosphere are recorded and noted. The sample is then disconnected for exposure to spraying.

(3) Spraying phase

The sample is put into the salt mist chamber and exposed to the salt mist for two hours at a temperature of +15 °C to +35 °C.

(4) Humidity period

The sample is placed in the air-conditioned chamber so that the least possible amount of saline solution drips from it. It is kept in the air-conditioned chamber for seven days, at an air temperature of +40 ± 2 °C and a relative humidity of 93 ± 3 %. It must not come into contact with any other sample or metal object. Several samples may be so arranged as to preclude any mutual influence.

(5) Repetition of the test cycle

The test cycle, including phases (3) and (4), is repeated three times.

(6) Subsequent treatment

Following the fourth test cycle, the sample is taken out of the air-conditioned chamber and immediately washed for five minutes in running tap water and rinsed in distilled or desalinated water. Drops adhering to the sample are removed by an air jet or shaken off.

The sample is exposed to the normal ambient atmosphere for at least three hours, and in any case long enough for any visible humidity to have evaporated, before being subjected to a final inspection. The sample is dried for an hour at +55 ± 2 °C after rinsing.

(7) Conclusions of the inspection

The external appearance of the sample is inspected visually. The nature and extent of deterioration from its initial state are recorded in the test report, with supporting photographs if necessary.

The sample is put into operation in accordance with the manufacturer’s instructions at the rated voltage of the on-board network with a tolerance of ± 3 %.

After the time required to reach normal operation has elapsed, the functions are tested and the operating data of importance for on-board use and for assessing the action of the salt mist atmosphere are recorded and noted.

All controls and moving parts are manipulated and checked for proper operation. The mobility of all closures, covers and moving parts intended to be detached or moved during operation or maintenance is checked.

7.3. Results to be obtained

The sample must not show any change which could:

— hinder its use and operation;
— prevent to any considerable extent the detachment of closures and covers, or the movement of moving parts in so far as this is necessary for use or maintenance;
— impair the waterproofness of the housing;
— be expected to cause malfunctions in the long run.

The operating data recorded in phases (3) and (7) must remain within the tolerances laid down in these test and approval conditions.
PART III

MINIMUM REQUIREMENTS AND TEST CONDITIONS FOR RADAR EQUIPMENT USED FOR NAVIGATION IN INLAND WATERWAY VESSELS

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Scope

These provisions set out the minimum technical and operational requirements for radar equipment used for navigation in inland waterway vessels as well as the conditions for testing conformity with these minimum requirements. Inland ECDIS equipment that can be used in navigation mode counts as navigational radar equipment within the meaning of these provisions.

Article 1.02
Purpose of the radar equipment

The radar equipment shall facilitate the navigation of the vessel by providing an intelligible radar picture of its position in relation to buoys, shorelines and navigational structures, as well as permitting the reliable and timely recognition of other vessels and obstructions protruding above the water surface.

Article 1.03
Approval testing

Radar equipment may not be installed on board vessels until it has been established by means of a type test that the equipment meets the minimum requirements laid down in these provisions.

Article 1.04
Application for approval testing

1. Applications for a type-test of radar equipment shall be submitted to a competent testing authority in one of the Member States.

   The competent testing authorities shall be made known to the Committee.

2. Each application shall be accompanied by the following documents:
   a. two copies of a detailed technical description;
   b. two complete sets of installation and service documents;
   c. two copies of a detailed operator's manual; and
   d. two copies of a summarised operator's manual.
3. By means of tests, the applicant shall establish or have it established that the radar equipment meets the minimum requirements of these provisions.

The results of the test and the measurement reports on the horizontal and vertical radiation pattern of the antenna shall be attached to the application.

These documents and the information obtained during testing shall be kept by the competent testing authority.

4. For approval testing purposes, 'applicant' means any legal or natural person under whose name, trademark or any other form of identification the equipment submitted for testing is manufactured or marketed.

**Article 1.05**

Type-approval

1. If the equipment passes the type test, the competent testing authority shall issue a certificate of conformity.

If the equipment fails to meet the minimum requirements, the applicant shall be notified in writing of the reasons for its rejection.

Approval shall be granted by the competent authority.

The competent authority shall inform the Committee of the equipment it has approved.

2. Each testing authority shall be entitled to select equipment from the production series at any time for inspection.

If this inspection reveals defects in the equipment, type-approval may be withdrawn.

The type-approval shall be withdrawn by the authority that issued it.

3. The type-approval shall be valid for a period of 10 years and may be renewed on request.

**Article 1.06**

Marking of the equipment and approval number

1. Each component of the equipment shall be marked indelibly with the name of the manufacturer, the trade designation of the equipment, the type of equipment and the serial number.

2. The approval number assigned by the competent authority shall be affixed indelibly to the display unit in such a way that it remains clearly visible after the equipment has been installed.

Composition of an approval number:

e-NN-NNN

(e = European Union

NN = code for the country of approval, where

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NNN = three-digit number, to be determined by the competent authority.)
3. The approval number shall be used only in conjunction with the associated approval. It shall be the responsibility of the applicant to produce and affix the approval number.

4. The competent authority shall immediately inform the Committee of the approval number assigned.

Article 1.07
Manufacturer’s declaration

Each unit of equipment shall be accompanied by a manufacturer’s declaration to the effect that it meets the prevailing minimum requirements and that is identical in every respect to the equipment submitted for testing.

Article 1.08
Modifications to approved equipment

1. Any modification made to equipment already approved shall cause the type-approval to be withdrawn. Whenever modifications are planned, details shall be sent in writing to the competent testing authority.

2. The competent testing authority shall decide whether the approval still applies or whether an inspection or new type-test is necessary. If a new approval is granted, a new approval number shall be assigned.

Chapter 2
General minimum requirements for radar equipment

Article 2.01
Construction, design

1. Radar equipment shall be suitable for operation on board inland waterway vessels.

2. The construction and design of the equipment shall be in accordance with the state of the art, both mechanically and electrically.

3. In the absence of any specific provision in Annex II to this Directive or in these provisions, the requirements and test methods contained in IEC publication 945 ‘Marine Navigational Equipment General Requirements’ shall apply to power supply, safety, mutual interference of shipborne equipment, compass safe distance, resistance to climatic influences, mechanical strength, environmental influences, audible noise emission and equipment markings.

   Additionally, the requirements of the ITU Radio Regulations shall apply. The equipment shall satisfy all requirements of these provisions for radar display ambient temperatures between 0 °C and 40 °C.

Article 2.02
Spurious emissions and electromagnetic compatibility

1. In the frequency range of 30 to 2 000 MHz, the field strength of spurious emissions shall not exceed 500 µV/m.

   In the frequency ranges of 156 to 165 MHz, 450 to 470 MHz and 1,53 to 1,544 GHz the field strength shall not exceed a value of 15 µV/m. These field strengths shall apply at a test distance of 3 metres from the equipment under test.

2. The equipment shall satisfy the minimum requirements at electromagnetic field strengths of up to 15 V/m in the immediate vicinity of the equipment under test in the frequency range of 30 to 2 000 MHz.

Article 2.03
Operation

1. The equipment shall not have more controls than are necessary for its correct operation.
The design, markings and manipulation of the controls shall be such as to permit their simple, unambiguous and fast operation. Their arrangement shall be such as to prevent operating mistakes as far as possible.

Controls not necessary for normal operation shall not be immediately accessible.

2. All controls and indicators shall be provided with symbols and/or markings in English. Symbols shall meet the requirements of IMO Recommendation No A.278 (VIII) ‘Symbols for controls on marine navigational radar equipment’ or the requirements contained in IEC publication No 417; all numerals and letters shall be at least 4 mm high.

If it can be demonstrated that, for technical reasons, numerals and letters 4 mm high are not possible and if for the purposes of operation smaller numerals and letters are acceptable, a reduction to 3 mm shall be allowed.

3. The equipment shall be designed in such a way that operating mistakes cannot cause its failure.

4. Any functions over and above the minimum requirements, such as facilities for connection to other equipment, shall be provided in such a way that the equipment meets the minimum requirements under all conditions.

Article 2.04
Operating instructions

1. A detailed operator’s manual shall be supplied with each unit. It shall be available in Dutch, English, French and German and shall contain at least the following information:

   (a) activation and operation;
   (b) maintenance and servicing;
   (c) general safety instructions (health hazards, e.g. the influencing of pacemakers, etc. by electromagnetic radiation);
   (d) instructions for correct technical installation.

2. A summarised operator’s manual in a durable form shall be supplied with each unit.
   It shall be available in Dutch, English, French and German.

Article 2.05
Installation and operating tests

Installation, replacement and operating tests shall be in accordance with the requirements of Part V.

Chapter 3
Minimum operational requirements for radar equipment

Article 3.01
Operational readiness of radar equipment

1. From a cold start, radar equipment shall be fully operational within four minutes. After this period, it shall be possible to interrupt and activate transmission instantaneously.

2. It shall be possible for a single person to operate the radar equipment and watch the display simultaneously.
   If the control panel is a separate unit, it shall contain all controls used directly for radar navigation.
   Cordless remote controls shall not be permitted.

3. It shall be possible to read the display also when there is considerable ambient brightness. When necessary, appropriate vision aids shall be available and shall be attachable and removable simply and easily.
   Vision aids shall be usable by wearers of spectacles.
Article 3.02
Resolution

1. Angular resolution

Angular resolution is related to range scale and distance. The required minimum resolution for shorter ranges up to and including 1 200 m is shown in Appendix 1.

Minimum resolution is understood to be the minimum azimuthal distance between two standard reflectors (see Article 5.03(2)) at which they are shown clearly separated on the radar picture.

2. Minimum range and range resolution

At all distances between 15 and 1 200 m in range scales up to and including 1 200 m, standard reflectors located 15 m apart on the same bearing shall be shown clearly separated on the radar screen.

3. Functions that can cause a deterioration of resolution shall not be switchable in range scales up to 2 000 m.

Article 3.03
Range scales

1. The radar equipment shall be provided with the following sequentially-switchable range scales and circles:

   Range scale 1:  500 m one circle every 100 m
   Range scale 2:  800 m one circle every 200 m
   Range scale 3:  1 200 m one circle every 200 m
   Range scale 4:  1 600 m one circle every 400 m
   Range scale 5:  2 000 m one circle every 400 m

2. Further sequentially-switchable range scales shall be permitted.

3. The selected range scale, the distance between range circles and the distance of the variable range marker shall be indicated in metres or kilometres.

4. The width of the range circles and the variable range marker shall, at the normal brightness setting, not exceed 2 mm.

5. Subsector display and enlargements shall not be permitted.

Article 3.04
Variable range marker

1. The radar equipment shall have a variable range marker.

2. Within eight seconds, it shall be possible to set the range marker to any distance.

3. The distance at which the variable range marker is set shall not change even after switchover to other range scales.

4. The range shall be displayed as a three- or four-digit number. The accuracy for ranges up to 2 000 m shall be within 10 metres. The radius of the range marker shall correspond to the digital display.

Article 3.05
Lubber line

1. A lubber line shall extend from the position on the radar display that corresponds to the antenna position up to the edge of the radar screen.

2. The width of the lubber line at the edge of the screen shall not be more than 0.5°.
3. The radar unit shall have an adjusting device for correcting any azimuthal angular error in the antenna mounting.

4. Following correction of the angular error and activation of the radar unit, the deviation of the lubber line from the keel line shall not exceed 0.5°.

Article 3.06
Off-centring

1. To permit an extended forward view, off-centring of the radar picture shall be possible at all the range scales specified in Article 3.03(1). Off-centring shall result exclusively in an extension of the forward view and shall be adjustable to at least 0.25, and at most 0.33, of the effective screen diameter.

2. In the range with extended forward view, the range circles shall be extended and the variable range marker shall be adjustable and readable up to the maximum of the displayed range.

3. A fixed forward extension of the range displayed in accordance with paragraph 1 is permitted provided that, for the central part of the picture, the effective diameter is not less than that specified in Article 4.03(1), and that the bearing scale is designed in such a way that a bearing can be taken in accordance with Article 3.08.

In that case the off-centring facility referred to in paragraph 1 shall not be required.

Article 3.07
Bearing scale

1. The radar equipment shall have a bearing scale at the edge of the screen.

2. The bearing scale shall be divided into at least 72 parts each representing 5 degrees. The graduation marks representing 10 degrees must be clearly longer than those representing 5 degrees.

The 000 mark on the bearing scale shall be positioned in the middle of the upper edge of the screen.

3. The bearing scale shall be marked in three-figure numbers from 000 to 360 degrees in a clockwise direction. Numbering shall be in Arabic numerals every 10 or every 30 degrees.

The figure 000 may be replaced by a clearly visible arrow.

Article 3.08
Bearing facilities

1. Facilities for taking bearings of targets shall be allowed.

2. If such facilities are provided, they shall be capable of taking a bearing of any target within approximately 5 seconds, with a maximum error of ± 1 degree.

3. If an electronic bearing line is used, it shall:
   (a) be clearly distinguishable from the lubber line;
   (b) be displayed quasi-continuously;
   (c) be freely rotatable through 360 degrees left and right;
   (d) be at most 0.5 degrees wide at the edge of the screen;
   (e) extend from origin up to the bearing scale;
   (f) and complete a three- or four-figure decimal degree reading.

4. If a mechanical bearing line is used, it shall:
   (a) be freely rotatable through 360 degrees left and right;
   (b) extend from the marked origin to the bearing scale;
   (c) bear no further markings; and
   (d) be designed in such a way that echo readings are not obscured unnecessarily.
Article 3.09
Facilities for reducing sea and rain clutter

1. The radar equipment shall have facilities with manual controls for reducing clutter from sea and rain.
2. The sea-clutter control (sensitivity time control — STC) shall, at its maximum setting, be effective up to a distance of approximately 1200 m.
3. The radar equipment shall not be provided with automatic facilities for reducing sea and rain clutter.

Article 3.10
Reduction of interference from other radar equipment

1. There shall be a switchable facility for the reduction of interference caused by other radar equipment.
2. The operation of this facility shall not suppress the display of useful targets.

Article 3.11
Compatibility with radar beacons

Signals from radar beacons in accordance with IMO resolution A.423 (XI) shall be displayed clearly with the rain clutter suppression (fast time constant — FTC) switched off.

Article 3.12
Gain control

The range of the gain control shall be such that, at minimum sea-clutter suppression setting, surface movement of the water is clearly visible and that powerful radar echoes with an echo area equivalent to 10 000 m² may be cut out at any distance.

Article 3.13
Frequency tuning

The display unit shall be provided with a tuning indicator. The tuning scale shall have a length of at least 30 mm. The indicator shall function in all ranges, even without radar echoes. The indicator shall function equally well when the gain or suppression of close proximity echoes is activated.

A manual control to correct the tuning shall be available.

Article 3.14
Nautical orientation lines and information on the screen

1. Only the lubber line, bearing lines and range circles may be superimposed on the radar screen.
2. Apart from the radar picture and in addition to information on the operation of the radar equipment, only nautical information such as that listed below may be displayed:
   (a) rate of turn;
   (b) speed of the vessel;
   (c) rudder position;
   (d) water depth;
   (e) compass course.
3. All screen information besides the radar picture shall be displayed quasi-statically and the refreshing rate shall satisfy the operational requirements.

4. The requirements regarding the display and accuracy of nautical information shall be the same as those applicable to the main equipment.

*Article 3.15*

**System sensitivity**

The system sensitivity shall be such that a standard reflector at a distance of 1 200 m appears clearly on the radar picture on every revolution of the antenna. In the case of a 1 m² reflector at the same distance, the quotient of the number of antenna revolutions with radar echo during a specific period and the total number of antenna revolutions in that same period based on 100 revolutions (blip-scan rate) shall not be less than 0.8.

*Article 3.16*

**Target trail**

Previous positions of targets shall be shown by means of a trail.

The representation of the target trail shall be quasi-continuous and the brightness shall be less than that of the associated target; the target trail and the radar picture shall have the same colour.

The persistence of the trail shall be adjustable to operational requirements, but shall not last longer than 2 antenna revolutions. The target trail shall not impair the radar picture.

*Article 3.17*

**Slave indicators**

Slave indicators shall comply with all requirements applicable to navigational radar equipment.

Chapter 4

**Minimum technical requirements for radar equipment**

*Article 4.01*

**Operation**

1. All controls shall be so arranged that during their operation no information is concealed from view and radar navigation remains unimpaired.

2. Controls which can be used to switch off the equipment or, if activated, could lead to a malfunction must be protected against accidental operation.

3. All controls and indicators shall be provided with a dazzle-free source of lighting appropriate for all ambient lighting conditions and adjustable down to zero by means of an independent control.

4. The following functions must have their own controls with direct access:
   (a) Stand-by/on;
   (b) Range;
   (c) Tuning;
   (d) Gain;
   (e) Seaclutter (STC);
   (f) Rainclutter (FTC);
   (g) Variable range marker (VRM);
(h) Cursor or electronic bearing line (EBL) (if fitted);

(i) Ship’s heading marker suppression (SHM).

If rotary controls are used for the abovementioned functions, concentric arrangement of the controls one above the other shall be prohibited.

5. At least the controls for gain, sea clutter and rain clutter must be adjustable by means of a rotary control with an effect proportional to the angle of rotation.

6. Adjustment of controls shall be such that movements to the right or upwards have a positive effect on the variable and movements to the left or downwards a negative effect.

7. If push-buttons are used, it shall be possible to locate and operate them by touch. They shall also have clearly perceptible contact release.

8. It must be possible to adjust the brightness of the following variables separately from zero to the value required for operational purposes:

(a) radar picture;

(b) fixed range circles;

(c) variable range circles;

(d) bearing scale;

(e) bearing line;

(f) nautical information as specified in Article 3.14(2).

9. Provided that the difference in brightness of some of the displayed values is only slight and the fixed range circle, the variable range circle and the bearing line can be switched off independently of each other, there may be four brightness controls, one for each of the following groups of values:

(a) radar picture and lubber line;

(b) fixed range circles;

(c) variable range circles;

(d) bearing line and bearing scale and nautical information as specified in Article 3.14(2).

10. The brightness of the lubber line shall be adjustable but shall not be reducible to zero.

11. To switch off the lubber line, there shall be a control with automatic reset.

12. From zero, the anti-clutter devices shall be continuously adjustable.

Article 4.02
Display

1. ‘Radar picture’ means the scaled representation of radar echoes of the surroundings and their motion relative to the vessel on the display unit’s screen from one antenna revolution with the vessel’s keel line and the lubber line coinciding at all times.

2. ‘Display unit’ means that part of the equipment that contains the screen.

3. ‘Screen’ means the low-reflection part of the display unit on which either the radar picture alone, or the radar picture together with additional nautical information, is shown.

4. ‘Effective diameter of the radar picture’ means the diameter of the largest completely circular radar picture which can be shown within the bearing scale.

5. ‘Raster scan representation’ means the quasi-static representation of the radar picture from a complete revolution of the antenna, in the form of a television picture.
Article 4.03  
Radar picture characteristics

1. The effective diameter of the radar picture shall be not less than 270 mm.
2. The diameter of the outer range circle in the range scales specified in Article 3.03 shall be at least 90% of the effective radar picture diameter.

For all range scales, the antenna position shall be visible in the radar picture.

Article 4.04  
Colour of the display

The display colour shall be chosen on the basis of physiological factors. If various colours can be reproduced on the screen, the actual radar picture shall be monochrome. The reproduction of different colours shall not result in mixed colours, by superimposition, on any part of the screen.

Article 4.05  
Picture refreshment rate and persistence

1. The radar picture shown by the display shall be replaced by the up-to-date radar picture within 2.5 seconds.
2. Each echo on the screen shall persist for at least the duration of one antenna revolution, but not longer than two antenna revolutions.

The persistence of the radar picture may be achieved in two fashions: either by a continuous display or by periodical picture refreshment. This periodical picture refreshment shall be effected at not less than 50 Hz.
3. The difference in brightness between the writing of an echo and its afterglow during one antenna revolution shall be as small as possible.

Article 4.06  
Display linearity

1. The linearity error of the radar picture shall not exceed 5%.
2. In all ranges up to 2000 m a fixed straight shore line at a distance of 30 m from the radar antenna shall be displayed as a straight continuous echo structure without observable distortions.

Article 4.07  
Accuracy of range and azimuthal measurements

1. The determination of the distance to a target by means of variable or fixed range circles shall be accurate to ± 10 m or ± 1.5%, whichever is the larger.
2. The angular value of the bearing of an object shall not differ by more than 1 degree from the real value.

Article 4.08  
Antenna characteristics and emission spectrum

1. The antenna drive system and the antenna shall be such as to allow correct operation at wind speeds of up to 100 km per hour.
2. The antenna drive system shall have a safety switch by means of which the transmitter and the rotator drive can be switched off.
3. The horizontal radiation pattern of the antenna, measured in one direction, shall meet the following requirements:
   (a) – 3 dB, width of the main lobe: maximum 1.2 degrees;
   (b) – 20 dB, width of the main lobe: maximum 3.0 degrees;
4. The vertical radiation pattern of the antenna, measured in one direction, shall meet the following requirements:
   (a) $-3$ dB, width of the main lobe: maximum 30 degrees;
   (b) the maximum of the main lobe shall be in the horizontal axis;
   (c) side-lobe attenuation: at least $-25$ dB.

5. The radiated high-frequency energy shall be horizontally polarised.

6. The operating frequency of the equipment shall be in a range above 9 GHz which is allocated under prevailing ITU Radio Regulations to navigational radar equipment.

7. The frequency spectrum of the high-frequency energy radiated by the antenna shall be in conformity with ITU Radio Regulations.

Chapter 5
Test conditions and test methods for radar equipment

Article 5.01
Safety, load capacity and interference diffusion

Power supply, safety, mutual interference of shipborne equipment, compass safe distance, resistance to climatic influences, mechanical strength, environmental impact and audible noise emission shall be tested in accordance with IEC publication 945 ‘Marine Navigational Equipment General Requirements’.

Article 5.02
Spurious emissions and electromagnetic compatibility

1. Spurious emissions shall be measured in accordance with IEC publication 945 ‘Marine Navigational Equipment Interference’ in the frequency range of 30 to 2 000 MHz.
   The requirements of Article 2.02(1) shall be met.

2. The electromagnetic compatibility requirements of Article 2.02(2) shall be met.

Article 5.03
Test procedure

1. The test field shown in Appendix 2 for the testing of radar equipment shall be arranged on a calm water surface at least 1,5 km long and 0,3 km wide, or on terrain with equivalent reflection properties.

2. A standard reflector shall be a radar reflector which, at a wavelength of 3,2 cm, has an equivalent radar cross-section of 10 m².
   The equivalent radar cross-section (sigma) of a three-axis radar reflector with triangular surfaces for a frequency of 9 GHz (3,2 cm) shall be calculated according to the following formula:
   $$\sigma = \frac{4 \cdot \pi \cdot a^4}{3 \cdot 0.032^2}$$
   $a =$ edge length in m
   For a standard reflector with triangular surfaces, the edge length $a = 0.222$ m.
   The dimensions of the reflectors used for the testing of range and discrimination at a wavelength of 3,2 cm shall also be used when the radar equipment under test has a wavelength other than 3,2 cm.
3. Standard reflectors shall be set up at distances of 15 m, 30 m, 45 m, 60 m, 85 m, 300 m, 800 m, 1 170 m, 1 185 m and 1 200 m from the antenna position.

Beside the standard reflector at 85 m, standard reflectors shall be set up at a distance of 5 m on both sides, at right angles to the bearing line.

Beside the standard reflector at 300 m, a reflector with an equivalent radar cross-section of 300 m² shall be set up at a distance of 18 m, at right angles to the bearing line.

Further reflectors with an equivalent radar cross-section of 1 m² and 1 000 m² shall be set up at an azimuthal angle to each other of at least 15 degrees, at the same distance of 300 m from the antenna.

Beside the standard reflector at 1 200 m, standard reflectors and a reflector with a radar cross-section of 1 m² shall be set up at a distance of 30 m on both sides, at right angles to the bearing line.

4. The radar equipment shall be adjusted to the best quality of picture. The gain must be adjusted in such a way that, in the area immediately beyond the range of operation of the anti-clutter control, noise can no longer be seen.

The sea-clutter suppression control (STC) shall be set at minimum, while the rain-clutter suppression control (FTC) shall be switched off. All controls that influence picture quality shall be left unchanged for the duration of the test at a specific antenna height and be fixed in an appropriate way.

5. The antenna shall be set up at any desired height between 5 and 10 m above the surface of the water or the ground. The reflectors shall be set up at such a height above the surface of the water or of the ground that their effective radar return corresponds to the value specified in paragraph 2.

6. All reflectors set up within the selected range shall, at all distances up to and including 1 200 m, be shown on the screen simultaneously as clearly separated targets, regardless of the azimuthal position of the test field in relation to the lubber line.

Signals from radar beacons as described in Article 3.11 shall be displayed clearly.

All requirements specified in these provisions shall be met at any antenna height between 5 and 10 m, with only essential adjustments of the controls being authorised.

Article 5.04
Antenna measurements

The antenna characteristics shall be measured in accordance with IEC publication 936 ‘Shipborne Radar’.

Appendix 1
Angular resolution in ranges up to and including 1 200 m

Appendix 2
Test field for determination of the resolution of radar equipment
PART IV
MINIMUM REQUIREMENTS AND TEST CONDITIONS FOR RATE-OF-TURN INDICATORS USED IN INLAND WATERWAY VESSELS

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Chapter 1

General

Article 1.01
Scope

These provisions set out the minimum technical and operational requirements for rate-of-turn indicators used in inland waterway vessels, as well as the conditions for testing conformity with these minimum requirements.
Article 1.02

Purpose of the rate-of-turn indicator

The rate-of-turn indicator is intended to facilitate radar navigation, and to measure and indicate the rate of turn of the vessel to port or starboard.

Article 1.03

Approval testing

Rate-of-turn indicators may not be installed on board vessels until it has been established by means of a type test that they meet the minimum requirements laid down in these provisions.

Article 1.04

Application for approval testing

1. Applications for a type-test of rate-of-turn indicators shall be submitted to a competent testing authority in one of the Member States.

The competent testing authorities shall be made known to the Committee.

2. Each application shall be accompanied by the following documents:
   (a) two copies of a detailed technical description;
   (b) two complete sets of installation and service documents;
   (c) two copies of an operator’s manual.

3. By means of tests, the applicant shall establish or have it established that the radar equipment meets the minimum requirements of these provisions.

The results of the test and the measurement reports shall be attached to the application.

These documents and the information obtained during testing shall be kept by the competent testing authority.

4. For approval testing purposes, ‘applicant’ means any legal or natural person under whose name, trademark or any other form of identification the equipment submitted for testing is manufactured or marketed.

Article 1.05

Type-approval

1. If the equipment passes the type test, the competent testing authority shall issue a certificate of conformity.

   If the equipment fails to meet the minimum requirements, the applicant shall be notified in writing of the reasons for its rejection.

   Approval shall be granted by the competent authority.

   The competent authority shall inform the Committee of the equipment it has approved.

2. Each testing authority shall be entitled to select equipment from the production series at any time for inspection.

   If this inspection reveals defects in the equipment, type-approval may be withdrawn.

   The type-approval shall be withdrawn by the authority that issued it.

3. The type-approval shall be valid for a period of 10 years and may be renewed on request.

Article 1.06

Marking of the equipment and approval number

1. Each component of the equipment shall be marked indelibly with the name of the manufacturer, the trade designation of the equipment, the type of equipment and the serial number.
2. The approval number assigned by the competent authority shall be affixed indelibly to the control unit in such a way that it remains clearly visible after the equipment has been installed.

Composition of an approval number:

e-NN-NNN

(e = European Union
NN = code for the country of approval, where

1 = Germany 18 = Denmark
2 = France 20 = Poland
3 = Italy 21 = Portugal
4 = Netherlands 23 = Greece
5 = Sweden 24 = Ireland
6 = Belgium 26 = Slovenia
7 = Hungary 27 = Slovakia
8 = Czech Republic 29 = Estonia
9 = Spain 32 = Latvia
11 = United Kingdom 36 = Lithuania
12 = Austria 49 = Cyprus
13 = Luxembourg 50 = Malta
17 = Finland

NNN = three-digit number, to be determined by the competent authority.)

3. The approval number shall be used only in conjunction with the associated approval. It shall be the responsibility of the applicant to produce and affix the approval number.

4. The competent authority shall immediately inform the Committee of the approval number assigned.

Article 1.07
Manufacturer's declaration

Each unit of equipment shall be accompanied by a manufacturer's declaration to the effect that it meets the prevailing minimum requirements and that is identical in every respect to the equipment submitted for testing.

Article 1.08
Modifications to approved equipment

1. Any modification made to equipment already approved shall cause the type-approval to be withdrawn. Whenever modifications are planned, details shall be sent in writing to the competent testing authority.

2. The competent testing authority shall decide whether the approval still applies or whether an inspection or new type-test is necessary. If a new approval is granted, a new approval number shall be assigned.

Chapter 2
General minimum requirements for rate-of-turn indicators

Article 2.01
Construction, design

1. Rate-of-turn indicators shall be suitable for operation on board inland waterway vessels.
2. The construction and design of the equipment shall be in accordance with the state of the art, both mechanically and electrically.

3. In the absence of any specific provision in Annex II to this Directive or in these provisions, the requirements and test methods contained in IEC publication 945 'Marine Navigational Equipment General Requirements' shall apply to power supply, safety, mutual interference of shipborne equipment, compass safe distance, resistance to climatic influences, mechanical strength, environmental influences, audible noise emission and equipment markings.

Additionally, the equipment shall satisfy all requirements of these provisions at ambient temperatures between 0 °C and 40 °C.

**Article 2.02**

*Spurious emissions and electromagnetic compatibility*

1. In the frequency range of 30 to 2000 MHz, the field strength of spurious emissions shall not exceed 500 µV/m.

   In the frequency ranges of 156 to 165 MHz, 450 to 470 MHz and 1,53 to 1,544 GHz the field strength shall not exceed a value of 15 µV/m. These field strengths shall apply at a test distance of 3 metres from the equipment under test.

2. The equipment shall satisfy the minimum requirements at electromagnetic field strengths of up to 15 V/m in the immediate vicinity of the equipment under test in the frequency range of 30 to 2000 MHz.

**Article 2.03**

*Operation*

1. The equipment shall not have more controls than are necessary for its correct operation.

   The design, markings and manipulation of the controls shall be such as to permit their simple, unambiguous and fast operation. Their arrangement shall be such as to prevent operating mistakes as far as possible.

   Controls not necessary for normal operation shall not be immediately accessible.

2. All controls and indicators shall be provided with symbols and/or markings in English. Symbols shall meet the requirements contained in IEC publication No 417.

   All numerals and letters shall be at least 4 mm high. If it can be demonstrated that, for technical reasons, numerals and letters 4 mm high are not possible and if for the purposes of operation smaller numerals and letters are acceptable, a reduction to 3 mm shall be allowed.

3. The equipment shall be designed in such a way that operating mistakes cannot cause its failure.

4. Any functions over and above the minimum requirements, such as facilities for connection to other equipment, shall be provided in such a way that the equipment meets the minimum requirements under all conditions.

**Article 2.04**

*Operating instructions*

A detailed operator's manual shall be supplied with each unit. It shall be available in Dutch, English, French and German and shall contain at least the following information:

(a) activation and operation;

(b) maintenance and servicing;

(c) general safety instructions.
Article 2.05
Installation and operating tests

1. Installation, replacement and operating tests shall be in accordance with the requirements of Part V.
2. The direction of installation in relation to the keel line shall be indicated on the rate-of-turn indicator’s sensor unit. Installation instructions to ensure maximum insensitivity to other normal movements of the vessel shall be provided.

Chapter 3
Minimum operational requirements for rate-of-turn indicators

Article 3.01
Operational readiness of the rate-of-turn indicator

1. From a cold start, the rate-of-turn indicator shall be fully operational within four minutes and shall operate to within the required accuracy tolerances.
2. A warning signal shall indicate that the indicator is switched on. It shall be possible to observe and operate the rate-of-turn indicator simultaneously.
3. Cordless remote controls shall not be permitted.

Article 3.02
Indication of the rate of turn

1. The rate of turn shall be indicated on a linear graduated scale having the zero point situated in the middle. It shall be possible to read the direction and extent of the rate of turn with the necessary accuracy. Needle indicators and bar-graphs shall be permitted.
2. The indicator scale shall be at least 20 cm long and may be circular or rectilinear.
   Rectilinear scales may be arranged horizontally only.
3. Solely digital indicators shall not be permitted.

Article 3.03
Measuring ranges

Rate-of-turn indicators may be provided with one or more measuring ranges. The following measuring ranges are recommended:
- 30°/minute
- 60°/minute
- 90°/minute
- 180°/minute
- 300°/minute.

Article 3.04
Accuracy of the indicated rate of turn

The indicated rate of turn shall not differ by more than 2% from the measurable maximum value or by more than 10% from the actual value, whichever is the greater (see Appendix).

Article 3.05
Sensitivity

The operating threshold shall be less than or equal to a change in angular speed equivalent to 1% of the indicated value.
Article 3.06

Monitoring of operation

1. If the rate-of-turn indicator does not operate within the required accuracy range, this shall be indicated.

2. If a gyroscope is used, any critical fall in the rate of rotation of the gyroscope shall be signalled by an indicator. A critical fall in the rate of rotation of the gyroscope is one which lowers accuracy by 10%.

Article 3.07

Insensitivity to other normal movements of the vessel

1. Rolling of the vessel of up to 10° at a rate of turn of up to 4° per second shall not give rise to measurement errors in excess of the stipulated tolerances.

2. Impacts such as those that may occur during berthing shall not give rise to measurement errors in excess of the stipulated tolerances.

Article 3.08

Insensitivity to magnetic fields

The rate-of-turn indicator shall be insensitive to magnetic fields which typically occur on board the vessel.

Article 3.09

Slave indicators

Slave indicators shall comply with all requirements applicable to rate-of-turn indicators.

Chapter 4

Minimum technical requirements for rate-of-turn indicators

Article 4.01

Operation

1. All controls shall be so arranged that during their operation no information is concealed from view and radar navigation remains unimpaired.

2. All controls and indicators shall be provided with a dazzle-free source of lighting appropriate for all ambient lighting conditions and adjustable down to zero by means of an independent control.

3. Adjustment of controls shall be such that movements to the right or upwards have a positive effect on the variable and movements to the left or downwards a negative effect.

4. If push-buttons are used, it shall be possible to locate and operate them by touch. They shall also have clearly perceptible contact release.

Article 4.02

Damping devices

1. The sensor system shall be damped for critical values. The damping constant (63% of the limit value) shall not exceed 0.4 seconds.

2. The indicator shall be damped for critical values.
   Controls for increasing damping shall be permitted.
   Under no circumstances may the damping constant exceed five seconds.
Article 4.03
Connection of additional equipment

1. If the rate-of-turn indicator can be connected to slave indicators or similar equipment, the rate-of-turn indication shall remain usable as an electric signal. The rate of turn shall continue to be indicated with galvanic earth insulation and the equivalent to an analogue voltage of 20 mV/degree ± 5% and a maximum internal resistance of 100 ohms. Polarity shall be positive when the vessel is turning to starboard and negative when it is turning to port. The operating threshold shall not exceed 0.3°/minute. Zero error shall not exceed 1°/minute at temperatures from 0 °C to 40 °C. With the indicator switched on and the sensor not exposed to the effects of movement, the spurious voltage at the output signal measured with a 10 Hz pass-band low-pass filter shall not exceed 10 mV. The rate-of-turn signal shall be received without additional damping beyond the limits referred to in Article 4.02(1).

2. An external alarm switch shall be provided. The switch shall be installed as a galvanic insulation break-switch for the indicator. The external alarm shall be triggered by contact closure:
   (a) if the rate-of-turn indicator is disconnected; or
   (b) if the rate-of-turn indicator is not in operation; or
   (c) if the operating control has reacted following an excessive error (Article 3.06).

Chapter 5
Test conditions and procedures for rate-of-turn indicators

Article 5.01
Safety, load capacity and interference diffusion

Power supply, safety, mutual interference of shipborne equipment, compass safe distance, resistance to climatic influences, mechanical strength, environmental impact and audible noise emission shall be tested in accordance with IEC publication 945 ‘Marine Navigational Equipment General Requirements’.

Article 5.02
Spurious emissions and electromagnetic compatibility

1. Spurious emissions shall be measured in accordance with IEC publication 945 ‘Marine Navigational Equipment Interference’ in the frequency range of 30 to 2 000 MHz. The requirements of Article 2.02(1) shall be met.

2. The electromagnetic compatibility requirements of Article 2.02(2) shall be met.

Article 5.03
Test procedure

1. Rate-of-turn indicators shall be brought into operation and tested under nominal and boundary conditions. In this regard, the influence of the operating voltage and of the ambient temperature shall be tested as far as the prescribed limit value.

   In addition, radio transmitters shall be used to set up the maximum magnetic fields in the vicinity of the indicators.

2. Under the conditions described in paragraph 1, indicator errors shall remain within the tolerances indicated in the Appendix. All other requirements shall be met.
Appendix

Maximum tolerances for indication errors of rate-of-turn indicators
PART V

REQUIREMENTS FOR INSTALLATION AND PERFORMANCE TESTS FOR RADAR EQUIPMENT AND RATE-OF-TURN INDICATORS USED IN INLAND WATERWAY VESSELS

Contents

Article 1 Scope
Article 2 Approval of equipment
Article 3 Approved specialised firms
Article 4 Requirements for on-board power supply
Article 5 Installation of the radar antenna
Article 6 Installation of the display unit and the control unit
Article 7 Installation of the rate-of-turn indicator
Article 8 Installation of the position sensor
Article 9 Installation and performance test
Article 10 Installation and performance certificate
Appendix Model installation and performance certificate for radar equipment and rate-of-turn indicators

Article 1
Scope

The purpose of these requirements is to ensure that in the interest of safety and orderly radar navigation on inland waterways in the Community, navigational radar equipment and rate-of-turn indicators are installed according to optimum technical and ergonomic standards and that installation is followed by a performance test. Inland ECDIS equipment that can be used in navigation mode counts as navigational radar equipment within the meaning of these provisions.

Article 2
Approval of equipment

For radar navigation on inland waterways in the Community, only equipment approved according to the applicable provisions of this Directive or of the Central Commission for Navigation on the Rhine and bearing an approval number shall be authorised for installation.

Article 3
Approved specialised firms

1. The installation, replacement, repair or maintenance of radar equipment and rate-of-turn indicators shall be carried out only by specialised firms approved by the competent authority in accordance with Article 1.

2. Approval may be granted by the competent authority for a limited period and may be withdrawn by the competent authority at any time if the conditions in Article 1 are no longer met.

3. The competent authority shall immediately notify the Committee of the specialised firms which it has approved.

Article 4
Requirements for on-board power supply

All power supply leads for radar equipment and rate-of-turn indicators shall have their own separate safety devices and if possible be fail-safe.
Article 5
Installation of the radar antenna

1. The radar antenna shall be installed as close as possible to the fore-and-aft-line. There shall be no obstruction in the vicinity of the antenna causing false echoes or unwanted shadows; if necessary, the antenna shall be mounted on the forecastle. The mounting and attachment of the radar antenna in its operational position shall be sufficiently stable to enable the radar equipment to perform within the required accuracy limits.

2. After the angular error in the mounting has been corrected and the equipment has been switched on, the difference between lubber line and fore-and-aft-line shall not be greater than 1 degree.

Article 6
Installation of the display unit and the control unit

1. The display unit and control unit shall be installed in the wheelhouse in such a way that the evaluation of the radar picture and the operation of the equipment present no difficulty. The azimuthal orientation of the radar picture shall be in accordance with the normal situation of the surroundings. Clamps and adjustable consoles are to be constructed in such a way that they can be locked in any position free of vibration.

2. During radar navigation, artificial lighting shall not be reflected in the direction of the radar operator.

3. When the control unit is not part of the display unit, it shall be located in a housing within 1 metre of the display unit. Cordless remote controls shall not be permitted.

4. If slave indicators are installed, they shall satisfy the requirements which apply to navigational radar equipment.

Article 7
Installation of the rate-of-turn indicator

1. The sensor system shall be installed as far as possible amidships, horizontal and aligned with the ship’s fore-and-aft-line. The installation site shall as far as possible be free of vibration and be liable to modest temperature variations. The indicator unit shall if possible be installed above the radar display.

2. If slave indicators are installed, they shall satisfy the requirements which apply to rate-of-turn indicators.

Article 8
Installation of the position sensor

The position sensor (e.g. DGPS antenna) must be installed in such a way as to ensure that it operates with the greatest possible degree of accuracy and is not adversely affected by superstructures and transmitting equipment on board ship.

Article 9
Installation and performance test

Before the equipment is switched on for the first time after installation or after renewals or extensions of the ship’s survey certificate (except according to Article 2.09(2) of Annex II) as well as after each modification of the vessel likely to affect the operating conditions of the equipment, an installation and performance test shall be carried out by the competent authority or by a firm authorised in accordance with Article 3. For this purpose, the following conditions shall be fulfilled:

(a) the power supply shall have a separate safety device;

(b) the operating voltage shall be within the tolerance (Article 2.01 of Part III);
(c) the cabling and its installation shall satisfy the provisions of Annex II and, if necessary, the ADNR;

(d) the number of antenna revolutions shall reach at least 24 per minute;

(e) there shall be no obstruction in the vicinity of the antenna which impairs navigation;

(f) the safety switch of the antenna shall be in good working order;

(g) the arrangement of display units, rate-of-turn indicators and control units shall be ergonomic and user-friendly;

(h) the lubber line of the radar equipment shall not deviate from the ship's fore-and-aft-line by more than 1 degree;

(i) the accuracy of the range and azimuthal displays shall satisfy the requirements (measurements using known targets);

(k) linearity in short ranges shall be correct (pushing and pulling);

(l) the displayed minimum range shall be 15 metres or less;

(m) the centre of the picture shall be visible and its diameter shall not exceed 1 mm;

(n) False echoes caused by reflections and unwanted shadows on the lubber line shall not occur or shall not impair the safety of navigation;

(o) Sea-clutter and rain-clutter suppressors (STC and FTC preset) and the associated controls shall perform correctly;

(p) the gain adjustment shall be in proper working order;

(q) focus and picture definition shall be correct;

(r) the ship's turning direction shall be as indicated on the rate-of-turn indicator and the zero position at dead ahead shall be correct;

(s) the radar equipment shall not be sensitive to transmissions by the ship's radio equipment or to interference from other on-board sources;

(t) the radar equipment and/or rate-of-turn indicator shall not interfere with other on-board equipment.

Furthermore, in the case of inland ECDIS equipment:

(u) the statistical positional error affecting the chart shall not exceed 2 m;

(v) the statistical phase angle error affecting the chart shall not exceed 1 degree.

Article 10
Installation and performance certificate

After successful completion of a test in accordance with Article 8, the competent authority or the approved firm shall issue a certificate based on the model in the Appendix. This certificate shall be kept permanently on board.

If the test conditions have not been met, a list of defects shall be drawn up. Any existing certificate shall be withdrawn or sent to the competent authority by the approved firm.
Appendix

Model installation and performance certificate for radar equipment and rate-of-turn indicators

Type/Name of vessel: ...........................................................................................................................................................................

Official registration number of vessel: ....................................................................................................................................................

Vessel's owner

Name: ...........................................................................................................................................................................................................

Address: ...........................................................................................................................................................................................................

Telephone: ....................................................................................................................................................................................................

Radar appliances: ...............................................................................................................................................................................

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Rate-of-turn indicators: ........................................................................................................................................................................

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This is to certify that the radar equipment and rate-of-turn indicator of the abovementioned vessel comply with the installation and performance test requirements for radar equipment and rate-of-turn indicators used in inland waterway vessels.

Approved firm

Name: ...........................................................................................................................................................................................................

Address: ...........................................................................................................................................................................................................

Telephone: ....................................................................................................................................................................................................

Stamp

Place ........................................................................ Date .................................................................

Signature: ...........................................................................................................................................................................................................

Approving authority

Name: ...........................................................................................................................................................................................................

Address: ...........................................................................................................................................................................................................

Telephone: ....................................................................................................................................................................................................
PART VI

MODEL LIST OF TEST INSTITUTES, APPROVED EQUIPMENT AND APPROVED INSTALLATION FIRMS

as provided for in Part IV and Part V

### A. COMPETENT TESTING AUTHORITIES

* pursuant to Article 1.04(1) of Part I

### B. APPROVED RADAR EQUIPMENT

* pursuant to Article 1.06(4) of Part IV

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### C. APPROVED RATE-OF-TURN INDICATORS

* pursuant to Article 1.06(4) of Part IV

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D. APPROVED SPECIALISED FIRMS FOR THE INSTALLATION OR REPLACEMENT OF RADAR EQUIPMENT AND RATE-OF-TURN INDICATORS

pursuant to Article 3 of Part V

The letters in column 4 refer to the designations in column 1 of points B (radar equipment) and C (rate-of-turn indicators).

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Harmonisation of technical requirements and administrative procedures in air transport ***II


(Codecision procedure: second reading)

The European Parliament,

— having regard to the Council common position (13376/1/2005 — C6-0090/2006),
Wednesday, 5 July 2006

— having regard to its positions at first reading (1) on the Commission proposal to Parliament and the Council (COM(2000)0121) (2) and on the amended proposal (COM(2002)0030) (3)


— having regard to Article 251(2) of the EC Treaty,

— having regard to Rule 62 of its Rules of Procedure,

— having regard to the recommendation for second reading of the Committee on Transport and Tourism (A6-0212/2006);

1. Approves the common position as amended;

2. Instructs its President to forward its position to the Council and Commission.

(4) Not yet published in OJ.

P6_TC2-COD(2000)0069


(Text with EEA relevance)

THE EUROPEAN PARLIAMENT AND THE COUNCIL OF THE EUROPEAN UNION,

Having regard to the Treaty establishing the European Community, and in particular Article 80(2) thereof,

Having regard to the proposal from the Commission,

Having regard to the opinion of the European Economic and Social Committee (1),

After consulting the Committee of the Regions,

Acting in accordance with the procedure laid down in Article 251 of the Treaty (2),

Whereas:

(1) Regulation (EEC) No 3922/91 (3) provided for common safety standards listed in Annex II to that Regulation with respect, in particular, to the design, manufacture, operation and maintenance of aircraft, as well as persons and organisations involved in those tasks. Those harmonised safety standards applied to all aircraft operated by Community operators, whether such aircraft are registered in a Member State or in a third country.


(2) Article 4(1) of that Regulation requires the adoption of common technical requirements and administrative procedures, on the basis of Article 80(2) of the Treaty, for the fields that are not listed in Annex II to that Regulation.

(3) Article 9 of Council Regulation (EEC) No 2407/92 of 23 July 1992 on licensing of air carriers (1) provides that the granting and validity at any time of an operating licence shall be dependent upon the possession of a valid air operator’s certificate specifying the activities covered by the operating licence and complying with the criteria to be established in a prospective regulation. It is now appropriate to establish such criteria.

(4) The Joint Aviation Authorities (JAA) have adopted a set of harmonised rules for commercial air transportation by aeroplane, called Joint Aviation Requirements for Commercial Air Transportation (Aeroplanes) (JAR-OPS 1), as amended. Those rules (Amendment 8 of 1 January 2005) provide for a minimum level of safety requirements and therefore constitute a good basis for Community legislation covering the operation of aeroplanes. Changes had to be made to JAR-OPS 1 in order to bring it into conformity with Community legislation and policies, account being taken of its numerous implications in the economic and social field. That new text cannot be introduced into Community law by simple reference to JAR-OPS 1 in Regulation (EEC) No 3922/91. A new Annex containing the common rules should therefore be added to that Regulation.

(5) Air operators should be given sufficient flexibility to address unforeseen urgent operational circumstances, or operational needs of a limited duration, or to demonstrate that they can achieve an equivalent level of safety by means other than the application of the common rules set out in the Annex (hereinafter referred to as Annex III). Member States should therefore be empowered to grant exemptions or introduce variations to the common technical requirements and administrative procedures. Because such exemptions and variations could, in certain cases, undermine the common safety standards or create distortions on the market, their scope should be strictly limited and their grant should be subject to appropriate Community control. In that respect, the Commission should be empowered to take safeguard measures.

(6) There exist well identified cases where Member States should be permitted to adopt or maintain national provisions regarding flight and duty time limitations and rest requirements, provided that commonly established procedures are complied with and until Community rules based on scientific knowledge and best practices are established.

(7) The aim of this Regulation is to provide harmonised safety standards of a high level, including in the field of flight and duty time limitations and rest periods. In some Member States collective labour agreements and/or legislation exists which provides for better conditions as regards flight and duty time limitations and as regards working conditions for cabin crew. Nothing in this Regulation should be interpreted as limiting the possibility of concluding or retaining such agreements. Member States are allowed to maintain legislation which contains more favourable provisions than those laid down in this Regulation.


This Regulation, in particular the provisions on flight and duty time limitations and rest requirements as set out in Subpart Q of Annex III, takes into account the limits and minimum standards already established in Directive 2000/79/EC (4). The limits set out in that Directive should always be respected for mobile workers in civil aviation. The provisions of Subpart Q of Annex III and other provisions approved pursuant to this Regulation should in no circumstances be broader and thereby provide those workers with less protection.

Member States should be able to continue to apply national provisions on flight and duty time limitations and rest requirements for crew members, provided that the limits established by such national provisions are below the maximum limits and above the minimum limits laid down in Subpart Q of Annex III.

Member States should be able to continue to apply national provisions on flight and duty time limitations and rest requirements for crew members in areas that are at present not covered by Subpart Q of Annex III, e.g., the maximum daily flight duty period for single pilot operations and emergency medical operations, provisions regarding the reduction of flight duty periods, or the augmentation of rest periods when crossing multiple time zones.

A scientific and medical evaluation of the provisions on flight and duty time limitations and rest requirements and, where relevant, of the provisions on cabin crews should be made within a period of two years following the entry into force of this Regulation.

This Regulation should not affect the application of provisions on inspections as laid down in the 1944 Chicago Convention on International Civil Aviation and in Directive 2004/36/EC of the European Parliament and of the Council of 21 April 2004 on the safety of third-country aircraft using Community airports (5).

Arrangements for greater cooperation over the use of Gibraltar airport were agreed in London on 2 December 1987 by the Kingdom of Spain and the United Kingdom in a joint declaration by the Ministers of Foreign Affairs of the two countries. Such arrangements have yet to enter into operation.

Regulation (EEC) No 3922/91 should therefore be amended accordingly.

---

HAVE ADOPTED THIS REGULATION:

Article 1

Regulation (EEC) No 3922/91 is hereby amended as follows:

1) The following recital shall be inserted after recital 9:

‘The application of provisions regarding flight and duty time limitations can result in significant disruption of rosters for undertakings the operating models of which are exclusively based on night-time operation; whereas, the Commission should, on the basis of evidence to be provided by the parties concerned, carry out an assessment and propose an adjustment of the provisions regarding flight and duty time limitations to take account of these special operating models.’

2) The following recitals shall be inserted after recital 10:

‘By ..., (*) the European Aviation Safety Agency should complete a scientific and medical evaluation of Subpart Q and, where relevant, of Subpart O of Annex III. On the basis of the results of this evaluation, and in accordance with the procedure referred to in Article 12(2), the Commission should, if necessary, draw up and submit proposals without delay to amend the relevant technical provisions.

In the review of certain provisions referred to in Article 8a the course towards further harmonisation of cabin crew training requirements hitherto adopted should be maintained, in order to facilitate the free movement of cabin crew personnel within the Community; in this context, the possibility of further harmonisation of cabin crew qualifications should be re-examined.

(*) Two years after the entry into force of this Regulation.’

3) The last recital shall be replaced by the following recital:

‘The measures necessary for the implementation of this Regulation should be adopted in accordance with Council Decision 1999/468/EC of 28 June 1999 laying down the procedures for the exercise of implementing powers conferred on the Commission (**),

(**) OJ L 184, 17.7.1999, p. 23.’

4) Article 1 is hereby amended as follows:

a) paragraph 1 shall be replaced by the following:

‘1. This Regulation shall apply to the harmonisation of technical requirements and administrative procedures in the field of civil aviation safety related to the operation and maintenance of aircraft and persons and organisations involved in such tasks.’

b) the following paragraphs shall be added:

‘3. The application of this Regulation to the airport of Gibraltar is understood to be without prejudice to the respective legal positions of the Kingdom of Spain and the United Kingdom with regard to the dispute over sovereignty over the territory in which the airport is situated.

4. Application of this Regulation to Gibraltar airport shall be suspended until the arrangements included in the Joint Declaration made by the Foreign Ministers of the Kingdom of Spain and the United Kingdom on 2 December 1987 enter into effect. The Governments of Spain and the United Kingdom shall inform the Council of such date of entry into operation.’

5) the following definition shall be added in Article 2:

‘(i) “the Authority” in Annex III means: the competent authority that has granted the air operator’s certificate (AOC).’
6) Article 3 shall be replaced by the following:

‘Article 3

1. Without prejudice to Article 11, the common technical requirements and administrative procedures applicable in the Community with regard to commercial transportation by aeroplane shall be those specified in Annex III.


(*) OJ L 315, 28.11.2003, p. 1.’;

7) Article 4(1) shall be replaced by the following:

‘1. With regard to the fields not covered by Annex III, common technical requirements and administrative procedures shall be adopted on the basis of Article 80(2) of the Treaty. The Commission shall, where appropriate and as soon as possible, submit suitable proposals in these fields.’;

8) Article 6 shall be replaced by the following:

‘Article 6

Aircraft operated under an authorisation granted by a Member State in compliance with the common technical requirements and administrative procedures may be operated under the same conditions in other Member States, without further technical requirements or evaluation by those other Member States.’;

9) Article 7 shall be replaced by the following:

‘Article 7

Member States shall recognise the certification granted pursuant to this Regulation by another Member State or by a body acting on its behalf, to bodies or persons placed under its jurisdiction and under its authority, who are concerned with the maintenance of products and the operation of aircraft.’;

10) Article 8 shall be replaced by the following:

‘Article 8

1. The provisions of Articles 3 to 7 shall not prevent a Member State from reacting immediately to a safety problem which involves a product, person or organisation subject to this Regulation.

If the safety problem results from an inadequate level of safety provided for by the common technical requirements and administrative procedures, or shortcomings in these requirements and procedures, the Member State shall immediately inform the Commission and the other Member States of the measures taken and the reasons therefor.

The Commission shall decide, in accordance with the procedure referred to in Article 12(2), whether an inadequate level of safety or a shortcoming in the common technical requirements and administrative procedures justifies the continued application of the measures adopted pursuant to the first subparagraph of this paragraph. In such a case, the Commission shall also take the necessary steps to amend the common technical requirements and administrative procedures concerned in accordance with Article 4 or Article 11. If the Member State’s measures are found not to be justified, it shall revoke the measures in question.’;
2. A Member State may grant exemptions from the technical requirements and administrative procedures specified by this Regulation in the case of unforeseen urgent operational circumstances or operational needs of a limited duration.

The Commission and the other Member States shall be informed of any exemptions granted repeatedly or for a period of more than two months.

When the Commission and other Member States are informed of exemptions granted by a Member State in accordance with the second subparagraph, the Commission shall examine whether the exemptions comply with the safety objectives of this Regulation or any other relevant rule of Community legislation.

If the Commission finds that the exemptions granted do not comply with the safety objectives of this Regulation or any other relevant rule of Community legislation, the Commission shall decide on safeguard measures in accordance with the procedure referred to in Article 12a.

In such a case, the Member State concerned shall revoke the exemption.

3. In cases where a safety level equivalent to that attained by the application of the common technical requirements and administrative procedures set out in Annex III can be achieved by other means, Member States may, without discrimination on grounds of the nationality of the applicants and having regard to the need not to distort competition, grant approval derogating from these provisions.

In such cases the Member State concerned shall notify the Commission of its intention to grant such approval, the reasons therefor and the conditions laid down in order to ensure that an equivalent level of safety is achieved.

The Commission shall, within a period of 3 months following notification by a Member State, initiate the procedure referred to in Article 12(2) in order to decide whether the proposed approval of the measure can be granted.

In such a case, the Commission shall notify its decision to all Member States, which shall be entitled to apply that measure. The relevant provisions of Annex III may also be amended to reflect such a measure.

Articles 6 and 7 shall apply to the measure in question.

4. Notwithstanding the provisions of paragraphs 1, 2 and 3, a Member State may adopt or maintain provisions relating to OPS 1.1105 point 6, OPS 1.1110 points 1.3 and 1.4.1, OPS 1.1115, and OPS 1.1125 point 2.1 of Subpart Q in Annex III until Community rules based on scientific knowledge and best practices are established.

A Member State shall inform the Commission of the provisions that it decides to maintain.

For national provisions derogating from the OPS 1 provisions referred to in the first subparagraph, which Member States intend to adopt after the date of application of Annex III, the Commission shall, within a period of three months following the notification by a Member State, initiate the procedure referred to in Article 12(2) in order to decide whether these provisions comply with the safety objectives of this Regulation and other rules of Community law, and if they may be made applicable.

If so, the Commission shall notify its decision to approve the measure to all Member States, which shall be entitled to apply the measure. The relevant provisions of Annex III may also be amended to reflect such a measure.

Articles 6 and 7 shall apply to the measure in question.
11) the following Article shall be inserted:

‘Article 8a
1. By … (*), the European Aviation Safety Agency shall conclude a scientific and medical evaluation of the provisions of Subpart Q and, where relevant, of Subpart O of Annex III.


12) Article 11(1) shall be replaced by the following:

‘1. The Commission, following the procedure referred to in Article 12(2), shall make the amendments necessitated by scientific and technical progress to the common technical requirements and administrative procedures listed in Annex III.’;

13) Article 12 shall be replaced by the following:

‘Article 12
1. The Commission shall be assisted by the Air Safety Committee, hereinafter referred to as the Committee.

2. Where reference is made to this paragraph, Articles 5 and 7 of Decision 1999/468/EC shall apply, having regard to the provisions of Article 8 thereof.

The period laid down in Article 5(6) of Decision 1999/468/EC shall be set at three months.

3. The Committee shall adopt its Rules of Procedure.’;

14) the following Article shall be inserted:

‘Article 12a
Where reference is made to this Article, the safeguard procedure laid down in Article 6 of Decision 1999/468/EC shall apply.

Before adopting its decision, the Commission shall consult the Committee.

The period provided for in Article 6(b) of Decision 1999/468/EC shall be three months.

When a Commission decision is referred to the Council by a Member State, the Council, acting by a qualified majority, may take a different decision within a period of three months.’;

15) The text appearing in the Annex to this Regulation shall be added as Annex III.

Article 2

This Regulation shall enter into force on the twentieth day following that of its publication in the Official Journal of the European Union.

Without prejudice to the provisions of Article 11 of Regulation (EEC) No 3922/91, Annex III shall apply with effect from … (**).

This Regulation shall be binding in its entirety and directly applicable in all Member States.

Done at …, on …

For the European Parliament
The President

For the Council
The President

(*) Two years after the entry into force of this Regulation.
(*** 18 months after entry into force of this Regulation.
ANNEX

‘ANNEX III

COMMON TECHNICAL REQUIREMENTS AND ADMINISTRATIVE PROCEDURES APPLICABLE TO COMMERCIAL TRANSPORTATION BY AIRCRAFT

OPS 1: Commercial Air Transportation (Aeroplanes)

Contents (General layout)

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SUBPART A

APPLICABILITY AND DEFINITIONS

OPS 1.001

Applicability

OPS Part 1 prescribes requirements applicable to the operation of any civil aeroplane for the purpose of commercial air transportation by any operator whose principal place of business and, if any, registered office is in a Member State, hereafter called operator. OPS 1 does not apply:

(1) to aeroplanes when used in military, customs and police services; nor

(2) to parachute dropping and fire-fighting flights, and to associated positioning and return flights in which the persons carried are those who would normally be carried on parachute dropping or fire-fighting; nor

(3) to flights immediately before, during, or immediately after an aerial work activity provided these flights are connected with that aerial work activity and in which, excluding crew members, no more than 6 persons indispensable to the aerial work activity are carried.
(a) For the purpose of this Annex:

(1) “Accepted/Acceptable” means not objected to by the Authority as suitable for the purpose intended.

(2) “Approved (by the Authority)” means documented (by the Authority) as suitable for the purpose intended.

(3) “Master Minimum Equipment List (MMEL)” means a master list (including a preamble) appropriate to an aircraft type which determines those instruments, items of equipment or functions that, while maintaining the level of safety intended in the applicable airworthiness certification specifications, may temporarily be inoperative either due to the inherent redundancy of the design, and/or due to specified operational and maintenance procedures, conditions and limitations, and in accordance with the applicable procedures for Continued Airworthiness.

(4) “Minimum Equipment List (MEL)” means a list (including a preamble) which provides for the operation of aircraft, under specified conditions, with particular instruments, items of equipment or functions inoperative at the commencement of flight. This list is prepared by the operator for his own particular aircraft taking account of their aircraft definition and the relevant operational and maintenance conditions in accordance with a procedure approved by the Authority.


SUBPART B

GENERAL

OPS 1.005

General

(a) An operator shall not operate an aeroplane for the purpose of commercial air transportation other than in accordance with OPS Part 1. For operations of Performance Class B aeroplanes, alleviated requirements can be found in Appendix 1 to OPS 1.005 (a).

(b) An operator shall comply with the applicable retroactive airworthiness requirements for aeroplanes operated for the purpose of commercial air transportation.

(c) Each aeroplane shall be operated in compliance with the terms of its Certificate of Airworthiness and within the approved limitations contained in its Aeroplane Flight Manual.

(d) All Synthetic Training Devices (STD), such as Flight Simulators or Flight Training Devices (FTD), replacing an aeroplane for training and/or checking purposes are to be qualified in accordance with the requirements applicable to Synthetic Training Devices. An operator intending to use such STD must obtain approval from the Authority.

OPS 1.020

Laws, Regulations and Procedures — Operator’s Responsibilities

An operator must ensure that:

(1) All employees are made aware that they shall comply with the laws, regulations and procedures of those States in which operations are conducted and which are pertinent to the performance of their duties; and
(2) All crew members are familiar with the laws, regulations and procedures pertinent to the performance of their duties.

OPS 1.025
Common Language

(a) An operator must ensure that all crew members can communicate in a common language.

(b) An operator must ensure that all operations personnel are able to understand the language in which those parts of the Operations Manual which pertain to their duties and responsibilities are written.

OPS 1.030
Minimum Equipment Lists — Operator’s Responsibilities

(a) An operator shall establish, for each aeroplane, a Minimum Equipment List (MEL) approved by the Authority. This shall be based upon, but no less restrictive than, the relevant Master Minimum Equipment List (MMEL) (if this exists) accepted by the Authority.

(b) An operator shall not operate an aeroplane other than in accordance with the MEL unless permitted by the Authority. Any such permission will in no circumstances permit operation outside the constraints of the MMEL.

OPS 1.035
Quality system

(a) An operator shall establish one Quality System and designate one Quality Manager to monitor compliance with, and adequacy of, procedures required to ensure safe operational practices and airworthy aeroplanes. Compliance monitoring must include a feed-back system to the Accountable Manager (See also OPS 1.175 (h)) to ensure corrective action as necessary.

(b) The Quality System must include a Quality Assurance Programme that contains procedures designed to verify that all operations are being conducted in accordance with all applicable requirements, standards and procedures.

(c) The Quality System and the Quality Manager must be acceptable to the Authority.

(d) The Quality System must be described in relevant documentation.

(e) Notwithstanding sub-paragraph (a) above, the Authority may accept the nomination of two Quality Managers, one for operations and one for maintenance provided that the operator has designated one Quality Management Unit to ensure that the Quality System is applied uniformly throughout the entire operation.

OPS 1.037
Accident prevention and flight safety programme

(a) An operator shall establish and maintain an accident prevention and flight safety programme, which may be integrated with the Quality System, including:

(1) Programmes to achieve and maintain risk awareness by all persons involved in operations; and

(2) An occurrence reporting scheme to enable the collation and assessment of relevant incident and accident reports in order to identify adverse trends or to address deficiencies in the interests of flight safety. The scheme shall protect the identity of the reporter and include the possibility that reports may be submitted anonymously; and
(3) Evaluation of relevant information relating to accidents and incidents and the promulgation of related information, but not the attribution of blame; and

(4) A flight data monitoring programme for those aeroplanes in excess of 27 000 kg MCTOM. Flight Data Monitoring (FDM) is the pro-active use of digital flight data from routine operations to improve aviation safety. The flight data monitoring programme shall be non-punitive and contain adequate safeguards to protect the source(s) of the data; and

(5) The appointment of a person accountable for managing the programme.

(b) Proposals for corrective action resulting from the accident prevention and flight safety programme shall be the responsibility of the person accountable for managing the programme.

(c) The effectiveness of changes resulting from proposals for corrective action identified by the accident and flight safety programme shall be monitored by the Quality Manager.

**OPS 1.040**

Crew members

(a) An operator shall ensure that all operating flight and cabin crew members have been trained in, and are proficient to perform, their assigned duties.

(b) Where there are crew members, other than cabin crew members, who carry out their duties in the passenger compartment of an aeroplane, an operator shall ensure that these

   (1) are not confused by the passengers with the cabin crew members;

   (2) do not occupy required cabin crew assigned stations;

   (3) do not impede the cabin crew members in their duties.

**OPS 1.050**

Search and rescue information

An operator shall ensure that essential information pertinent to the intended flight concerning search and rescue services is easily accessible on the flight deck.

**OPS 1.055**

Information on emergency and survival equipment carried

An operator shall ensure that there are available for immediate communication to rescue coordination centres, lists containing information on the emergency and survival equipment carried on board all of his aeroplanes. The information shall include, as applicable, the number, colour and type of life rafts and pyrotechnics, details of emergency medical supplies, water supplies and the type and frequencies of emergency portable radio equipment.

**OPS 1.060**

Ditching

An operator shall not operate an aeroplane with an approved passenger seating configuration of more than 30 passengers on overwater flights at a distance from land suitable for making an emergency landing, greater than 120 minutes at cruising speed, or 400 nautical miles, whichever is the lesser, unless the aeroplane complies with the ditching requirements prescribed in the applicable airworthiness code.
OPS 1.065
Carriage of weapons of war and munitions of war

(a) An operator shall not transport weapons of war and munitions of war by air unless an approval to do so has been granted by all States concerned.

(b) An operator shall ensure that weapons of war and munitions of war are:
   (1) Stowed in the aeroplane in a place which is inaccessible to passengers during flight; and
   (2) In the case of firearms, unloaded, unless, before the commencement of the flight, approval has been granted by all States concerned that such weapons of war and munitions of war may be carried in circumstances that differ in part or in total from those indicated in this subparagraph.

(c) An operator shall ensure that the commander is notified before a flight begins of the details and location on board the aeroplane of any weapons of war and munitions of war intended to be carried.

OPS 1.070
Carriage of sporting weapons and ammunition

(a) An operator shall take all reasonable measures to ensure that any sporting weapons intended to be carried by air are reported to him.

(b) An operator accepting the carriage of sporting weapons shall ensure that they are:
   (1) Stowed in the aeroplane in a place which is inaccessible to passengers during flight unless the Authority has determined that compliance is impracticable and has accepted that other procedures might apply; and
   (2) In the case of firearms or other weapons that can contain ammunition, unloaded.

(c) Ammunition for sporting weapons may be carried in passengers' checked baggage, subject to certain limitations, in accordance with the Technical Instructions (see OPS 1.1160 (b)(5)) as defined in OPS 1.1150 (a)(15).

OPS 1.075
Method of carriage of persons

An operator shall take all measures to ensure that no person is in any part of an aeroplane in flight which is not a part designed for the accommodation of persons unless temporary access has been granted by the commander to any part of the aeroplane:

(1) For the purpose of taking action necessary for the safety of the aeroplane or of any person, animal or goods therein; or
(2) In which cargo or stores are carried, being a part which is designed to enable a person to have access thereto while the aeroplane is in flight.

OPS 1.080
Offering dangerous goods for transport by air

An operator shall take all reasonable measures to ensure that no person offers or accepts dangerous goods for transport by air unless the person has been trained and the goods are properly classified, documented, certificated, described, packaged, marked, labelled and in a fit condition for transport as required by the Technical Instructions and relevant Community legislation.
Crew responsibilities

(a) A crew member shall be responsible for the proper execution of his/her duties that:

1. Are related to the safety of the aeroplane and its occupants; and

(b) A crew member shall:

1. Report to the commander any fault, failure, malfunction or defect which he/she believes may affect the airworthiness or safe operation of the aeroplane including emergency systems.
2. Report to the commander any incident that endangered, or could have endangered, the safety of operation;
3. Make use of the operator's occurrence reporting schemes in accordance with OPS 1.037(a)(2). In all such cases, a copy of the report(s) shall be communicated to the commander concerned.

(c) Nothing in paragraph (b) above shall oblige a crew member to report an occurrence which has already been reported by another crew member.

(d) A crew member shall not perform duties on an aeroplane:

1. While under the influence of any drug that may affect his/her faculties in a manner contrary to safety;
2. Following deep sea diving except when a reasonable time period has elapsed;
3. Following blood donation except when a reasonable time period has elapsed;
4. If applicable medical requirements are not fulfilled, or if he/she is in any doubt of being able to accomplish his/her assigned duties; or
5. If he/she knows or suspects that he/she is suffering from fatigue, or feels unfit to the extent that the flight may be endangered.

(e) A crew member shall be subject to appropriate requirements on the consumption of alcohol which shall be established by the operator and acceptable by the Authority, and which shall not be less restrictive than the following:

1. No alcohol shall be consumed less than 8 hours prior to the specified reporting time for flight duty or the commencement of standby;
2. The blood alcohol level shall not exceed 0,2 promille at the start of a flight duty period;
3. No alcohol shall be consumed during the flight duty period or whilst on standby.

(f) The commander shall:

1. Be responsible for the safety of all crew members, passengers and cargo on board, as soon as he/she arrives on board, until he/she leaves the aeroplane at the end of the flight;
2. Be responsible for the operation and safety of the aeroplane from the moment the aeroplane is first ready to move for the purpose of taxiing prior to take-off until the moment it finally comes to rest at the end of the flight and the engine(s) used as primary propulsion units are shut down;
3. Have authority to give all commands he/she deems necessary for the purpose of securing the safety of the aeroplane and of persons or property carried therein;
(4) Have authority to disembark any person, or any part of the cargo, which, in his/her opinion, may represent a potential hazard to the safety of the aeroplane or its occupants;

(5) Not allow a person to be carried in the aeroplane who appears to be under the influence of alcohol or drugs to the extent that the safety of the aeroplane or its occupants is likely to be endangered;

(6) Have the right to refuse transportation of inadmissible passengers, deportees or persons in custody if their carriage poses any risk to the safety of the aeroplane or its occupants;

(7) Ensure that all passengers are briefed on the location of emergency exits and the location and use of relevant safety and emergency equipment;

(8) Ensure that all operational procedures and check lists are complied with in accordance with the Operations Manual;

(9) Not permit any crew member to perform any activity during take-off, initial climb, final approach and landing except those duties required for the safe operation of the aeroplane;

(10) Not permit:

(i) A flight data recorder to be disabled, switched off or erased during flight nor permit recorded data to be erased after flight in the event of an accident or an incident subject to mandatory reporting;

(ii) A cockpit voice recorder to be disabled or switched off during flight unless he/she believes that the recorded data, which otherwise would be erased automatically, should be preserved for incident or accident investigation nor permit recorded data to be manually erased during or after flight in the event of an accident or an incident subject to mandatory reporting;

(11) Decide whether or not to accept an aeroplane with unserviceabilities allowed by the CDL or MEL; and

(12) Ensure that the pre-flight inspection has been carried out.

(g) The commander shall, in an emergency situation that requires immediate decision and action, take any action he/she considers necessary under the circumstances. In such cases he/she may deviate from rules, operational procedures and methods in the interest of safety.

**OPS 1.090**

Authority of the commander

An operator shall take all reasonable measures to ensure that all persons carried in the aeroplane obey all lawful commands given by the commander for the purpose of securing the safety of the aeroplane and of persons or property carried therein.

**OPS 1.095**

Authority to taxi an aeroplane

An operator shall take all reasonable steps to ensure that an aeroplane in his charge is not taxied on the movement area of an aerodrome by a person other than a flight crew member, unless that person, seated at the controls:

(1) Has been duly authorised by the operator or a designated agent and is competent to:

(i) taxi the aeroplane;

(ii) use the radio telephone; and
(2) Has received instruction in respect of aerodrome layout, routes, signs, marking, lights, air traffic control signals and instructions, phraseology and procedures, and is able to conform to the operational standards required for safe aeroplane movement at the aerodrome.

**OPS 1.100**
Admission to flight deck

(a) An operator must ensure that no person, other than a flight crew member assigned to a flight, is admitted to, or carried in, the flight deck unless that person is:

(1) An operating crew member;

(2) A representative of the Authority responsible for certification, licensing or inspection if this is required for the performance of his/her official duties; or

(3) Permitted by, and carried in accordance with instructions contained in the Operations Manual.

(b) The commander shall ensure that:

(1) In the interests of safety, admission to the flight deck does not cause distraction and/or interfere with the flight's operation; and

(2) All persons carried on the flight deck are made familiar with the relevant safety procedures.

(c) The final decision regarding the admission to the flight deck shall be the responsibility of the commander.

**OPS 1.105**
Unauthorised carriage

An operator shall take all reasonable measures to ensure that no person secretes himself/herself or secretes cargo on board an aeroplane.

**OPS 1.110**
Portable electronic devices

An operator shall not permit any person to use, and take all reasonable measures to ensure that no person does use, on board an aeroplane a portable electronic device that can adversely affect the performance of the aeroplane's systems and equipment.

**OPS 1.115**
Alcohol and drugs

An operator shall not permit any person to enter or be in, and take all reasonable measures to ensure that no person enters or is in, an aeroplane when under the influence of alcohol or drugs to the extent that the safety of the aeroplane or its occupants is likely to be endangered.

**OPS 1.120**
Endangering safety

An operator shall take all reasonable measures to ensure that no person recklessly or negligently acts or omits to act:

(1) so as to endanger an aeroplane or person therein;

(2) so as to cause or permit an aeroplane to endanger any person or property.
OPS 1.125
Documents to be carried

(a) An operator shall ensure that the following documents or copies thereof are carried on each flight:

(1) The Certificate of Registration;

(2) The Certificate of Airworthiness;

(3) The original or a copy of the Noise Certificate (if applicable), including an English translation, where one has been provided by the Authority responsible for issuing the noise certificate;

(4) The original or a copy of the Air Operator Certificate;

(5) The Aircraft Radio Licence; and

(6) The original or a copy of the Third party liability Insurance Certificate(s).

(b) Each flight crew member shall, on each flight, carry a valid flight crew licence with appropriate rating(s) for the purpose of the flight.

OPS 1.130
Manuals to be carried

An operator shall ensure that:

(1) The current parts of the Operations Manual relevant to the duties of the crew are carried on each flight;

(2) Those parts of the Operations Manual which are required for the conduct of a flight are easily accessible to the crew on board the aeroplane; and

(3) The current Aeroplane Flight Manual is carried in the aeroplane unless the Authority has accepted that the Operations Manual prescribed in OPS 1.1045, Appendix 1, Part B contains relevant information for that aeroplane.

OPS 1.135
Additional information and forms to be carried

(a) An operator shall ensure that, in addition to the documents and manuals prescribed in OPS 1.125 and OPS 1.130, the following information and forms, relevant to the type and area of operation, are carried on each flight:

(1) Operational Flight Plan containing at least the information required in OPS 1.1060;

(2) Aeroplane Technical Log containing at least the information required in Part M, paragraph M. A. 306;

(3) Details of the filed ATS flight plan;

(4) Appropriate NOTAM/AIS briefing documentation;

(5) Appropriate meteorological information;

(6) Mass and balance documentation as specified in Subpart J;

(7) Notification of special categories of passenger such as security personnel, if not considered as crew, handicapped persons, inadmissible passengers, deportees and persons in custody;
(8) Notification of special loads including dangerous goods including written information to the commander as prescribed in OPS 1.1215 (d);

(9) Current maps and charts and associated documents as prescribed in OPS 1.290 (b)(7);

(10) Any other documentation which may be required by the States concerned with this flight, such as cargo manifest, passenger manifest etc; and

(11) Forms to comply with the reporting requirements of the Authority and the operator.

(b) The Authority may permit the information detailed in sub-paragraph (a) above, or parts thereof, to be presented in a form other than on printed paper. An acceptable standard of accessibility, usability and reliability must be assured.

OPS 1.140

Information retained on the ground

(a) An operator shall ensure that: At least for the duration of each flight or series of flights;

(i) Information relevant to the flight and appropriate for the type of operation is preserved on the ground; and

(ii) The information is retained until it has been duplicated at the place at which it will be stored in accordance with OPS 1.1065; or, if this is impracticable,

(iii) The same information is carried in a fireproof container in the aeroplane.

(b) The information referred to in subparagraph (a) above includes:

(1) A copy of the operational flight plan where appropriate;

(2) Copies of the relevant part(s) of the aeroplane technical log;

(3) Route specific NOTAM documentation if specifically edited by the operator;

(4) Mass and balance documentation if required (OPS 1.625 refers); and

(5) Special loads notification.

OPS 1.145

Power to inspect

An operator shall ensure that any person authorised by the Authority is permitted at any time to board and fly in any aeroplane operated in accordance with an AOC issued by that Authority and to enter and remain on the flight deck provided that the commander may refuse access to the flight deck if, in his/her opinion, the safety of the aeroplane would thereby be endangered.

OPS 1.150

Production of documentation and records

(a) An operator shall:

(1) Give any person authorised by the Authority access to any documents and records which are related to flight operations or maintenance; and

(2) Produce all such documents and records, when requested to do so by the Authority, within a reasonable period of time.
(b) The commander shall, within a reasonable time of being requested to do so by a person authorised by an Authority, produce to that person the documentation required to be carried on board.

**OPS 1.155**

Preservation of documentation

An operator shall ensure that:

(1) Any original documentation, or copies thereof, that he is required to preserve is preserved for the required retention period even if he ceases to be the operator of the aeroplane; and

(2) Where a crew member, in respect of whom an operator has kept flight duty, duty and rest period records, becomes a crew member for another operator, that record is made available to the new operator.

**OPS 1.160**

Preservation, production and use of flight recorder recordings

(a) Preservation of recordings:

(1) Following an accident, the operator of an aeroplane on which a flight recorder is carried shall, to the extent possible, preserve the original recorded data pertaining to that accident, as retained by the recorder for a period of 60 days unless otherwise directed by the investigating authority.

(2) Unless prior permission has been granted by the Authority, following an incident that is subject to mandatory reporting, the operator of an aeroplane on which a flight recorder is carried shall, to the extent possible, preserve the original recorded data pertaining to that incident, as retained by the recorder for a period of 60 days unless otherwise directed by the investigating authority.

(3) Additionally, when the Authority so directs, the operator of an aeroplane on which a flight recorder is carried shall preserve the original recorded data for a period of 60 days unless otherwise directed by the investigating authority.

(4) When a flight data recorder is required to be carried aboard an aeroplane, the operator of that aeroplane shall:

   (i) Save the recordings for the period of operating time as required by OPS 1.715, 1.720 and 1.725 except that, for the purpose of testing and maintaining flight data recorders, up to one hour of the oldest recorded material from the time of testing may be erased; and

   (ii) Keep a document which presents the information necessary to retrieve and convert the stored data into engineering units.

(b) Production of recordings

The operator of an aeroplane on which a flight recorder is carried shall, within a reasonable time after being requested to do so by the Authority, produce any recording made by a flight recorder which is available or has been preserved.

(c) Use of recordings

(1) The cockpit voice recorder recordings may not be used for purposes other than for the investigation of an accident or incident subject to mandatory reporting except with the consent of all crew members concerned.
The flight data recorder recordings may not be used for purposes other than for the investigation of an accident or incident subject to mandatory reporting except when such records are:

(i) Used by the operator for airworthiness or maintenance purposes only; or

(ii) De-identified; or

(iii) Disclosed under secure procedures.

OPS 1.165
Leasing

(a) Terminology

Terms used in this paragraph have the following meaning:

(1) Dry lease — Is when the aeroplane is operated under the AOC of the lessee.

(2) Wet lease — Is when the aeroplane is operated under the AOC of the lessor.

(b) Leasing of aeroplanes between Community operators

(1) Wet lease-out. A Community operator providing an aeroplane and complete crew to another Community operator, in accordance with Council Regulation (EEC) No 2407/92 of 23 July 1992 on licensing of air carriers (1), and retaining all the functions and responsibilities prescribed in Subpart C, shall remain the operator of the aeroplane.

(2) All leases except wet lease-out

(i) Except as provided by subparagraph (b)(1) above, a Community operator utilising an aeroplane from, or providing it to, another Community operator, must obtain prior approval for the operation from his respective Authority. Any conditions which are part of this approval must be included in the lease agreement.

(ii) Those elements of lease agreements which are approved by the Authority, other than lease agreements in which an aeroplane and complete crew are involved and no transfer of functions and responsibilities is intended, are all to be regarded, with respect to the leased aeroplane, as variations of the AOC under which the flights will be operated.

(c) Leasing of aeroplanes between a Community operator and any entity other than a Community operator:

(1) Dry lease-in

(i) A Community operator shall not dry lease-in an aeroplane from an entity other than another Community operator, unless approved by the Authority. Any conditions which are part of this approval must be included in the lease agreement.

(ii) A Community operator shall ensure that, with regard to aeroplanes that are dry leased-in, any differences from the requirements prescribed in Subparts K, L, and/or OPS 1.005(b), are notified to and are acceptable to the Authority.

(2) Wet lease-in

(i) A Community operator shall not wet lease-in an aeroplane from an entity other than another Community operator without the approval of the Authority.

(ii) A Community operator shall ensure that, with regard to aeroplanes that are wet leased-in:

(A) The safety standards of the lessor with respect to maintenance and operation are equivalent to those established by the present Regulation;

(B) The lessor is an operator holding an AOC issued by a State which is a signatory to the Chicago Convention;

(C) The aeroplane has a standard Certificate of Airworthiness issued in accordance with ICAO Annex VIII. Standard Certificates of Airworthiness issued by a Member State other than the State responsible for issuing the AOC, will be accepted without further showing when issued in accordance with Part 21; and

(D) Any requirement made applicable by the lessee’s Authority is complied with.

(3) Dry lease-out

A Community operator may dry lease-out an aeroplane for the purpose of commercial air transportation to any operator of a State which is signatory to the Chicago Convention provided that the following conditions are met:

(A) The Authority exempted the operator from the relevant provisions of OPS Part 1 and, after the foreign regulatory authority has accepted responsibility in writing for surveillance of the maintenance and operation of the aeroplane(s), has removed the aeroplane from its AOC; and

(B) The aeroplane is maintained according to an approved maintenance programme.

(4) Wet lease-out

A Community operator providing an aeroplane and complete crew to another entity, in accordance with Regulation (EEC) No 2407/92, and retaining all the functions and responsibilities prescribed in Subpart C, shall remain the operator of the aeroplane.

Appendix 1 to OPS 1.005(a)

Operations of performance class B aeroplanes

(a) Terminology

(1) A to A operations — Take-off and landing are made at the same place.

(2) A to B operations — Take-off and landing are made at different places.

(3) Night — The hours between the end of evening civil twilight and the beginning of morning civil twilight or such other period between sunset and sunrise, as may be prescribed by the appropriate authority.

(b) Operations, to which this Appendix is applicable, may be conducted in accordance with the following alleviations.

(1) OPS 1.035 Quality System: In the case of a very small operator, the post of Quality Manager may be held by a nominated postholder if external auditors are used. This applies also where the accountable manager is holding one or several of the nominated posts.

(2) Reserved

(3) OPS 1.075 Methods of carriage of persons: Not required for VFR operations of single engine aeroplanes.
OPS 1.100 Admission to the flight deck:

(i) An operator must establish rules for the carriage of passengers in a pilot seat.

(ii) The commander must ensure that:

(A) Carriage of passengers in a pilot seat does not cause distraction and/or interference with
the operation of the flight; and

(B) The passenger occupying a pilot seat is made familiar with the relevant restrictions and
safety procedures.

OPS 1.105 Unauthorised Carriage: Not required for VFR operations of single engine aeroplanes.

OPS 1.135 Additional information and forms to be carried:

(i) For A to A VFR operations of single engine aeroplanes by day, the following documents need
not be carried:

(A) Operational Flight Plan;

(B) Aeroplane Technical Log;

(C) NOTAM/AIS briefing documentation;

(D) Meteorological Information;

(E) Notification of special categories of passengers etc.; and

(F) Notification of special loads including dangerous goods etc.

(ii) For A to B VFR operations of single engine aeroplanes by day, notification of special categories
of passengers as described in OPS 1.135 (a)(7) does not need to be carried.

(iii) For A to B VFR operations by day, the Operational Flight Plan may be in a simplified form and
must meet the needs of the type of operation.

OPS 1.215 Use of Air Traffic Services: For VFR operations of single engine aeroplanes by day, non
mandatory contact with ATS shall be maintained to the extent appropriate to the nature of the
operation. Search and rescue services must be ensured in accordance with OPS 1.300.

OPS 1.225 Aerodrome Operating Minima: For VFR operations, the standard VFR operating
minima will normally cover this requirement. Where necessary, the operator shall specify additional
requirements taking into account such factors as radio coverage, terrain, nature of sites for take-off
and landing, flight conditions and ATS capacity

OPS 1.235 Noise abatement procedures: Not applicable to VFR operations of single engine
aeroplanes.

OPS 1.240 Routes and Areas of Operation:

Subparagraph (a)(1) is not applicable to A to A VFR operations of single engine aeroplanes by day.

OPS 1.250 Establishment of minimum flight altitudes:

For VFR operations by day, this requirement is applicable as follows. An operator shall ensure that
operations are only conducted along such routes or within such areas for which a safe terrain clear-
cance can be maintained and shall take account of such factors as temperature, terrain, unfavourable
meteorological conditions (e.g. severe turbulence and descending air currents, corrections for
temperature and pressure variations from standard values).
(12) OPS 1.255 Fuel Policy:

(i) For A to A Flights — An operator shall specify the minimum fuel contents at which a flight must end. This minimum, final reserve, fuel must not be less than the amount needed to fly for a period of 45 minutes.

(ii) For A to B Flights — An operator shall ensure that the pre-flight calculation of usable fuel required for a flight includes:

(A) Taxi fuel — Fuel consumed before take-off, if significant; and

(B) Trip fuel (Fuel to reach the destination); and

(C) Reserve fuel

(1) Contingency fuel — Fuel that is not less than 5% of the planned trip fuel or, in the event of in-flight replanning, 5% of the trip fuel for the remainder of the flight; and

(2) Final reserve fuel — Fuel to fly for an additional period of 45 minutes (piston engines) or 30 minutes (turbine engines); and

(D) Alternate fuel — Fuel to reach the destination alternate via the destination, if a destination alternate is required; and

(E) Extra fuel — Fuel that the commander may require in addition to that required under sub-paragraphs (A)-(D) above.

(13) OPS 1.265 Carriage of inadmissible passengers, deportees or persons in custody: For VFR operations of single engine aeroplanes and where it is not intended to carry inadmissible passengers, deportees or persons in custody, an operator is not required to establish procedures for the carriage of such passengers.

(14) OPS 1.280 Passenger Seating: Not Applicable to VFR operations of single engine aeroplanes.

(15) OPS 1.285 Passenger Briefing: Demonstration and briefing shall be given as appropriate to the kind of operations. In single pilot operations, the pilot may not be allocated tasks distracting him/her from his/her flying duties.

(16) OPS 1.290 Flight Preparation:

(i) Operational Flight Plan for A to A operations — Not Required.

(ii) A to B operations under VFR by day — An operator shall ensure that a simplified form of an operational flight plan which is relevant to the type of operation is completed for each flight.

(17) OPS 1.295 Selection of aerodromes: Not applicable to VFR operations.

The necessary instructions for the use of aerodromes and sites for take-off and landing are to be issued with reference to OPS 1.220.

(18) OPS 1.310 Crew members at stations:

For VFR operations, instructions on this matter are required only where two pilot operations are conducted.

(19) OPS 1.375 In-flight fuel management:

Appendix 1 to OPS 1.375 is not required to be applied to VFR operations of single engine aeroplanes by day.

(20) OPS 1.405 Commencement and continuation of approach:

Not applicable to VFR operations.
(21) OPS 1.410 Operating procedures — threshold crossing height:

Not applicable to VFR operations.

(22) OPS 1.430 to 1.460, including appendices:

Not applicable to VFR operations.

(23) OPS 1.530 Take-off:

(i) Subparagraph (a) applies with the following addition. The Authority may, on a case-by-case basis, accept other performance data produced by the operator and based on demonstration and/or documented experience. Subparagraphs (b) and (c) apply with the following addition. Where the requirements of this paragraph cannot be complied with due to physical limitations relating to extending the runway and there is a clear public interest and necessity for the operation, the Authority may accept, on a case-by-case basis, other performance data, not conflicting with the Aeroplane Flight Manual relating to special procedures, produced by the operator based on demonstration and/or documented experience.

(ii) An operator wishing to conduct operations according to subparagraph (i) must have the prior approval of the Authority issuing the AOC. Such an approval will:

(A) Specify the type of aeroplane;

(B) Specify the type of operation;

(C) Specify the aerodrome(s) and runways concerned;

(D) Restrict the take-off to be conducted under VMC;

(E) Specify the crew qualification, and

(F) Be limited to aeroplanes where the first type certificate was first issued before 1 January 2005.

(iii) The operation must be accepted by the State in which the aerodrome is located.

(24) OPS 1.535 Take-off Obstacle Clearance — Multi-Engined aeroplanes:

(i) Subparagraphs (a)(3), (a)(4), (a)(5), (b)(2), (c)(1), (c)(2) and the Appendix are not applicable to VFR operations by day.

(ii) For IFR or VFR operations by day, sub-paragraphs (b) and (c) apply with the following variations.

(A) Visual course guidance is considered available when the flight visibility is 1 500 m or more.

(B) The maximum corridor width required is 300 m when flight visibility is 1 500 m or more.

(25) OPS 1.545 Landing — Destination and Alternate Aerodromes:

(i) The paragraph applies with the following addition. Where the requirements of this paragraph cannot be complied with due to physical limitations relating to extending the runway and there is a clear public interest and operational necessity for the operation, the Authority may accept, on a case-by-case basis, other performance data, not conflicting with the Aeroplane Flight Manual relating to special procedures, produced by the operator based on demonstration and/or documented experience.
(ii) An operator wishing to conduct operations according to subparagraph (i) must have prior approval of the Authority issuing the AOC. Such an approval will:

(A) Specify the type of aeroplane;
(B) Specify the type of operation;
(C) Specify the aerodrome(s) and runways concerned;
(D) Restrict the final approach and landing to be conducted under $V_{SL}$;
(E) Specify the crew qualification, and
(F) Be limited to aeroplanes where the type certificate was first issued before 1 January 2005.

(iii) The operation must be accepted by the State in which the aerodrome is located.

(26) OPS 1.550 Landing — Dry Runways:

(i) The paragraph applies with the following addition. Where the requirements of this paragraph cannot be complied with due to physical limitations relating to extending the runway and there is a clear public interest and operational necessity for the operation, the Authority may accept, on a case-by-case basis, other performance data, not conflicting with the Aeroplane Flight Manual relating to special procedures, produced by the operator based on demonstration and/or documented experience.

(ii) An operator wishing to conduct operations according to subparagraph (i) must have prior approval of the Authority issuing the AOC. Such an approval will:

(A) Specify the type of aeroplane;
(B) Specify the type of operation;
(C) Specify the aerodrome(s) and runways concerned;
(D) Restrict the final approach and landing to be conducted under $V_{SL}$;
(E) Specify the crew qualification; and
(F) Be limited to aeroplanes where the first type certificate was issued before 1 January 2005.

(iii) The operation must be accepted by the State in which the aerodrome is located.

(27) Reserved

(28) OPS 1.650 Day VFR operations:

Paragraph 1.650 is applicable with the following addition. Single engine aeroplanes, first issued with an individual certificate of airworthiness before 22 May 1995, may be exempted from the requirements of subparagraphs (f), (g), (h) and (i) by the Authority if the fulfilment would require retrofitting.

(29) Part M, paragraph M. A. 704, Continuing Airworthiness Management Exposition

The Continuing Airworthiness Management Exposition may be adapted to the operation to be conducted;

(30) Part M, paragraph M. A. 306, Aeroplane Technical Log:

The Authority may approve an abbreviated form of Technical Log System, relevant to the type of operation conducted.

(31) OPS 1.940 Composition of Flight Crew:

Subparagraphs (a)(2), (a)(4), and (b) are not applicable to VFR operations by day, except that (a)(4) must be applied in full where 2 pilots are required by OPS 1.
OPS 1.945 Conversion training and checking:

(i) Subparagraph (a)(7) — Line flying under supervision (LIFUS) may be performed on any aeroplane within the applicable class. The amount of LIFUS required is dependent on the complexity of the operations to be performed.

(ii) Subparagraph (a)(8) is not required.

OPS 1.955 Nomination as commander:

Subparagraph (b) applies as follows: The Authority may accept an abbreviated command course relevant to the type of operation conducted.

OPS 1.960 Commanders holding a Commercial Pilot Licence

Subparagraph (a)(1)(i) is not applicable to VFR operations by day.

OPS 1.965 Recurrent training and checking:

(i) Subparagraph (a)(1) shall be applied as follows for VFR operations by day. All training and checking shall be relevant to the type of operation and class of aeroplane on which the flight crew member operates with due account taken of any specialised equipment used.

(ii) Subparagraph (a)(3)(ii) applies as follows. Training in the aeroplane may be conducted by a Class Rating Examiner (CRE), a Flight Examiner (FE) or a Type Rating Examiner (TRE).

(iii) Subparagraph (a)(4)(i) applies as follows. Operator proficiency check may be conducted by a Type Rating Examiner (TRE), Class Rating Examiner (CRE) or by a suitably qualified commander nominated by the operator and acceptable to the Authority; trained in CRM concepts and the assessment of CRM skills.

(iv) Sub-paragraph (b)(2) shall be applicable as follows for VFR operations by day. In those cases where the operations are conducted during seasons not longer than 8 consecutive months, 1 operator proficiency check is sufficient. This proficiency check must be undertaken before commencing commercial air transport operations.

OPS 1.968 Pilot qualification for either pilot’s seat:

Appendix 1 is not applicable to VFR operations of single engine aeroplanes by day.

OPS 1.975 Route and Aerodrome Competence:

(i) For VFR operations by day, subparagraphs (b), (c) and (d) are not applicable, except that the operator shall ensure that in the cases where a special approval by the state of the aerodrome is required, the associated requirements are observed.

(ii) For IFR operations or VFR operations by night, as an alternative to subparagraphs (b)-(d), route and aerodrome competence may be revalidated as follows:

(A) Except for operations to the most demanding aerodromes, by completion of at least 10 sectors within the area of operation during the preceding 12 months in addition to any required self briefing.
Operations to the most demanding aerodromes may be performed only if:

1. The commander has been qualified at the aerodrome within the preceding 36 months by a visit as an operating flight crew member or as an observer;

2. The approach is performed in $V_{\text{min}}$ from the applicable minimum sector altitude; and

3. An adequate self briefing has been made prior to the flight.

(38) OPS 1.980 More than one type or variant:

(i) Not applicable if operations are limited to single pilot classes of piston engine aeroplanes under VFR by day.

(ii) For IFR and VFR Night Operations, the requirement in Appendix 1 to OPS 1.980, subparagraph (d)(2)(i) for 500 hours in the relevant crew position before exercising the privileges of 2 licence endorsements, is reduced to 100 hours or sectors if one of the endorsements is related to a class. A check flight must be completed before the pilot is released for duties as Commander.

(39) OPS 1.981 Operation of helicopters and aeroplanes:

Subparagraph (a)(1) is not applicable if operations are limited to single pilot classes of piston engine aeroplanes.

(40) Reserved

(41) OPS 1.1060 Operational flight plan:

Not required for A to A VFR/Day operations. For A to B VFR/Day operations the requirement is applicable but the flight plan may be in a simplified form relevant to the kind of operations conducted. (cf. OPS 1.135).

(42) OPS 1.1070 Continuing Airworthiness Management Exposition

The Continuing Airworthiness Management Exposition may be adapted to the operation to be conducted.

(43) OPS 1.1071 Aeroplane technical log:

Applicable as indicated for Part M, paragraph M. A. 306.

(44) Reserved

(45) Reserved

(46) OPS 1.1240 Training programmes:

The training programmes shall be adapted to the kind of operations performed. A self-study training programme may be acceptable for VFR operations.

(47) OPS 1.1250 Aeroplane search procedure checklist:

Not applicable for VFR operations by day.

Appendix 1 to OPS 1.125.

Documents to be carried.

See OPS 1.125.

In case of loss or theft of documents specified in OPS 1.125, the operation is allowed to continue until the flight reaches the base or a place where a replacement document can be provided.
SUBPART C

OPERATOR CERTIFICATION AND SUPERVISION

OPS 1.175
General rules for Air Operator Certification

Note 1: Appendix 1 to this paragraph specifies the contents and conditions of the AOC.

Note 2: Appendix 2 to this paragraph specifies the management and organisation requirements.

(a) An operator shall not operate an aeroplane for the purpose of commercial air transportation otherwise than under, and in accordance with, the terms and conditions of an Air Operator Certificate (AOC).

(b) An applicant for an AOC, or variation of an AOC, shall allow the Authority to examine all safety aspects of the proposed operation.

(c) An applicant for an AOC must:
   (1) Not hold an AOC issued by another Authority unless specifically approved by the Authorities concerned;
   (2) Have his principal place of business and, if any, his registered office located in the State responsible for issuing the AOC;
   (3) Satisfy the Authority that he is able to conduct safe operations.

(d) If an operator has aeroplanes registered in different Member States, appropriate arrangements shall be made to ensure appropriate safety oversight.

(e) An operator shall grant the Authority access to his organisation and aeroplanes and shall ensure that, with respect to maintenance, access is granted to any associated Part-145 maintenance organisation, to determine continued compliance with OPS 1.

(f) An AOC will be varied, suspended or revoked if the Authority is no longer satisfied that the operator can maintain safe operations.

(g) The operator must satisfy the Authority that;
   (1) Its organisation and management are suitable and properly matched to the scale and scope of the operation; and
   (2) Procedures for the supervision of operations have been defined.

(h) The operator must have nominated an accountable manager acceptable to the Authority who has corporate authority for ensuring that all operations and maintenance activities can be financed and carried out to the standard required by the Authority.

(i) The operator must have nominated post holders, acceptable to the Authority, who are responsible for the management and supervision of the following areas,
   (1) Flight operations;
   (2) The maintenance system;
   (3) Crew training; and
   (4) Ground operations.
(j) A Person may hold more than one of the nominated posts if acceptable to the Authority but, for operators who employ 21 or more full-time staff, a minimum of two persons are required to cover the four areas of responsibility.

(k) For operators who employ 20 or less full-time staff, one or more of the nominated posts may be filled by the accountable manager if acceptable to the Authority.

(l) The operator must ensure that every flight is conducted in accordance with the provisions of the Operations Manual.

(m) The operator must arrange appropriate ground handling facilities to ensure the safe handling of its flights.

(n) The operator must ensure that its aeroplanes are equipped and its crews are qualified, as required for the area and type of operation.

(o) The operator must comply with the maintenance requirements, in accordance with Part M, for all aeroplanes operated under the terms of its AOC.

(p) The operator must provide the Authority with a copy of the Operations Manual, as specified in Subpart P and all amendments or revisions to it.

(q) The operator must maintain operational support facilities at the main operating base, appropriate for the area and type of operation.

**OPS 1.180**

Issue, variation and continued validity of an AOC

(a) An operator will not be granted an AOC, or a variation to an AOC, and that AOC will not remain valid unless:

1. Aeroplanes operated have a standard Certificate of Airworthiness issued in accordance with Commission Regulation (EC) No 1702/2003 of 24 September 2003 laying down implementing rules for the airworthiness and environmental certification of aircraft and related products, parts and appliances, as well as for the certification of design and production organisations (1) by a Member State. Standard Certificates of Airworthiness issued by a Member State other than the State responsible for issuing the AOC, will be accepted without further showing when issued in accordance with Part 21;

2. The maintenance system has been approved by the Authority in accordance with Part M, Subpart G; and

3. He has satisfied the Authority that he has the ability to:
   (i) Establish and maintain an adequate organisation;
   (ii) Establish and maintain a quality system in accordance with OPS 1.035;
   (iii) Comply with required training programmes;
   (iv) Comply with maintenance requirements, consistent with the nature and extent of the operations specified, including the relevant items prescribed in OPS 1.175 (g) to (o); and
   (v) Comply with OPS 1.175.

(b) Notwithstanding the provisions of OPS 1.185 (f), the operator must notify the Authority as soon as practicable of any changes to the information submitted in accordance with OPS 1.185(a) below.

(c) If the Authority is not satisfied that the requirements of subparagraph (a) above have been met, the Authority may require the conduct of one or more demonstration flights, operated as if they were commercial air transport flights.

OPS 1.185

Administrative requirements

(a) An operator shall ensure that the following information is included in the initial application for an AOC and, when applicable, any variation or renewal applied for:

(1) The official name and business name, address and mailing address of the applicant;

(2) A description of the proposed operation;

(3) A description of the management organisation;

(4) The name of the accountable manager;

(5) The names of major post holders, including those responsible for flight operations, the maintenance system, crew training and ground operations together with their qualifications and experience; and


(b) In respect of the operator’s maintenance system only, the following information must be included in the initial application for an AOC and, when applicable, any variation or renewal applied for, and for each aeroplane type to be operated:

(1) The operator’s continuing airworthiness management exposition;

(2) The operator’s aeroplane maintenance programme(s);

(3) The aeroplane technical log;

(4) Where appropriate, the technical specification(s) of the maintenance contract(s) between the operator and any Part-145 approved maintenance organisation;

(5) The number of aeroplanes.

(c) The application for an initial issue of an AOC must be submitted at least 90 days before the date of intended operation except that the Operations Manual may be submitted later but not less than 60 days before the date of intended operation.

(d) The application for the variation of an AOC must be submitted at least 30 days, or as otherwise agreed, before the date of intended operation.

(e) The application for the renewal of an AOC must be submitted at least 30 days, or as otherwise agreed, before the end of the existing period of validity.

(f) Other than in exceptional circumstances, the Authority must be given at least 10 days prior notice of a proposed change of a nominated post holder.

Appendix 1 to OPS 1.175

Content and conditions of the Air Operator Certificate

An AOC specifies the:

(a) Name and location (principal place of business) of the operator;

(b) Date of issue and period of validity;

(c) Description of the type of operations authorised;

(d) Type(s) of aeroplane(s) authorised for use;

(e) Registration markings of the authorised aeroplane(s) except that operators may obtain approval for a system to inform the Authority about the registration markings for aeroplanes operated under its AOC;
(f) Authorised areas of operation;

(g) Special limitations; and

(h) Special authorisations/approvals e.g.:
   — CAT II/CAT III (including approved minima)
   — (MNPS) Minimum Navigation Performance Specifications
   — (ETOPS) Extended Range Operation Twin Engined Aeroplanes
   — (RNAV) Area Navigation
   — (RVSM) Reduced Vertical Separation Minima
   — Transportation of Dangerous Goods.
   — Authorisation to provide cabin crew initial safety training and, if applicable, to issue the attestation provided for in Subpart O, for those operators who provide such training directly or indirectly.

Appendix 2 to OPS 1.175
The management and organisation of an AOC holder

(a) General

An operator must have a sound and effective management structure in order to ensure the safe conduct of air operations. Nominated post holders must have managerial competency together with appropriate technical/operational qualifications in aviation.

(b) Nominated post holders:

(1) A description of the functions and the responsibilities of the nominated post holders, including their names, must be contained in the Operations Manual and the Authority must be given notice in writing of any intended or actual change in appointments or functions.

(2) The operator must make arrangements to ensure continuity of supervision in the absence of nominated post holders.

(3) A person nominated as a post holder by the holder of an AOC must not be nominated as a post holder by the holder of any other AOC, unless acceptable to the Authorities concerned.

(4) Persons nominated as post holders must be contracted to work sufficient hours to fulfil the management functions associated with the scale and scope of the operation.

(c) Adequacy and supervision of staff:

(1) Crew members. The operator must employ sufficient flight and cabin crew for the planned operation, trained and checked in accordance with Subpart N and Subpart O as appropriate.

(2) Ground Staff

(i) The number of ground staff is dependent upon the nature and the scale of operations. Operations and ground handling departments, in particular, must be staffed by trained personnel who have a thorough understanding of their responsibilities within the organisation.

(ii) An operator contracting other organisations to provide certain services retains responsibility for the maintenance of proper standards. In such circumstances, a nominated post holder must be given the task of ensuring that any contractor employed meets the required standards.
(3) Supervision

(i) The number of supervisors to be appointed is dependent upon the structure of the operator and the number of staff employed.

(ii) The duties and responsibilities of these supervisors must be defined, and any flying commitments arranged so that they can discharge their supervisory responsibilities.

(iii) The supervision of crew members and ground staff must be exercised by individuals possessing experience and personal qualities sufficient to ensure the attainment of the standards specified in the operations manual.

(d) Accommodation facilities

(1) An operator must ensure that working space available at each operating base is sufficient for personnel pertaining to the safety of flight operations. Consideration must be given to the needs of ground staff, those concerned with operational control, the storage and display of essential records, and flight planning by crews.

(2) Office services must be capable, without delay, of distributing operational instructions and other information to all concerned.

(e) Documentation

The operator must make arrangements for the production of manuals, amendments and other documentation.

SUBPART D

OPERATIONAL PROCEDURES

OPS 1.195

Operational Control

An operator shall:

(a) Establish and maintain a method of exercising operational control approved by the Authority; and 

(b) Exercise operational control over any flight operated under the terms of his AOC.

OPS 1.200

Operations manual

An operator shall provide an Operations Manual in accordance with Subpart P for the use and guidance of operations personnel.

OPS 1.205

Competence of operations personnel

An operator shall ensure that all personnel assigned to, or directly involved in, ground and flight operations are properly instructed, have demonstrated their abilities in their particular duties and are aware of their responsibilities and the relationship of such duties to the operation as a whole.

OPS 1.210

Establishment of procedures

(a) An operator shall establish procedures and instructions, for each aeroplane type, containing ground staff and crew members’ duties for all types of operation on the ground and in flight.
(b) An operator shall establish a check-list system to be used by crew members for all phases of operation of the aeroplane under normal, abnormal and emergency conditions as applicable, to ensure that the operating procedures in the Operations Manual are followed.

(c) An operator shall not require a crew member to perform any activities during critical phases of the flight other than those required for the safe operation of the aeroplane.

**OPS 1.215**

**Use of Air Traffic Services**

An operator shall ensure that Air Traffic Services are used for all flights whenever available.

**OPS 1.216**

**In-Flight Operational Instructions**

An operator shall ensure that his in-flight operational instructions involving a change to the air traffic flight plan shall, when practicable, be coordinated with the appropriate Air Traffic Service Unit before transmission to an aeroplane.

**OPS 1.220**

**Authorisation of Aerodromes by the Operator**

An operator shall only authorise use of aerodromes that are adequate for the type(s) of aeroplane and operation(s) concerned.

**OPS 1.225**

**Aerodrome Operating Minima**

(a) An operator shall specify aerodrome operating minima, established in accordance with OPS 1.430 for each departure, destination or alternate aerodrome authorised to be used in accordance with OPS 1.220.

(b) Any increment imposed by the Authority must be added to the minima specified in accordance with sub-paragraph (a) above.

(c) The minima for a specific type of approach and landing procedure are considered applicable if:

1. The ground equipment shown on the respective chart required for the intended procedure is operative;
2. The aeroplane systems required for the type of approach are operative;
3. The required aeroplane performance criteria are met; and
4. Crew is qualified accordingly.

**OPS 1.230**

**Instrument departure and approach procedures**

(a) An operator shall ensure that instrument departure and approach procedures established by the State in which the aerodrome is located are used.

(b) Notwithstanding sub-paragraph (a) above, a commander may accept an ATC clearance to deviate from a published departure or arrival route, provided obstacle clearance criteria are observed and full account is taken of the operating conditions. The final approach must be flown visually or in accordance with the established instrument approach procedure.
Different procedures to those required to be used in accordance with sub-paragraph (a) above may only be implemented by an operator provided they have been approved by the State in which the aerodrome is located, if required, and accepted by the Authority.

OPS 1.235
Noise abatement procedures

(a) An operator shall establish operating procedures for noise abatement during instrument flight operations in compliance with ICAO PANS OPS Volume 1 (Doc 8168-OPS/611).

(b) Take-off climb procedures for noise abatement specified by an operator for any one aeroplane type should be the same for all aerodromes.

OPS 1.240
Routes and areas of operation

(a) An operator shall ensure that operations are only conducted along such routes or within such areas, for which:

(1) Ground facilities and services, including meteorological services, are provided which are adequate for the planned operation;

(2) The performance of the aeroplane intended to be used is adequate to comply with minimum flight altitude requirements;

(3) The equipment of the aeroplane intended to be used meets the minimum requirements for the planned operation;

(4) Appropriate maps and charts are available (OPS 1.135 (a)(9) refers);

(5) If two-engined aeroplanes are used, adequate aerodromes are available within the time/distance limitations of OPS 1.245;

(6) If single-engine aeroplanes are used, surfaces are available which permit a safe forced landing to be executed.

(b) An operator shall ensure that operations are conducted in accordance with any restriction on the routes or the areas of operation, imposed by the Authority.

OPS 1.241
Operation in defined airspace with Reduced Vertical Separation Minima (RVSM)

An operator shall not operate an aeroplane in defined portions of airspace where, based on Regional Air Navigation Agreement, a vertical separation minimum of 300 m (1 000 ft) applies unless approved to do so by the Authority (RVSM Approval). (See also OPS 1.872).

OPS 1.243
Operation in areas with specific navigation performance requirements

An operator shall not operate an aeroplane in defined areas, or a defined portion of specified airspace, based on Regional Air Navigation Agreements where minimum navigation performance specifications are prescribed unless approved to do so by the Authority (MNPS/RNP/RNAV Approval). (See also OPS 1.865 (c)(2) and OPS 1.870).
Maximum distance from an adequate aerodrome for two-engined aeroplanes without an ETOPS Approval

(a) Unless specifically approved by the Authority in accordance with OPS 1.246 (a) (ETOPS approval), an operator shall not operate a two-engined aeroplane over a route which contains a point further from an adequate aerodrome than, in the case of:

(1) Performance Class A aeroplanes with either:
   (i) A maximum approved passenger seating configuration of 20 or more; or
   (ii) A maximum take-off mass of 45 360 kg or more,
       the distance flown in 60 minutes at the one-engine-inoperative cruise speed determined in accordance with subparagraph (b) below;

(2) Performance Class A aeroplanes with:
   (i) A maximum approved passenger seating configuration of 19 or less; and
   (ii) A maximum take-off mass less than 45 360 kg, the distance flown in 120 minutes or, if approved by the Authority, up to 180 minutes for turbo-jet aeroplanes, at the one-engine-inoperative cruise speed determined in accordance with subparagraph (b) below;

(3) Performance Class B or C aeroplanes:
   (i) The distance flown in 120 minutes at the one-engine-inoperative cruise speed determined in accordance with subparagraph (b) below; or
   (ii) 300 nautical miles, whichever is less.

(b) An operator shall determine a speed for the calculation of the maximum distance to an adequate aerodrome for each two-engined aeroplane type or variant operated, not exceeding VMO, based upon the true airspeed that the aeroplane can maintain with one-engine-inoperative under the following conditions:

(1) International Standard Atmosphere (ISA);

(2) Level flight:
   (i) For turbo-jet aeroplanes at:
       (A) FL 170; or
       (B) At the maximum flight level to which the aeroplane, with one engine inoperative, can climb, and maintain, using the gross rate of climb specified in the AFM, whichever is less.
   (ii) For propeller driven aeroplanes at:
       (A) FL 80; or
       (B) At the maximum flight level to which the aeroplane, with one engine inoperative, can climb, and maintain, using the gross rate of climb specified in the AFM, whichever is less.

(3) Maximum continuous thrust or power on the remaining operating engine;
An aeroplane mass not less than that resulting from:

(i) Take-off at sea-level at maximum take-off mass; and
(ii) All engines climb to the optimum long range cruise altitude; and
(iii) All engines cruise at the long range cruise speed at this altitude, until the time elapsed since take-off is equal to the applicable threshold prescribed in subparagraph (a) above.

(c) An operator must ensure that the following data, specific to each type or variant, is included in the Operations Manual:

(1) The one-engine-inoperative cruise speed determined in accordance with subparagraph (b) above; and
(2) The maximum distance from an adequate aerodrome determined in accordance with subparagraphs (a) and (b) above.

Note: The speeds and altitudes (flight levels) specified above are only intended to be used for establishing the maximum distance from an adequate aerodrome.

OPS 1.246
Extended range operations with two-engined aeroplanes (ETOPS)

(a) An operator shall not conduct operations beyond the threshold distance determined in accordance with OPS 1.245 unless approved to do so by the Authority (ETOPS approval).

(b) Prior to conducting an ETOPS flight, an operator shall ensure that a suitable ETOPS en-route alternate is available, within either the approved diversion time, or a diversion time based on the MEL generated serviceability status of the aeroplane, whichever is shorter. (See also OPS 1.297 (d)).

OPS 1.250
Establishment of minimum flight altitudes

(a) An operator shall establish minimum flight altitudes and the methods to determine those altitudes for all route segments to be flown which provide the required terrain clearance taking into account the requirements of Subparts F to I.

(b) Every method for establishing minimum flight altitudes must be approved by the Authority.

(c) Where minimum flight altitudes established by States overflown are higher than those established by the operator, the higher values shall apply.

(d) An operator shall take into account the following factors when establishing minimum flight altitudes:

(1) The accuracy with which the position of the aeroplane can be determined;
(2) The probable inaccuracies in the indications of the altimeters used;
(3) The characteristics of the terrain (e.g. sudden changes in the elevation) along the routes or in the areas where operations are to be conducted;
(4) The probability of encountering unfavourable meteorological conditions (e.g. severe turbulence and descending air currents); and
(5) Possible inaccuracies in aeronautical charts.

(e) In fulfilling the requirements prescribed in sub-paragraph (d) above due consideration shall be given to:

(1) Corrections for temperature and pressure variations from standard values;
(2) The ATC requirements; and
(3) Any foreseeable contingencies along the planned route.
OPS 1.255
Fuel policy

(a) An operator must establish a fuel policy for the purpose of flight planning and in-flight replanning to ensure that every flight carries sufficient fuel for the planned operation and reserves to cover deviations from the planned operation.

(b) An operator shall ensure that the planning of flights is at least based upon (1) and (2) below:

(1) Procedures contained in the Operations Manual and data derived from:

   (i) Data provided by the aeroplane manufacturer; or

   (ii) Current aeroplane specific data derived from a fuel consumption monitoring system.

(2) The operating conditions under which the flight is to be conducted including:

   (i) Realistic aeroplane fuel consumption data;

   (ii) Anticipated masses;

   (iii) Expected meteorological conditions; and

   (iv) Air Traffic Services procedures and restrictions.

(c) An operator shall ensure that the pre-flight calculation of usable fuel required for a flight includes:

   (1) Taxi fuel;

   (2) Trip fuel;

   (3) Reserve fuel consisting of:

      (i) Contingency fuel;

      (ii) Alternate fuel, if a destination alternate is required. (This does not preclude selection of the departure aerodrome as the destination alternate);

      (iii) Final reserve fuel; and

      (iv) Additional fuel, if required by the type of operation (e.g. ETOPS); and

   (4) Extra fuel if required by the commander.

(d) An operator shall ensure that in-flight replanning procedures for calculating usable fuel required when a flight has to proceed along a route or to a destination other than originally planned includes:

   (1) Trip fuel for the remainder of the flight;

   (2) Reserve fuel consisting of:

      (i) Contingency fuel;

      (ii) Alternate fuel, if a destination alternate is required (This does not preclude selection of the departure aerodrome as the destination alternate);

      (iii) Final reserve fuel; and

      (iv) Additional fuel, if required by the type of operation (e.g. ETOPS); and

   (3) Extra fuel if required by the commander.
OPS 1.260
Carriage of Persons with Reduced Mobility

(a) An operator shall establish procedures for the carriage of Persons with Reduced Mobility (PRMs).

(b) An operator shall ensure that PRMs are not allocated, nor occupy, seats where their presence could:
   (1) Impede the crew in their duties;
   (2) Obstruct access to emergency equipment; or
   (3) Impede the emergency evacuation of the aeroplane.

(c) The commander must be notified when PRMs are to be carried on board.

OPS 1.265
Carriage of inadmissible passengers, deportees or persons in custody

An operator shall establish procedures for the transportation of inadmissible passengers, deportees or persons in custody to ensure the safety of the aeroplane and its occupants. The commander must be notified when the above-mentioned persons are to be carried on board.

OPS 1.270
Stowage of baggage and cargo

(See Appendix 1 to OPS 1.270)

(a) An operator shall establish procedures to ensure that only such hand baggage is taken into the passenger cabin as can be adequately and securely stowed.

(b) An operator shall establish procedures to ensure that all baggage and cargo on board, which might cause injury or damage, or obstruct aisles and exits if displaced, is placed in stowages designed to prevent movement.

OPS 1.275
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OPS 1.280
Passenger Seating

An operator shall establish procedures to ensure that passengers are seated where, in the event that an emergency evacuation is required, they may best assist and not hinder evacuation from the aeroplane.

OPS 1.285
Passenger briefing

An operator shall ensure that:

(a) General
   (1) Passengers are given a verbal briefing about safety matters. Parts or all of the briefing may be provided by an audio-visual presentation.
   (2) Passengers are provided with a safety briefing card on which picture type instructions indicate the operation of emergency equipment and exits likely to be used by passengers.
(b) Before take-off

(1) Passengers are briefed on the following items if applicable:

(i) Smoking regulations;

(ii) Back of the seat to be in the upright position and tray table stowed;

(iii) Location of emergency exits;

(iv) Location and use of floor proximity escape path markings;

(v) Stowage of hand baggage;

(vi) Restrictions on the use of portable electronic devices; and

(vii) The location and the contents of the safety briefing card; and,

(2) Passengers receive a demonstration of the following:

(i) The use of safety belts and/or safety harnesses, including how to fasten and unfasten the safety belts and/or safety harnesses;

(ii) The location and use of oxygen equipment if required (OPS 1.770 and OPS 1.775 refer). Passengers must also be briefed to extinguish all smoking materials when oxygen is being used; and

(iii) The location and use of life jackets if required (OPS 1.825 refers).

c) After take-off

(1) Passengers are reminded of the following if applicable:

(i) Smoking regulations; and

(ii) Use of safety belts and/or safety harnesses including the safety benefits of having safety belts fastened when seated irrespective of seat belt sign illumination.

d) Before landing

(1) Passengers are reminded of the following if applicable:

(i) Smoking regulations;

(ii) Use of safety belts and/or safety harnesses;

(iii) Back of the seat to be in the upright position and tray table stowed;

(iv) Re-stowage of hand baggage; and

(v) Restrictions on the use of portable electronic devices.

e) After landing

(1) Passengers are reminded of the following:

(i) Smoking regulations; and

(ii) Use of safety belts and/or safety harnesses.

(f) In an emergency during flight, passengers are instructed in such emergency action as may be appropriate to the circumstances.

OPS 1.290
Flight preparation

(a) An operator shall ensure that an operational flight plan is completed for each intended flight.

(b) The commander shall not commence a flight unless he/she is satisfied that:

(1) The aeroplane is airworthy;

(2) The aeroplane is not operated contrary to the provision of the Configuration Deviation List (CDL);

(3) The instruments and equipment required for the flight to be conducted, in accordance with Subparts K and L, are available;
The instruments and equipment are in operable condition except as provided in the MEL;

Those parts of the operations manual which are required for the conduct of the flight are available;

The documents, additional information and forms required to be available by OPS 1.125 and OPS 1.135 are on board;

Current maps, charts and associated documentation or equivalent data are available to cover the intended operation of the aeroplane including any diversion which may reasonably be expected. This shall include any conversion tables necessary to support operations where metric heights, altitudes and flight levels must be used;

Ground facilities and services required for the planned flight are available and adequate;

The provisions specified in the operations manual in respect of fuel, oil and oxygen requirements, minimum safe altitudes, aerodrome operating minima and availability of alternate aerodromes, where required, can be complied with for the planned flight;

The load is properly distributed and safely secured;

The mass of the aeroplane, at the commencement of take-off roll, will be such that the flight can be conducted in compliance with Subparts F to I as applicable; and

Any operational limitation in addition to those covered by sub-paragraphs (9) and (11) above can be complied with.

OPS 1.295

Selection of aerodromes

(a) An operator shall establish procedures for the selection of destination and/or alternate aerodromes in accordance with OPS 1.220 when planning a flight.

(b) An operator must select and specify in the operational flight plan a take-off alternate if it would not be possible to return to the aerodrome of departure for meteorological or performance reasons. The take-off alternate shall be located within:

(1) For two-engined aeroplanes, either:

   (i) One hour flight time at a one-engine-inoperative cruising speed according to the AFM in still air standard conditions based on the actual take-off mass; or

   (ii) The operator’s approved ETOPS diversion time, subject to any MEL restriction, up to a maximum of two hours, at the one-engine-inoperative cruising speed according to the AFM in still air standard conditions based on the actual take-off mass for aeroplanes and crews authorised for ETOPS; or

(2) Two hours flight time at a one-engine-inoperative cruising speed according to the AFM in still air standard conditions based on the actual take-off mass for three and four-engined aeroplanes; and

(3) If the AFM does not contain a one-engine-inoperative cruising speed, the speed to be used for calculation must be that which is achieved with the remaining engine(s) set at maximum continuous power.
(c) An operator must select at least one destination alternate for each IFR flight unless:

(1) Both:

(i) The duration of the planned flight from take-off to landing does not exceed 6 hours; and

(ii) Two separate runways are available and useable at the destination and the appropriate weather reports or forecasts for the destination aerodrome, or any combination thereof, indicate that for the period from one hour before until one hour after the expected time of arrival at destination, the ceiling will be at least 2 000 ft or circling height + 500 ft, whichever is greater, and the visibility will be at least 5 km;

or

(2) The destination is isolated and no adequate destination alternate exists.

(d) An operator must select two destination alternates when:

(1) The appropriate weather reports or forecasts for the destination, or any combination thereof, indicate that during a period commencing 1 hour before and ending 1 hour after the estimated time of arrival, the weather conditions will be below the applicable planning minima; or

(2) No meteorological information is available.

(e) An operator shall specify any required alternate(s) in the operational flight plan.

OPS 1.297
Planning minima for IFR flights

(a) Planning minima for take-off alternates. An operator shall not select an aerodrome as a take-off alternate aerodrome unless the appropriate weather reports or forecasts or any combination thereof indicate that, during a period commencing 1 hour before and ending 1 hour after the estimated time of arrival at the aerodrome, the weather conditions will be at or above the applicable landing minima specified in accordance with OPS 1.225. The ceiling must be taken into account when the only approaches available are non-precision and/or circling approaches. Any limitation related to one-engine-inoperative operations must be taken into account.

(b) Planning minima for destination and destination alternate aerodromes. An operator shall only select the destination aerodrome and/or destination alternate aerodrome(s) when the appropriate weather reports or forecasts, or any combination thereof, indicate that, during a period commencing 1 hour before and ending 1 hour after the estimated time of arrival at the aerodrome, the weather conditions will be at or above the applicable planning minima as follows:

(1) Planning minima for a destination aerodrome except isolated destination aerodromes:

(i) RVR/visibility specified in accordance with OPS 1.225; and

(ii) For a non-precision approach or a circling approach, the ceiling at or above MDH; and

(2) Planning minima for destination alternate aerodrome(s) and isolated destination aerodromes will be in accordance with Table 1 below:
Table 1
Planning minima — En-route and destination alternates — Isolated destination aerodromes

<table>
<thead>
<tr>
<th>Type of approach</th>
<th>Planning Minima</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cat II and III</td>
<td>Cat I (Note 1)</td>
</tr>
<tr>
<td>Cat I</td>
<td>Non-precision</td>
</tr>
<tr>
<td></td>
<td>(Notes 1 &amp; 2)</td>
</tr>
<tr>
<td>Non-precision</td>
<td>Non-precision</td>
</tr>
<tr>
<td></td>
<td>(Notes 1 &amp; 2)</td>
</tr>
<tr>
<td></td>
<td>plus 200 ft/1 000 m</td>
</tr>
<tr>
<td>Circling</td>
<td>Circling (Notes 2 and 3)</td>
</tr>
</tbody>
</table>

Note 1: RVR.

Note 2: The ceiling must be at or above the MDH.

Note 3: Visibility.

(c) Planning minima for an en-route alternate aerodrome. An operator shall not select an aerodrome as an en-route alternate aerodrome unless the appropriate weather reports or forecasts, or any combination thereof, indicate that, during a period commencing 1 hour before and ending 1 hour after the expected time of arrival at the aerodrome, the weather conditions will be at or above the planning minima in accordance with Table 1 above.

(d) Planning minima for an ETOPS en-route alternate. An operator shall not select an aerodrome as an ETOPS en-route alternate aerodrome unless the appropriate weather reports or forecasts, or any combination thereof, indicate that, during a period commencing 1 hour before and ending 1 hour after the expected time of arrival at the aerodrome, the weather conditions will be at or above the planning minima prescribed in Table 2 below, and in accordance with the operator’s ETOPS approval.

Table 2
Planning minima — ETOPS

<table>
<thead>
<tr>
<th>Type of Approach</th>
<th>Planning Minima</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(RVR/visibility required &amp; ceiling if applicable)</td>
</tr>
<tr>
<td>AERODROME WITH</td>
<td></td>
</tr>
<tr>
<td>at least 2 separate approach procedures based on 2 separate aids serving 2 separate runways.</td>
<td>at least 2 separate approach procedures based on 2 separate aids serving 1 runway or, at least 1 approach procedure based on 1 aid serving 1 runway</td>
</tr>
<tr>
<td>Precision Approach Cat II, III (ILS, MLS)</td>
<td>Precision Approach Cat I Minima</td>
</tr>
<tr>
<td>Non-Precision Approach Minima</td>
<td></td>
</tr>
<tr>
<td>Precision Approach Cat I (ILS, MLS)</td>
<td>Non-Precision Approach Minima</td>
</tr>
<tr>
<td>Circular Minima or if not available, Non-Precision Approach minima plus 200 ft/1 000 m</td>
<td></td>
</tr>
<tr>
<td>Type of Approach</td>
<td>Planning Minima</td>
</tr>
<tr>
<td>--------------------------</td>
<td>---------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Non-Precision Approach</td>
<td>The lower of Non-Precision Approach minima plus 200 ft/1,000 m or circling minima</td>
</tr>
<tr>
<td></td>
<td>The higher of circling minima or Non-Precision Approach minima plus 200 ft/1,000 m</td>
</tr>
<tr>
<td>Circling Approach</td>
<td>Circling minima</td>
</tr>
</tbody>
</table>

**OPS 1.300**

Submission of ATS Flight Plan

An operator shall ensure that a flight is not commenced unless an ATS flight plan has been submitted, or adequate information has been deposited in order to permit alerting services to be activated if required.

**OPS 1.305**

Refuelling/defuelling with passengers embarking, on board or disembarking

(See Appendix 1 to OPS 1.305)

An operator shall ensure that no aeroplane is refuelled/defuelled with Avgas or wide cut type fuel (e.g. Jet-B or equivalent) or when a mixture of these types of fuel might occur, when passengers are embarking, on board or disembarking. In all other cases necessary precautions must be taken and the aeroplane must be properly manned by qualified personnel ready to initiate and direct an evacuation of the aeroplane by the most practical and expeditious means available.

**OPS 1.307**

Refuelling/Defuelling with wide-cut fuel

An operator shall establish procedures for refuelling/defuelling with wide-cut fuel (e.g. Jet-B or equivalent) if this is required.

**OPS 1.308**

Push Back and Towing

(a) The operator shall ensure that all push back and towing procedures comply with appropriate aviation standards and procedures.

(b) The operator shall ensure that pre- or post-taxi positioning of the aeroplanes is not executed by towbar-less towing unless:

1. an aeroplane is protected by its own design from damage to the nose wheel steering system due to towbarless towing operation, or

2. a system/procedure is provided to alert the flight crew that such damage may have or has occurred, or

3. the towbarless towing vehicle is designed to prevent damage to the aeroplane type.
OPS 1.310

Crew Members at stations

(a) Flight crew members

(1) During take-off and landing each flight crew member required to be on flight deck duty shall be at his/her station.

(2) During all other phases of flight each flight crew member required to be on flight deck duty shall remain at his/her station unless his/her absence is necessary for the performance of his/her duties in connection with the operation, or for physiological needs provided at least one suitably qualified pilot remains at the controls of the aeroplane at all times.

(3) During all phases of flight each flight crew member required to be on flight deck duty shall remain alert. If a lack of alertness is encountered, appropriate countermeasures shall be used. If unexpected fatigue is experienced a controlled rest procedure, organised by the commander, can be used if workload permits. Controlled rest taken in this way may never be considered to be part of a rest period for purposes of calculating flight time limitations nor used to justify any duty period.

(b) Cabin crew members. On all the decks of the aeroplane that are occupied by passengers, required cabin crew members shall be seated at their assigned stations during critical phases of flight.

OPS 1.315

Assisting means for emergency evacuation

An operator shall establish procedures to ensure that before taxiing, take-off and landing, and when safe and practicable to do so, an assisting means for emergency evacuation that deploys automatically, is armed.

OPS 1.320

Seats, safety belts and harnesses

(a) Crew members

(1) During take-off and landing, and whenever deemed necessary by the commander in the interest of safety, each crew member shall be properly secured by all safety belts and harnesses provided.

(2) During other phases of the flight each flight crew member on the flight deck shall keep his/her safety belt fastened while at his/her station.

(b) Passengers

(1) Before take-off and landing, and during taxiing, and whenever deemed necessary in the interest of safety, the commander shall ensure that each passenger on board occupies a seat or berth with his/her safety belt, or harness where provided, properly secured.

(2) An operator shall make provision for, and the commander shall ensure that multiple occupancy of aeroplane seats may only be allowed on specified seats and does not occur other than by one adult and one infant who is properly secured by a supplementary loop belt or other restraint device.

OPS 1.325

Securing of passenger cabin and galley(s)

(a) An operator shall establish procedures to ensure that before taxiing, take-off and landing all exits and escape paths are unobstructed.

(b) The commander shall ensure that before take-off and landing, and whenever deemed necessary in the interest of safety, all equipment and baggage is properly secured.
OPS 1.330
Accessibility of emergency equipment

The commander shall ensure that relevant emergency equipment remains easily accessible for immediate use.

OPS 1.335
Smoking on board

(a) The commander shall ensure that no person on board is allowed to smoke:

(1) Whenever deemed necessary in the interest of safety;

(2) While the aeroplane is on the ground unless specifically permitted in accordance with procedures defined in the Operations Manual;

(3) Outside designated smoking areas, in the aisle(s) and in the toilet(s);

(4) In cargo compartments and/or other areas where cargo is carried which is not stored in flame resistant containers or covered by flame resistant canvas; and

(5) In those areas of the cabin where oxygen is being supplied.

OPS 1.340
Meteorological Conditions

(a) On an IFR flight a commander shall not:

(1) Commence take-off; nor

(2) Continue beyond the point from which a revised flight plan applies in the event of in-flight replanning, unless information is available indicating that the expected weather conditions at the destination and/or required alternate aerodrome(s) prescribed in OPS 1.295 are at or above the planning minima, prescribed in OPS 1.297.

(b) On an IFR flight a commander shall not continue beyond:

(1) The decision point when using the decision point procedure; or

(2) The pre-determined point when using the pre-determined point procedure, unless information is available indicating that the expected weather conditions at the destination and/or required alternate aerodrome(s) prescribed in OPS 1.295 are at or above the applicable aerodrome operating minima prescribed in OPS 1.225.

(c) On an IFR flight, a commander shall not continue towards the planned destination aerodrome unless the latest information available indicates that, at the expected time of arrival, the weather conditions at the destination, or at least one destination alternate aerodrome, are at or above the planning applicable aerodrome operating minima.

(d) On a VFR flight a commander shall not commence take-off unless current meteorological reports or a combination of current reports and forecasts indicate that the meteorological conditions along the route or that part of the route to be flown under VFR will, at the appropriate time, be such as to render compliance with these rules possible.
OPS 1.345
Ice and other contaminants — ground procedures

(a) An operator shall establish procedures to be followed when ground de-icing and anti-icing and related inspections of the aeroplane(s) are necessary.

(b) A commander shall not commence take-off unless the external surfaces are clear of any deposit which might adversely affect the performance and/or controllability of the aeroplane except as permitted in the Aeroplane Flight Manual.

OPS 1.346
Ice and other contaminants — flight procedures

(a) An operator shall establish procedures for flights in expected or actual icing conditions.

(b) A commander shall not commence a flight nor intentionally fly into expected or actual icing conditions unless the aeroplane is certificated and equipped to cope with such conditions.

OPS 1.350
Fuel and oil supply

A commander shall not commence a flight unless he/she is satisfied that the aeroplane carries at least the planned amount of fuel and oil to complete the flight safely, taking into account the expected operating conditions.

OPS 1.355
Take-off conditions

Before commencing take-off, a commander must satisfy himself/herself that, according to the information available to him/her, the weather at the aerodrome and the condition of the runway intended to be used should not prevent a safe take-off and departure.

OPS 1.360
Application of take-off minima

Before commencing take-off, a commander must satisfy himself/herself that the RVR or visibility in the take-off direction of the aeroplane is equal to or better than the applicable minimum.

OPS 1.365
Minimum flight altitudes

The commander or the pilot to whom conduct of the flight has been delegated shall not fly below specified minimum altitudes except when necessary for take-off or landing.

OPS 1.370
Simulated abnormal situations in flight

An operator shall establish procedures to ensure that abnormal or emergency situations requiring the application of part or all of abnormal or emergency procedures and simulation of IMC by artificial means are not simulated during commercial air transportation flights.
OPS 1.375
In-flight fuel management

(See Appendix 1 to OPS 1.375)

(a) An operator shall establish a procedure to ensure that in-flight fuel checks and fuel management are carried out.

(b) A commander shall ensure that the amount of usable fuel remaining in flight is not less than the fuel required to proceed to an aerodrome where a safe landing can be made, with final reserve fuel remaining.

(c) The commander shall declare an emergency when calculated usable fuel on landing is less than final reserve fuel.

OPS 1.380
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OPS 1.385
Use of supplemental oxygen

A commander shall ensure that flight crew members engaged in performing duties essential to the safe operation of an aeroplane in flight use supplemental oxygen continuously whenever cabin altitude exceeds 10 000 ft for a period in excess of 30 minutes and whenever the cabin altitude exceeds 13 000 ft.

OPS 1.390
Cosmic radiation

(a) An operator shall take account of the in-flight exposure to cosmic radiation of all crew members while on duty (including positioning) and shall take the following measures for those crew liable to be subject to exposure of more than 1 mSv per year;

(1) Assess their exposure;

(2) Take into account the assessed exposure when organising working schedules with a view to reduce the doses of highly exposed crew members;

(3) Inform the crew members concerned of the health risks their work involves;

(4) Ensure that the working schedules for female crew members, once they have notified the operator that they are pregnant, keep the equivalent dose to the foetus as low as can reasonably be achieved and in any case ensure that the dose does not exceed 1 mSv for the remainder of the pregnancy;

(5) Ensure that individual records are kept for those crew members who are liable to high exposure. These exposures are to be notified to the individual on an annual basis, and also upon leaving the operator.

(b) (1) An operator shall not operate an aeroplane above 15 000 m (49 000 ft) unless the equipment specified in OPS 1.680 is serviceable, or the procedure prescribed in OPS 1.680 is complied with.

(2) The commander or the pilot to whom conduct of the flight has been delegated shall initiate a descent as soon as practicable when the limit values of cosmic radiation dose rate specified in the Operations Manual are exceeded.
When undue proximity to the ground is detected by any flight crew member or by a ground proximity warning system, the commander or the pilot to whom conduct of the flight has been delegated shall ensure that corrective action is initiated immediately to establish safe flight conditions.

An operator shall establish procedures to ensure that:

(a) When ACAS is installed and serviceable, it shall be used in flight in a mode that enables Resolution Advisories (RA) to be produced unless to do so would not be appropriate for conditions existing at the time.

(b) When undue proximity to another aircraft (RA) is detected by ACAS, the commander or the pilot to whom conduct of the flight has been delegated shall ensure that corrective action is initiated immediately to establish safe separation unless the intruder has been visually identified and has been determined not to be a threat.

Before commencing an approach to land, the commander must satisfy himself/herself that, according to the information available to him/her, the weather at the aerodrome and the condition of the runway intended to be used should not prevent a safe approach, landing or missed approach, having regard to the performance information contained in the Operations Manual.

(a) The commander or the pilot to whom conduct of the flight has been delegated may commence an instrument approach regardless of the reported RVR/Visibility but the approach shall not be continued beyond the outer marker, or equivalent position, if the reported RVR/visibility is less than the applicable minima.

(b) Where RVR is not available, RVR values may be derived by converting the reported visibility in accordance with Appendix 1 to OPS 1.430, sub-paragraph (h).

(c) If, after passing the outer marker or equivalent position in accordance with (a) above, the reported RVR/visibility falls below the applicable minimum, the approach may be continued to DA/H or MDA/H.

(d) Where no outer marker or equivalent position exists, the commander or the pilot to whom conduct of the flight has been delegated shall make the decision to continue or abandon the approach before descending below 1 000 ft above the aerodrome on the final approach segment. If the MDA/H is at or above 1 000 ft above the aerodrome, the operator shall establish a height, for each approach procedure, below which the approach shall not be continued if RVR/visibility is less than applicable minima.

(e) The approach may be continued below DA/H or MDA/H and the landing may be completed provided that the required visual reference is established at the DA/H or MDA/H and is maintained.
(f) The touch-down zone RVR is always controlling. If reported and relevant, the mid point and stop end RVR are also controlling. The minimum RVR value for the mid-point is 125 m or the RVR required for the touch-down zone if less, and 75 m for the stop-end. For aeroplanes equipped with a roll-out guidance or control system, the minimum RVR value for the mid-point is 75 m.

Note. “Relevant”, in this context, means that part of the runway used during the high speed phase of the landing down to a speed of approximately 60 knots.

**OPS 1.410**

Operating procedures — Threshold crossing height

An operator must establish operational procedures designed to ensure that an aeroplane being used to conduct precision approaches crosses the threshold by a safe margin, with the aeroplane in the landing configuration and attitude.

**OPS 1.415**

Journey log

A commander shall ensure that the Journey log is completed.

**OPS 1.420**

Occurrence reporting

(a) Terminology

(1) Incident. An occurrence, other than an accident, associated with the operation of an aircraft which affects or could affect the safety of operation.

(2) Serious Incident. An incident involving circumstances indicating that an accident nearly occurred.

(3) Accident. An occurrence associated with the operation of an aircraft which takes place between the time any person boards the aircraft with the intention of flight until such time as all persons have disembarked, in which:

(i) a person is fatally or seriously injured as a result of:

(A) being in the aircraft;

(B) direct contact with any part of the aircraft, including parts which have become detached from the aircraft; or

(C) direct exposure to jet blast; except when the injuries are from natural causes, self-inflicted or inflicted by other persons, or when the injuries are to stowaways hiding outside the areas normally available to the passengers and crew; or

(ii) the aircraft sustains damage or structural failure which adversely affects the structural strength, performance or flight characteristics of the aircraft, and would normally require major repair or replacement of the affected component, except for engine failure or damage, when the damage is limited to the engine, its cowlings or accessories; or for damage limited to propellers, wing tips, antennas, tyres, brakes, fairings, small dents or puncture holes in the aircraft skin; or

(iii) the aircraft is missing or is completely inaccessible.
(b) Incident reporting. An operator shall establish procedures for reporting incidents taking into account responsibilities described below and circumstances described in sub-paragraph (d) below.

(1) OPS 1.085(b) specifies the responsibilities of crew members for reporting incidents that endangers, or could endanger, the safety of operation.

(2) The commander or the operator of an aeroplane shall submit a report to the Authority of any incident that endangers or could endanger the safety of operation.

(3) Reports must be despatched within 72 hours of the time when the incident was identified unless exceptional circumstances prevent this.

(4) A commander shall ensure that all known or suspected technical defects and all exceedances of technical limitations occurring while he/she was responsible for the flight are recorded in the aircraft technical log. If the deficiency or exceedance of technical limitations endangers or could endanger the safety of operation, the commander must in addition initiate the submission of a report to the Authority in accordance with paragraph (b)(2) above.

(5) In the case of incidents reported in accordance with sub-paragraph (b)(1), (b)(2) and (b)(3) above, arising from, or relating to, any failure, malfunction or defect in the aeroplane, its equipment or any item of ground support equipment or which cause or might cause adverse effects on the continuing airworthiness of the aeroplane, the operator must also inform the organisation responsible for the design or the supplier or, if applicable, the organisation responsible for continued airworthiness, at the same time as a report is submitted to the Authority.

(c) Accident and Serious Incident Reporting.

An operator shall establish procedures for reporting accidents and serious incidents taking into account responsibilities described below and circumstances described in sub-paragraph (d) below.

(1) A commander shall notify the operator of any accident or serious incident occurring while he/she was responsible for the flight. In the event that the commander is incapable of providing such notification, this task shall be undertaken by any other member of the crew if they are able to do so, noting being taken of the succession of command specified by the operator.

(2) An operator shall ensure that the Authority in the State of the operator, the nearest appropriate Authority (if not the Authority in the State of the operator), and any other organisation require by the State of the operator to be informed, are notified by the quickest means available of any accident or serious incident and-in the case of accidents only — at least before the aeroplane is moved unless exceptional circumstances prevent this.

(3) The commander or the operator of an aeroplane shall submit a report to the authority in the State of the operator within 72 hours of the time when the accident or serious incident occurred.

(d) Specific Reports.

Occurrences for which specific notification and reporting methods must be used are described below:

(1) Air traffic incidents. A commander shall without delay notify the air traffic service unit concerned of the incident and shall inform them of his/her intention to submit an air traffic incident report after the flight has ended whenever an aircraft in flight has been endangered by:

(i) A near collision with any other flying device;
(ii) Faulty air traffic procedures or lack of compliance with applicable procedures by air traffic services or by the flight crew;

(iii) failure of air traffic services facilities.

In addition, the commander shall notify the Authority of the incident.

(2) Airborne Collision Avoidance System Resolution Advisory. A commander shall notify the air traffic service unit concerned and submit an ACAS report to the Authority whenever an aircraft in flight has manoeuvred in response to an ACAS Resolution Advisory.

(3) Bird Hazards and Strikes

(i) A commander shall immediately inform the local air traffic service unit whenever a potential bird hazard is observed.

(ii) If he/she is aware that a bird strike has occurred, a commander shall submit a written bird strike report after landing to the Authority whenever an aircraft for which he/she is responsible suffers a bird strike that results in significant damage to the aircraft or the loss or malfunction of any essential service. If the bird strike is discovered when the commander is not available, the operator is responsible for submitting the report.

(4) In-flight Emergencies with Dangerous Goods on board. If an in-flight emergency occurs and the situation permits, a commander shall inform the appropriate Air Traffic Service unit of any Dangerous Goods on board. After the aircraft has landed, the commander shall, if the occurrence has been associated with and was related to the transport of dangerous goods, comply also with the reporting requirements specified in OPS 1.1225.

(5) Unlawful Interference. Following an act of unlawful interference on board an aircraft, the commander or, in his/her absence, the operator shall submit a report, as soon as practicable to the local Authority and to the Authority in the State of the operator. (See also OPS 1.1245)

(6) Encountering Potential Hazardous Conditions. A commander shall notify the appropriate air traffic services unit as soon as practicable whenever a potentially hazardous condition such as an irregularity in a ground or navigational facility, a meteorological phenomenon or a volcanic ash cloud is encountered during flight.

OPS 1.425
Reserved

Appendix 1 to OPS 1.270

Stowage of baggage and cargo

Procedures established by an operator to ensure that hand baggage and cargo is adequately and securely stowed must take account of the following:

(1) Each item carried in a cabin must be stowed only in a location that is capable of restraining it;

(2) Mass limitations placarded on or adjacent to stowages must not be exceeded;

(3) Underseat stowages must not be used unless the seat is equipped with a restraint bar and the baggage is of such size that it may adequately be restrained by this equipment;

(4) Items must not be stowed in toilets or against bulkheads that are incapable of restraining articles against movement forwards, sideways or upwards and unless the bulkheads carry a placard specifying the greatest mass that may be placed there;
(5) Baggage and cargo placed in lockers must not be of such size that they prevent latched doors from being closed securely;

(6) Baggage and cargo must not be placed where it can impede access to emergency equipment; and

(7) Checks must be made before take-off, before landing, and whenever the fasten seat belts signs are illuminated or it is otherwise so ordered to ensure that baggage is stowed where it cannot impede evacuation from the aircraft or cause injury by falling (or other movement) as may be appropriate to the phase of flight.

Appendix 1 to OPS 1.305

Re/defuelling with passengers embarking, on board or disembarking

An operator must establish operational procedures for re/defuelling with passengers embarking, on board or disembarking to ensure the following precautions are taken:

(1) One qualified person must remain at a specified location during fuelling operations with passengers on board. This qualified person must be capable of handling emergency procedures concerning fire protection and fire-fighting, handling communications and initiating and directing an evacuation;

(2) A two-way communication shall be established and shall remain available by the aeroplane’s intercommunication system or other suitable means between the ground crew supervising the refuelling and the qualified personnel on board the aeroplane;

(3) Crew, staff and passengers must be warned that re/defuelling will take place;

(4) “Fasten Seat Belts” signs must be off;

(5) “NO SMOKING” signs must be on, together with interior lighting to enable emergency exits to be identified;

(6) Passengers must be instructed to unfasten their seat belts and refrain from smoking;

(7) Sufficient qualified personnel must be on board and be prepared for an immediate emergency evacuation;

(8) If the presence of fuel vapour is detected inside the aeroplane, or any other hazard arises during re/defuelling, fuelling must be stopped immediately;

(9) The ground area beneath the exits intended for emergency evacuation and slide deployment areas must be kept clear; and

(10) Provision is made for a safe and rapid evacuation.

Appendix 1 to OPS 1.375

In-flight fuel management

(a) In-flight fuel checks

(1) A commander must ensure that fuel checks are carried out in flight at regular intervals. The remaining fuel must be recorded and evaluated to:

(i) Compare actual consumption with planned consumption;

(ii) Check that the remaining fuel is sufficient to complete the flight; and

(iii) Determine the expected fuel remaining on arrival at the destination.

(2) The relevant fuel data must be recorded.
(b) In-flight fuel management.

(1) If, as a result of an in-flight fuel check, the calculated fuel remaining on arrival at the destination is less than the required alternate fuel plus final reserve fuel, the commander must take into account the traffic and the operational conditions prevailing at the destination aerodrome, along the diversion route to an alternate aerodrome and at the destination alternate aerodrome, in order to decide to proceed to the destination aerodrome or to divert, so as to land with not less than final reserve fuel.

(2) On a flight to an isolated aerodrome: The last possible point of diversion to any available en-route alternate aerodrome shall be determined. Before reaching this point, the commander shall assess the fuel expected to remain overhead the isolated aerodrome, the weather conditions, and the traffic and operational conditions prevailing at the isolated aerodrome and at any of the en-route aerodromes before deciding whether to proceed to the isolated aerodrome or to divert to an en-route aerodrome.

SUBPART E

ALL WEATHER OPERATIONS

OPS 1.430

Aerodrome Operating Minima — General

(See Appendix 1 to OPS 1.430)

(a) An operator shall establish, for each aerodrome planned to be used, aerodrome operating minima that are not lower than the values given in Appendix 1. The method of determination of such minima must be acceptable to the Authority. Such minima shall not be lower than any that may be established for such aerodromes by the State in which the aerodrome is located, except when specifically approved by that State.

Note: The above paragraph does not prohibit in-flight calculation of minima for a non-planned alternate aerodrome if carried out in accordance with an accepted method.

(b) In establishing the aerodrome operating minima which will apply to any particular operation, an operator must take full account of:

(1) The type, performance and handling characteristics of the aeroplane;

(2) The composition of the flight crew, their competence and experience;

(3) The dimensions and characteristics of the runways which may be selected for use;

(4) The adequacy and performance of the available visual and non-visual ground aids;

(5) The equipment available on the aeroplane for the purpose of navigation and/or control of the flight path, as appropriate, during the take-off, the approach, the flare, the landing, roll-out and the missed approach;

(6) The obstacles in the approach, missed approach and the climb-out areas required for the execution of contingency procedures and necessary clearance;

(7) The obstacle clearance altitude/height for the instrument approach procedures; and

(8) The means to determine and report meteorological conditions.

(c) The aeroplane categories referred to in this Subpart must be derived in accordance with the method given in Appendix 2 to OPS 1.430 (c).
OPS 1.435

Terminology

Terms used in this Subpart have the following meaning:

(1) Circling. The visual phase of an instrument approach to bring an aircraft into position for landing on a runway which is not suitably located for a straight-in approach.

(2) Low Visibility Procedures (LVP). Procedures applied at an aerodrome for the purpose of ensuring safe operations during Category II and III approaches and Low Visibility Take-Offs.

(3) Low Visibility Take-Off (LVTO). A take-off where the Runway Visual Range (RVR) is less than 400 m.

(4) Flight control system. A system which includes an automatic landing system and/or a hybrid landing system.

(5) Fail-Passive flight control system. A flight control system is fail-passive if, in the event of a failure, there is no significant out-of-trim condition or deviation of flight path or attitude but the landing is not completed automatically. For a fail-passive automatic flight control system the pilot assumes control of the aeroplane after a failure.

(6) Fail-Operational flight control system. A flight control system is fail-operational if, in the event of a failure below alert height, the approach, flare and landing, can be completed automatically. In the event of a failure, the automatic landing system will operate as a fail-passive system.

(7) Fail-operational hybrid landing system. A system which consists of a primary fail-passive automatic landing system and a secondary independent guidance system enabling the pilot to complete a landing manually after failure of the primary system.

Note: A typical secondary independent guidance system consists of a monitored head-up display providing guidance which normally takes the form of command information but it may alternatively be situation (or deviation) information.

(8) Visual approach. An approach when either part or all of an instrument approach procedure is not completed and the approach is executed with visual reference to the terrain.

OPS 1.440

Low visibility operations — General operating rules

(See Appendix 1 to OPS 1.440)

(a) An operator shall not conduct Category II or III operations unless:

(1) Each aeroplane concerned is certificated for operations with decision heights below 200 ft, or no decision height, and equipped in accordance with CS-AWO on all weather operations or an equivalent accepted by the Authority;

(2) A suitable system for recording approach and/or automatic landing success and failure is established and maintained to monitor the overall safety of the operation;

(3) The operations are approved by the Authority;

(4) The flight crew consists of at least 2 pilots; and

(5) Decision Height is determined by means of a radio altimeter.

(b) An operator shall not conduct low visibility take-offs in less than 150 m RVR (Category A, B and C aeroplanes) or 200 m RVR (Category D aeroplanes) unless approved by the Authority.
OPS 1.445
Low visibility operations — Aerodrome considerations

(a) An operator shall not use an aerodrome for Category II or III operations unless the aerodrome is approved for such operations by the State in which the aerodrome is located.

(b) An operator shall verify that Low Visibility Procedures (LVP) have been established, and will be enforced, at those aerodromes where low visibility operations are to be conducted.

OPS 1.450
Low visibility operations — Training and Qualifications

(See Appendix 1 to OPS 1.450)

An operator shall ensure that, prior to conducting Low VISibility Take-Off, Category II and III operations:

(1) Each flight crew member:

  (i) Completes the training and checking requirements prescribed in Appendix 1 including Flight simulator training in operating to the limiting values of RVR and Decision Height appropriate to the operator's Category II/III approval; and

  (ii) Is qualified in accordance with Appendix 1;

(2) The training and checking is conducted in accordance with a detailed syllabus approved by the Authority and included in the Operations Manual. This training is in addition to that prescribed in Subpart N; and

(3) The flight crew qualification is specific to the operation and the aeroplane type.

OPS 1.455
Low visibility operations — Operating Procedures

(See Appendix 1 to OPS 1.455)

(a) An operator must establish procedures and instructions to be used for Low VISibility Take-Off and Category II and III operations. These procedures must be included in the Operations Manual and contain the duties of flight crew members during taxiing, take-off, approach, flare, landing, roll-out and missed approach as appropriate.

(b) The commander shall satisfy himself/herself that:

  (1) The status of the visual and non-visual facilities is sufficient prior to commencing a Low VISibility Take-Off or a Category II or III approach;

  (2) Appropriate LVPs are in force according to information received from Air Traffic Services, before commencing a Low VISibility Take-off or a Category II or III approach; and

  (3) The flight crew members are properly qualified prior to commencing a Low VISibility Take-off in an RVR of less than 150 m (Category A, B and C aeroplanes) or 200 m (Cat D aeroplanes) or a Category II or III approach.

OPS 1.460
Low visibility operations — Minimum equipment

(a) An operator must include in the Operations Manual the minimum equipment that has to be serviceable at the commencement of a Low VISibility Take-off or a Category II or III approach in accordance with the AFM or other approved document.
The commander shall satisfy himself/herself that the status of the aeroplane and of the relevant airborne systems is appropriate for the specific operation to be conducted.

OPS 1.465

VFR Operating minima

(See Appendix 1 to OPS 1.465)

An operator shall ensure that:

1. VFR flights are conducted in accordance with the Visual Flight Rules and in accordance with the Table in Appendix 1 to OPS 1.465.

2. Special VFR flights are not commenced when the visibility is less than 3 km and not otherwise conducted when the visibility is less than 1.5 km.

Appendix 1 to OPS 1.430

Aerodrome Operating Minima

(a) Take-off Minima

1. General

   i. Take-off minima established by the operator must be expressed as visibility or RVR limits, taking into account all relevant factors for each aerodrome planned to be used and the aeroplane characteristics. Where there is a specific need to see and avoid obstacles on departure and/or for a forced landing, additional conditions (e.g. ceiling) must be specified.

   ii. The commander shall not commence take-off unless the weather conditions at the aerodrome of departure are equal to or better than applicable minima for landing at that aerodrome unless a suitable take-off alternate aerodrome is available.

   iii. When the reported meteorological visibility is below that required for take-off and RVR is not reported, a take-off may only be commenced if the commander can determine that the RVR/visibility along the take-off runway is equal to or better than the required minimum.

   iv. When no reported meteorological visibility or RVR is available, a take-off may only be commenced if the commander can determine that the RVR/visibility along the take-off runway is equal to or better than the required minimum.

2. Visual reference. The take-off minima must be selected to ensure sufficient guidance to control the aeroplane in the event of both a discontinued take-off in adverse circumstances and a continued take-off after failure of the critical power unit.

3. Required RVR/Visibility

   i. For multi-engined aeroplanes, whose performance is such that, in the event of a critical power unit failure at any point during take-off, the aeroplane can either stop or continue the take-off to a height of 1 500 ft above the aerodrome while clearing obstacles by the required margins, the take-off minima established by an operator must be expressed as RVR/Visibility values not lower than those given in Table 1 below except as provided in paragraph (4) below:
### Table 1

**RVR/Visibility for take-off**

<table>
<thead>
<tr>
<th>Facilities</th>
<th>Take-off RVR/Visibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nil (Day only)</td>
<td>500 m</td>
</tr>
<tr>
<td>Runway edge lighting and/or centreline marking</td>
<td>250/300 m (Notes 1 &amp; 2)</td>
</tr>
<tr>
<td>Runway edge and centreline lighting</td>
<td>200/250 m (Note 1)</td>
</tr>
<tr>
<td>Runway edge and centreline lighting and multiple RVR information</td>
<td>150/200 m (Notes 1 &amp; 4)</td>
</tr>
</tbody>
</table>

**Note 1:** The higher values apply to Category D aeroplanes.

**Note 2:** For night operations at least runway edge and runway end lights are required.

**Note 3:** The reported RVR/Visibility value representative of the initial part of the take-off run can be replaced by pilot assessment.

**Note 4:** The required RVR value must be achieved for all of the relevant RVR reporting points with the exception given in Note 3 above.

(ii) For multi-engined aeroplanes whose performance is such that they cannot comply with the performance conditions in sub-paragraph (a)(3)(i) above in the event of a critical power unit failure, there may be a need to re-land immediately and to see and avoid obstacles in the take-off area. Such aeroplanes may be operated to the following take-off minima provided they are able to comply with the applicable obstacle clearance criteria, assuming engine failure at the height specified. The take-off minima established by an operator must be based upon the height from which the one engine inoperative net take-off flight path can be constructed. The RVR minima used may not be lower than either of the values given in Table 1 above or Table 2 below.

### Table 2

**Assumed engine failure height above the runway versus RVR/Visibility**

<table>
<thead>
<tr>
<th>Assumed engine failure height above the take-off runway</th>
<th>RVR/Visibility (Note 2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 50 ft</td>
<td>200 m</td>
</tr>
<tr>
<td>51-100 ft</td>
<td>300 m</td>
</tr>
<tr>
<td>101-150 ft</td>
<td>400 m</td>
</tr>
<tr>
<td>151-200 ft</td>
<td>500 m</td>
</tr>
<tr>
<td>201-300 ft</td>
<td>1 000 m</td>
</tr>
<tr>
<td>&gt; 300 ft</td>
<td>1 500 m (Note 1)</td>
</tr>
</tbody>
</table>

**Note 1:** 1 500 m is also applicable if no positive take-off flight path can be constructed.

**Note 2:** The reported RVR/Visibility value representative of the initial part of the take-off run can be replaced by pilot assessment.
When reported RVR, or meteorological visibility is not available, the commander shall not commence take-off unless he/she can determine that the actual conditions satisfy the applicable take-off minima.

(4) Exceptions to paragraph (a)(3)(i) above:

(i) Subject to the approval of the Authority, and provided the requirements in paragraphs (A) to (E) below have been satisfied, an operator may reduce the take-off minima to 125 m RVR (Category A, B and C aeroplanes) or 150 m RVR (Category D aeroplanes) when:

(A) Low Visibility Procedures are in force;

(B) High intensity runway centreline lights spaced 15 m or less and high intensity edge lights spaced 60 m or less are in operation;

(C) Flight crew members have satisfactorily completed training in a Flight Simulator;

(D) A 90 m visual segment is available from the cockpit at the start of the take-off run; and

(E) The required RVR value has been achieved for all of the relevant RVR reporting points.

(ii) Subject to the approval of the Authority, an operator of an aeroplane using an approved lateral guidance system for take-off may reduce the take-off minima to an RVR less than 125 m (Category A, B and C aeroplanes) or 150 m (Category D aeroplanes) but not lower than 75 m provided runway protection and facilities equivalent to Category III landing operations are available.

(b) Non-Precision approach

(1) System minima

(i) An operator must ensure that system minima for non-precision approach procedures, which are based upon the use of ILS without glide path (LLZ only), VOR, NDB, SRA and VDF are not lower than the MDH values given in Table 3 below.

<table>
<thead>
<tr>
<th>System minima for non-precision approach aids</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facility</td>
</tr>
<tr>
<td>ILS (no glide path — LLZ)</td>
</tr>
<tr>
<td>SRA (terminating at ½ NM)</td>
</tr>
<tr>
<td>SRA (terminating at 1 NM)</td>
</tr>
<tr>
<td>SRA (terminating at 2 NM)</td>
</tr>
<tr>
<td>VOR</td>
</tr>
<tr>
<td>VOR/DME</td>
</tr>
<tr>
<td>NDB</td>
</tr>
<tr>
<td>VDF (QDM &amp; QGH)</td>
</tr>
<tr>
<td>SRA (terminating at ½ NM)</td>
</tr>
</tbody>
</table>
(2) Minimum Descent Height. An operator must ensure that the minimum descent height for a non-precision approach is not lower than either:
   (i) The OCH/OCL for the category of aeroplane; or
   (ii) The system minimum.

(3) Visual Reference. A pilot may not continue an approach below MDA/MDH unless at least one of the following visual references for the intended runway is distinctly visible and identifiable to the pilot:
   (i) Elements of the approach light system;
   (ii) The threshold;
   (iii) The threshold markings;
   (iv) The threshold lights;
   (v) The threshold identification lights;
   (vi) The visual glide slope indicator;
   (vii) The touchdown zone or touchdown zone markings;
   (viii) The touchdown zone lights;
   (ix) Runway edge lights; or
   (x) Other visual references accepted by the Authority.

(4) Required RVR. The lowest minima to be used by an operator for non-precision approaches are:

Table 4a
RVR for non-precision approach — full facilities

<table>
<thead>
<tr>
<th>MDH</th>
<th>RVR/Aeroplane Category</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
</tr>
<tr>
<td>250-299 ft</td>
<td>800 m</td>
</tr>
<tr>
<td>300-449 ft</td>
<td>900 m</td>
</tr>
<tr>
<td>450-649 ft</td>
<td>1 000 m</td>
</tr>
<tr>
<td>650 ft and above</td>
<td>1 200 m</td>
</tr>
</tbody>
</table>

Table 4b
RVR for non-precision approach — intermediate facilities

<table>
<thead>
<tr>
<th>MDH</th>
<th>RVR/Aeroplane Category</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
</tr>
<tr>
<td>250-299 ft</td>
<td>1 000 m</td>
</tr>
<tr>
<td>300-449 ft</td>
<td>1 200 m</td>
</tr>
<tr>
<td>450-649 ft</td>
<td>1 400 m</td>
</tr>
<tr>
<td>650 ft and above</td>
<td>1 500 m</td>
</tr>
</tbody>
</table>
### Table 4c

RVR for non-precision approach — basic facilities

<table>
<thead>
<tr>
<th>MDH</th>
<th>A (RVR/Aeroplane Category)</th>
<th>B (RVR/Aeroplane Category)</th>
<th>C (RVR/Aeroplane Category)</th>
<th>D (RVR/Aeroplane Category)</th>
</tr>
</thead>
<tbody>
<tr>
<td>250-299 ft</td>
<td>1 200 m</td>
<td>1 300 m</td>
<td>1 400 m</td>
<td>1 600 m</td>
</tr>
<tr>
<td>300-449 ft</td>
<td>1 300 m</td>
<td>1 400 m</td>
<td>1 600 m</td>
<td>1 800 m</td>
</tr>
<tr>
<td>450-649 ft</td>
<td>1 500 m</td>
<td>1 500 m</td>
<td>1 800 m</td>
<td>2 000 m</td>
</tr>
<tr>
<td>650 ft and above</td>
<td>1 500 m</td>
<td>1 500 m</td>
<td>2 000 m</td>
<td>2 000 m</td>
</tr>
</tbody>
</table>

### Table 4d

RVR for non-precision approach — Nil approach light facilities

<table>
<thead>
<tr>
<th>MDH</th>
<th>A (RVR/Aeroplane Category)</th>
<th>B (RVR/Aeroplane Category)</th>
<th>C (RVR/Aeroplane Category)</th>
<th>D (RVR/Aeroplane Category)</th>
</tr>
</thead>
<tbody>
<tr>
<td>250-299 ft</td>
<td>1 000 m</td>
<td>1 500 m</td>
<td>1 600 m</td>
<td>1 800 m</td>
</tr>
<tr>
<td>300-449 ft</td>
<td>1 500 m</td>
<td>1 500 m</td>
<td>1 800 m</td>
<td>2 000 m</td>
</tr>
<tr>
<td>450-649 ft</td>
<td>1 500 m</td>
<td>1 500 m</td>
<td>2 000 m</td>
<td>2 000 m</td>
</tr>
<tr>
<td>650 ft and above</td>
<td>1 500 m</td>
<td>1 500 m</td>
<td>2 000 m</td>
<td>2 000 m</td>
</tr>
</tbody>
</table>

Note 1: Full facilities comprise runway markings, 720 m or more of HI/MI approach lights, runway edge lights, threshold lights and runway end lights. Lights must be on.

Note 2: Intermediate facilities comprise runway markings, 420-719 m of HI/MI approach lights, runway edge lights, threshold lights and runway end lights. Lights must be on.

Note 3: Basic facilities comprise runway markings, < 420 m of HI/MI approach lights, any length of LI approach lights, runway edge lights, threshold lights and runway end lights. Lights must be on.

Note 4: Nil approach light facilities comprise runway markings, runway edge lights, threshold lights, runway end lights or no lights at all.

Note 5: The tables are only applicable to conventional approaches with a nominal descent slope of not greater than 4°. Greater descent slopes will usually require that visual glide slope guidance (e.g. PAPI) is also visible at the Minimum Descent Height.

Note 6: The above figures are either reported RVR or meteorological visibility converted to RVR as in sub-paragraph (h) below.

Note 7: The MDH mentioned in Table 4a, 4b, 4c and 4d refers to the initial calculation of MDH. When selecting the associated RVR, there is no need to take account of a rounding up to the nearest ten feet, which may be done for operational purposes, e.g. conversion to MDA.
(5) Night operations. For night operations at least runway edge, threshold and runway end lights must be on.

(c) Precision approach — Category I operations

(1) General. A Category I operation is a precision instrument approach and landing using ILS, MLS or PAR with a decision height not lower than 200 ft and with a runway visual range not less than 550 m.

(2) Decision Height. An operator must ensure that the decision height to be used for a Category I precision approach is not lower than:

(i) The minimum decision height specified in the Aeroplane Flight Manual (AFM) if stated;

(ii) The minimum height to which the precision approach aid can be used without the required visual reference;

(iii) The OCH/OCL for the category of aeroplane; or

(iv) 200 ft.

(3) Visual Reference. A pilot may not continue an approach below the Category I decision height, determined in accordance with sub-paragraph (c)(2) above, unless at least one of the following visual references for the intended runway is distinctly visible and identifiable to the pilot:

(i) Elements of the approach light system;

(ii) The threshold;

(iii) The threshold markings;

(iv) The threshold lights;

(v) The threshold identification lights;

(vi) The visual glide slope indicator;

(vii) The touchdown zone or touchdown zone markings;

(viii) The touchdown zone lights; or

(ix) Runway edge lights.

(4) Required RVR. The lowest minima to be used by an operator for Category I operations are:

<table>
<thead>
<tr>
<th>Decision height (Note 7)</th>
<th>Category I minima</th>
<th>Facilities/RVR (Note 5)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Full</td>
<td>Interim (Note 2 &amp; 6)</td>
</tr>
<tr>
<td>200 ft</td>
<td>550 m</td>
<td>700 m</td>
</tr>
<tr>
<td>201-250 ft</td>
<td>600 m</td>
<td>700 m</td>
</tr>
<tr>
<td>251-300 ft</td>
<td>650 m</td>
<td>800 m</td>
</tr>
<tr>
<td>301 ft and above</td>
<td>800 m</td>
<td>900 m</td>
</tr>
</tbody>
</table>

Note 1: Full facilities comprise runway markings, 720 m or more of H/I/MI approach lights, runway edge lights, threshold lights and runway end lights. Lights must be on.
Note 2: Intermediate facilities comprise runway markings, 420-719 m of HI/MI approach lights, runway edge lights, threshold lights and runway end lights. Lights must be on.

Note 3: Basic facilities comprise runway markings, < 420 m of HI/MI approach lights, any length of LI approach lights, runway edge lights, threshold lights and runway end lights. Lights must be on.

Note 4: Nil approach light facilities comprise runway markings, runway edge lights, threshold lights, runway end lights or no lights at all.

Note 5: The above figures are either the reported RVR or meteorological visibility converted to RVR in accordance with paragraph (h).

Note 6: The Table is applicable to conventional approaches with a glide slope angle up to and including 4° (degree).

Note 7: The DH mentioned in the Table 5 refers to the initial calculation of DH. When selecting the associated RVR, there is no need to take account of a rounding up to the nearest ten feet, which may be done for operational purposes, (e.g. conversion to DA).

(5) Single pilot operations. For single pilot operations, an operator must calculate the minimum RVR for all approaches in accordance with OPS 1.430 and this Appendix. An RVR of less than 800 m is not permitted except when using a suitable autopilot coupled to an ILS or MLS, in which case normal minima apply. The Decision Height applied must not be less than 1.25 × the minimum use height for the autopilot.

(6) Night operations. For night operations at least runway edge, threshold and runway end lights must be on.

(d) Precision approach — Category II operations

(1) General. A Category II operation is a precision instrument approach and landing using ILS or MLS with:

(i) A decision height below 200 ft but not lower than 100 ft; and

(ii) A runway visual range of not less than 300 m.

(2) Decision Height. An operator must ensure that the decision height for a Category II operation is not lower than:

(i) The minimum decision height specified in the AFM, if stated;

(ii) The minimum height to which the precision approach aid can be used without the required visual reference;

(iii) The OCH/OCL for the category of aeroplane;

(iv) The decision height to which the flight crew is authorised to operate; or

(v) 100 ft.
(3) Visual reference. A pilot may not continue an approach below the Category II decision height determined in accordance with sub-paragraph (d)(2) above unless visual reference containing a segment of at least 3 consecutive lights being the centre line of the approach lights, or touchdown zone lights, or runway centre line lights, or runway edge lights, or a combination of these is attained and can be maintained. This visual reference must include a lateral element of the ground pattern, i.e. an approach lighting crossbar or the landing threshold or a barette of the touchdown zone lighting.

(4) Required RVR. The lowest minima to be used by an operator for Category II operations are:

Table 6

RVR for Cat II approach vs DH

<table>
<thead>
<tr>
<th>Category II minima</th>
<th>Auto-coupled to below DH (see Note 1)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>RVR/Aeroplane Category A, B &amp; C</td>
</tr>
<tr>
<td>Decision height</td>
<td></td>
</tr>
<tr>
<td>100 ft-120 ft</td>
<td>300 m</td>
</tr>
<tr>
<td>121 ft-140 ft</td>
<td>400 m</td>
</tr>
<tr>
<td>141 ft and above</td>
<td>450 m</td>
</tr>
</tbody>
</table>

Note 1: The reference to “auto-coupled to below DH” in this table means continued use of the automatic flight control system down to a height which is not greater than 80% of the applicable DH. Thus airworthiness requirements may, through minimum engagement height for the automatic flight control system, affect the DH to be applied.

Note 2: 300 m may be used for a Category D aeroplane conducting an auto land.

(e) Precision approach — Category III operations

(1) General. Category III operations are subdivided as follows:

(i) Category III A operations. A precision instrument approach and landing using ILS or MLS with:

(A) A decision height lower than 100 ft; and

(B) A runway visual range not less than 200 m.

(ii) Category III B operations. A precision instrument approach and landing using ILS or MLS with:

(A) A decision height lower than 50 ft, or no decision height; and

(B) A runway visual range lower than 200 m but not less than 75 m.

Note: Where the decision height (DH) and runway visual range (RVR) do not fall within the same category, the RVR will determine in which category the operation is to be considered.
(2) Decision Height. For operations in which a decision height is used, an operator must ensure that the decision height is not lower than:

(i) The minimum decision height specified in the AFM, if stated;

(ii) The minimum height to which the precision approach aid can be used without the required visual reference; or

(iii) The decision height to which the flight crew is authorised to operate.

(3) No Decision Height Operations. Operations with no decision height may only be conducted if:

(i) The operation with no decision height is authorised in the AFM;

(ii) The approach aid and the aerodrome facilities can support operations with no decision height; and

(iii) The operator has an approval for CAT III operations with no decision height.

Note: In the case of a CAT III runway it may be assumed that operations with no decision height can be supported unless specifically restricted as published in the AIP or NOTAM.

(4) Visual reference

(i) For Category IIIA operations, and for category IIIB operations with fail-passive flight control systems, a pilot may not continue an approach below the decision height determined in accordance with sub-paragraph (e)(2) above unless a visual reference containing a segment of at least 3 consecutive lights being the centreline of the approach lights, or touchdown zone lights, or runway centre line lights, or runway edge lights, or a combination of these is attained and can be maintained.

(ii) For Category IIIB operations with fail-operational flight control systems using a decision height, a pilot may not continue an approach below the Decision Height, determined in accordance with sub-paragraph (e)(2) above, unless a visual reference containing at least one centreline light is attained and can be maintained.

(iii) For Category III operations with no decision height there is no requirement for visual contact with the runway prior to touchdown.

(5) Required RVR. The lowest minima to be used by an operator for Category III operations are:

Table 7
RVR for Cat III approach vs. DH and roll-out control/guidance system

<table>
<thead>
<tr>
<th>Category III minima</th>
<th>Approach Category</th>
<th>Decision Height (ft) (Note 2)</th>
<th>Roll-out Control/Guidance System</th>
<th>RVR (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>III A</td>
<td>Less than 100 ft</td>
<td>Not required</td>
<td>200 m</td>
<td></td>
</tr>
<tr>
<td>III B</td>
<td>Less than 100 ft</td>
<td>Fail-passive</td>
<td>150 m (Note 1)</td>
<td></td>
</tr>
<tr>
<td>III B</td>
<td>Less than 50 ft</td>
<td>Fail-passive</td>
<td>125 m</td>
<td></td>
</tr>
<tr>
<td>III B</td>
<td>Less than 50 ft or no Decision Height</td>
<td>Fail-operational</td>
<td>75 m</td>
<td></td>
</tr>
</tbody>
</table>

Note 1: For aeroplanes certificated in accordance with CS-AWO on all weather operations 321(b)(3).

Note 2: Flight control system redundancy is determined under CS-AWO on all weather operations by the minimum certificated decision height.
(f) Circling

(1) The lowest minima to be used by an operator for circling are:

Table 8
Visibility and MDH for circling vs. aeroplane category

<table>
<thead>
<tr>
<th>Aeroplane Category</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>MDH</td>
<td>400 ft</td>
<td>500 ft</td>
<td>600 ft</td>
<td>700 ft</td>
</tr>
<tr>
<td>Minimum meteorological visibility</td>
<td>1 500 m</td>
<td>1 600 m</td>
<td>2 400 m</td>
<td>3 600 m</td>
</tr>
</tbody>
</table>

(2) Circling with prescribed tracks is an accepted procedure within the meaning of this paragraph.

(g) Visual Approach. An operator shall not use an RVR of less than 800 m for a visual approach.

(h) Conversion of Reported Meteorological Visibility to RVR

(1) An operator must ensure that a meteorological visibility to RVR conversion is not used for calculating take-off minima, Category II or III minima or when a reported RVR is available.

Note: If the RVR is reported as being above the maximum value assessed by the aerodrome operator, e.g. “RVR more than 1 500 metres”, it is not considered to be a reported RVR in this context and the Conversion Table may be used.

(2) When converting meteorological visibility to RVR in all other circumstances than those in sub-paragraph (h)(1) above, an operator must ensure that the following Table is used:

Table 9
Conversion of visibility to RVR

<table>
<thead>
<tr>
<th>Lighting elements in operation</th>
<th>Day</th>
<th>Night</th>
</tr>
</thead>
<tbody>
<tr>
<td>HI approach and runway lighting</td>
<td>1,5</td>
<td>2,0</td>
</tr>
<tr>
<td>Any type of lighting installation other than above</td>
<td>1,0</td>
<td>1,5</td>
</tr>
<tr>
<td>No lighting</td>
<td>1,0</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>
Appendix 2 to OPS 1.430 (c)

Aeroplane categories — All Weather Operations

(a) Classification of aeroplanes

The criteria taken into consideration for the classification of aeroplanes by categories is the indicated airspeed at threshold (V_{AT}) which is equal to the stalling speed (V_{SO}) multiplied by 1.3 or V_{SIG} multiplied by 1.23 in the landing configuration at the maximum certificated landing mass. If both V_{SO} and V_{SIG} are available, the higher resulting V_{AT} shall be used. The aeroplane categories corresponding to V_{AT} values are in the Table below:

<table>
<thead>
<tr>
<th>Aeroplane Category</th>
<th>V_{AT}</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Less than 91 kt</td>
</tr>
<tr>
<td>B</td>
<td>From 91 to 120 kt</td>
</tr>
<tr>
<td>C</td>
<td>From 121 to 140 kt</td>
</tr>
<tr>
<td>D</td>
<td>From 141 to 165 kt</td>
</tr>
<tr>
<td>E</td>
<td>From 166 to 210 kt</td>
</tr>
</tbody>
</table>

The landing configuration which is to be taken into consideration shall be defined by the operator or by the aeroplane manufacturer.

(b) Permanent change of category (maximum landing mass)

(1) An operator may impose a permanent, lower, landing mass, and use this mass for determining the V_{AT} if approved by the Authority.

(2) The category defined for a given aeroplane shall be a permanent value and thus independent of the changing conditions of day-to-day operations.

Appendix 1 to OPS 1.440

Low Visibility Operations — General Operating Rules

(a) General. The following procedures apply to the introduction and approval of low visibility operations.

(b) Operational Demonstration. The purpose of the operational demonstration is to determine or validate the use and effectiveness of the applicable aircraft flight guidance systems, training, flight crew procedures, maintenance programme, and manuals applicable to the Category II/III programme being approved.

(1) At least 30 approaches and landings must be accomplished in operations using the Category II/III systems installed in each aircraft type if the requested DH is 50 ft or higher. If the DH is less than 50 ft, at least 100 approaches and landings will need to be accomplished unless otherwise approved by the Authority.

(2) If an operator has different variants of the same type of aircraft utilising the same basic flight control and display systems, or different basic flight control and display systems on the same type of aircraft, the operator must show that the various variants have satisfactory performance, but the operator need not conduct a full operational demonstration for each variant. The Authority may also accept a reduction of the number of approach and landings based on credit given for the experience gained by another operator with an AOC issued in accordance with OPS 1 using the same aeroplane type or variant and procedures.
(3) If the number of unsuccessful approaches exceeds 5% of the total (e.g. unsatisfactory landings, system disconnects) the evaluation programme must be extended in steps of at least 10 approaches and landings until the overall failure rate does not exceed 5%.

c) Data Collection For Operational Demonstrations. Each applicant must develop a data collection method (e.g. a form to be used by the flight crew) to record approach and landing performance. The resulting data and a summary of the demonstration data shall be made available to the Authority for evaluation.

d) Data Analysis. Unsatisfactory approaches and/or automatic landings shall be documented and analysed.

e) Continuous Monitoring

(1) After obtaining the initial authorisation, the operations must be continuously monitored by the operator to detect any undesirable trends before they become hazardous. Flight crew reports may be used to achieve this.

(2) The following information must be retained for a period of 12 months:

   (i) The total number of approaches, by aeroplane type, where the airborne Category II or III equipment was utilised to make satisfactory, actual or practice, approaches to the applicable Category II or III minima; and

   (ii) Reports of unsatisfactory approaches and/or automatic landings, by aerodrome and aeroplane registration, in the following categories:

       (A) Airborne equipment faults;

       (B) Ground facility difficulties;

       (C) Missed approaches because of ATC instructions; or

       (D) Other reasons.

(3) An operator must establish a procedure to monitor the performance of the automatic landing system of each aeroplane.

f) Transitional periods

(1) Operators with no previous Category II or III experience

   (i) An operator without previous Category II or III operational experience may be approved for Category II or IIIA operations, having gained a minimum experience of 6 months of Category I operations on the aeroplane type.

   (ii) On completing 6 months of Category II or IIIA operations on the aeroplane type the operator may be approved for Category IIIB operations. When granting such an approval, the Authority may impose higher minima than the lowest applicable for an additional period. The increase in minima will normally only refer to RVR and/or a restriction against operations with no decision height and must be selected such that they will not require any change of the operational procedures.

(2) Operators with previous Category II or III experience. An operator with previous Category II or III experience may obtain authorisation for a reduced transition period by application to the Authority.
(g) Maintenance of Category II, Category III and LVTO equipment. Maintenance instructions for the on-
board guidance systems must be established by the operator, in liaison with the manufacturer, and
included in the operator's aeroplane maintenance programme prescribed in OPS 1.910 which must be
approved by the Authority.

(h) Eligible Aerodromes and Runways

(1) Each aeroplane type/on-board equipment/runway combination must be verified by the successful
completion of at least one approach and landing in Category II or better conditions, prior to
commencing Category III operations.

(2) For runways with irregular pre-threshold terrain or other foreseeable or known deficiencies, each
aeroplane type/on-board equipment/runway combination must be verified by operations in
Category I or better conditions, prior to commencing Category II or III operations.

(3) If an operator has different variants of the same type of aircraft utilising the same basic flight
control and display systems, or different basic flight control and display systems on the same type
of aircraft, the operator must show that the various variants have satisfactory performance, but the
operator need not conduct a full operational demonstration for each variant/runway combination.

(4) Operators using the same aeroplane type/variant and on-board equipment combination and proce-
dures may take credit from each others’ experience and records in complying with this paragraph.

Appendix 1 to OPS 1.450
Low Visibility Operations — Training & Qualifications

(a) General: An operator must ensure that flight crew member training programmes for Low Visibility
Operations include structured courses of ground, Flight Simulator and/or flight training. The operator
may abbreviate the course content as prescribed by sub-paragraphs (2) and (3) below provided the
content of the abbreviated course is acceptable to the authority.

(1) Flight crew members with no Category II or Category III experience must complete the full training
programme prescribed in sub-paragraphs (b),(c) and (d) below.

(2) Flight crew members with Category II or Category III experience with another operator may under-
take an abbreviated ground training course.

(3) Flight crew members with Category II or Category III experience with the operator may undertake
an abbreviated ground, Flight simulator and/or flight training course. The abbreviated course is to
include at least the requirements of sub-paragraphs (d)(1), (d)(2)(i) or (d)(2)(ii) as appropriate and
(d)(3)(i).

(b) Ground Training. An operator must ensure that the initial ground training course for Low Visibility
Operations covers at least:

(1) The characteristics and limitations of the ILS and/or MLS;

(2) The characteristics of the visual aids;

(3) The characteristics of fog;

(4) The operational capabilities and limitations of the particular airborne system;

(5) The effects of precipitation, ice accretion, low level wind shear and turbulence;

(6) The effect of specific aeroplane malfunctions;
(7) The use and limitations of RVR assessment systems;

(8) The principles of obstacle clearance requirements;

(9) Recognition of and action to be taken in the event of failure of ground equipment;

(10) The procedures and precautions to be followed with regard to surface movement during operations when the RVR is 400 m or less and any additional procedures required for take-off in conditions below 150 m (200 m for Category D aeroplanes);

(11) The significance of decision heights based upon radio altimeters and the effect of terrain profile in the approach area on radio altimeter readings and on the automatic approach/landing systems;

(12) The importance and significance of Alert Height if applicable and the action in the event of any failure above and below the Alert Height;

(13) The qualification requirements for pilots to obtain and retain approval to conduct Low Visibility Take-offs and Category II or III operations; and

(14) The importance of correct seating and eye position.

(c) Flight Simulator training and/or flight training

(1) An operator must ensure that Flight Simulator and/or flight training for Low Visibility Operations includes:

(i) Checks of satisfactory functioning of equipment, both on the ground and in flight;

(ii) Effect on minima caused by changes in the status of ground installations;

(iii) Monitoring of automatic flight control systems and auto land status annunciators with emphasis on the action to be taken in the event of failures of such systems;

(iv) Actions to be taken in the event of failures such as engines, electrical systems, hydraulics or flight control systems;

(v) The effect of known unserviceabilities and use of minimum equipment lists;

(vi) Operating limitations resulting from airworthiness certification;

(vii) Guidance on the visual cues required at decision height together with information on maximum deviation allowed from glide path or localiser; and

(viii) The importance and significance of Alert Height if applicable and the action in the event of any failure above and below the Alert Height.

(2) An operator must ensure that each flight crew member is trained to carry out his/her duties and instructed on the coordination required with other crew members. Maximum use should be made of flight simulators.

(3) Training must be divided into phases covering normal operation with no aeroplane or equipment failures but including all weather conditions which may be encountered and detailed scenarios of aeroplane and equipment failure which could affect Category II or III operations. If the aeroplane system involves the use of hybrid or other special systems (such as head up displays or enhanced vision equipment) then flight crew members must practise the use of these systems in normal and abnormal modes during the Flight Simulator phase of training.
Incapacitation procedures appropriate to Low Visibility Take-offs and Category II and III operations shall be practised.

For aeroplanes with no Flight Simulator operators must ensure that the flight training phase specific to the visual scenarios of Category II operations is conducted in a specifically approved Flight Simulator. Such training must include a minimum of 4 approaches. The training and procedures that are type specific shall be practised in the aeroplane.

Initial Category II and III training shall include at least the following exercises:

(i) Approach using the appropriate flight guidance, autopilots and control systems installed in the aeroplane, to the appropriate decision height and to include transition to visual flight and landing;

(ii) Approach with all engines operating using the appropriate flight guidance systems, autopilots and control systems installed in the aeroplane down to the appropriate decision height followed by missed approach; all without external visual reference;

(iii) Where appropriate, approaches utilising automatic flight systems to provide automatic flare, landing and roll-out; and

(iv) Normal operation of the applicable system both with and without acquisition of visual cues at decision height.

Subsequent phases of training must include at least:

(i) Approaches with engine failure at various stages on the approach;

(ii) Approaches with critical equipment failures (e.g. electrical systems, auto flight systems, ground and/or airborne ILS/MLS systems and status monitors);

(iii) Approaches where failures of auto flight equipment at low level require either:

(A) Reversion to manual flight to control flare, landing and roll out or missed approach; or

(B) Reversion to manual flight or a downgraded automatic mode to control missed approaches from, at or below decision height including those which may result in a touch-down on the runway;

(iv) Failures of the systems which will result in excessive localiser and/or glide slope deviation, both above and below decision height, in the minimum visual conditions authorised for the operation. In addition, a continuation to a manual landing must be practised if a head-up display forms a downgraded mode of the automatic system or the head-up display forms the only flare mode; and

(v) Failures and procedures specific to aeroplane type or variant.

The training programme must provide practice in handling faults which require a reversion to higher minima.

The training programme must include the handling of the aeroplane when, during a fail passive Category III approach, the fault causes the autopilot to disconnect at or below decision height when the last reported RVR is 300 m or less.

Where take-offs are conducted in RVRs of 400 m and below, training must be established to cover systems failures and engine failure resulting in continued as well as rejected take-offs.
(d) Conversion Training Requirements to conduct Low Visibility Take-off and Category II and III Operations. An operator shall ensure that each flight crew member completes the following Low Visibility Procedures training if converting to a new type or variant of aeroplane in which Low Visibility Take-off and Category II and III Operations will be conducted. The flight crew member experience requirements to undertake an abbreviated course are prescribed in sub-paragraphs (a)(2) and (a)(3), above:

(1) Ground Training. The appropriate requirements prescribed in sub-paragraph (b) above, taking into account the flight crew member’s Category II and Category III training and experience.

(2) Flight Simulator Training and/or Flight training.

(i) A minimum of 8 approaches and/or landings in a Flight Simulator.

(ii) Where no Flight simulator is available to represent that specific aeroplane, a minimum of 3 approaches including at least 1 go-around is required on the aeroplane.

(iii) Appropriate additional training if any special equipment is required such as head-up displays or enhanced vision equipment.

(3) Flight Crew Qualification. The flight crew qualification requirements are specific to the operator and the type of aeroplane operated.

(i) The operator must ensure that each flight crew member completes a check before conducting Category II or III operations.

(ii) The check prescribed in sub-paragraph (i) above may be replaced by successful completion of the simulator and/or flight training prescribed in sub-paragraph (d)(2) above.

(4) Line Flying under Supervision. An operator must ensure that each flight crew member undergoes the following line flying under supervision:

(i) For Category II when a manual landing is required, a minimum of 3 landings from autopilot disconnect;

(ii) For Category III, a minimum of 3 auto lands except that only 1 auto land is required when the training required in sub-paragraph (d)(2) above has been carried out in a Flight Simulator usable for zero flight time conversion.

(e) Type and command experience. Before commencing Category II/III operations, the following additional requirements are applicable to commanders, or pilots to whom conduct of the flight has been delegated, who are new to the aeroplane type:

(1) 50 hours or 20 sectors on the type, including line flying under supervision; and

(2) 100 m must be added to the applicable Category II or Category III RVR minima unless previously qualified for Category II or III operations with an operator, until a total of 100 hours or 40 sectors, including line flying under supervision, has been achieved on the type.

(3) The Authority may authorise a reduction in the above command experience requirements for flight crew members who have Category II or Category III command experience.

(f) Low Visibility Take-Off with RVR less than 150/200 m

(1) An operator must ensure that prior to authorisation to conduct take-offs in RVRs below 150 m (below 200 m for Category D aeroplanes) the following training is carried out:

(i) Normal take-off in minimum authorised RVR conditions;
(ii) Take-off in minimum authorised RVR conditions with an engine failure between $V_1$ and $V_2$, or as soon as safety considerations permit; and

(iii) Take-off in minimum authorised RVR conditions with an engine failure before $V_1$ resulting in a rejected take-off.

(2) An operator must ensure that the training required by sub-paragraph (1) above is carried out in a Flight Simulator. This training must include the use of any special procedures and equipment. Where no Flight Simulator is available to represent that specific aeroplane, the Authority may approve such training in an aeroplane without the requirement for minimum RVR conditions (See Appendix 1 to OPS 1.965).

(3) An operator must ensure that a flight crew member has completed a check before conducting low visibility take-offs in RVRs of less than 150 m (less than 200 m for Category D aeroplanes) if applicable. The check may only be replaced by successful completion of the simulator and/or flight training prescribed in sub-paragraph (f)(1) on conversion to an aeroplane type.

(g) Recurrent Training and Checking — Low Visibility Operations

(1) An operator must ensure that, in conjunction with the normal recurrent training and operator proficiency checks, a pilot's knowledge and ability to perform the tasks associated with the particular category of operation, for which he/she is authorised is checked. The required number of approaches within the validity period of the operators proficiency check(as described in OPS 1.965 (b)) is to be a minimum of three, one of which may be substituted by an approach and landing in the aeroplane using approved Category II and III procedures. One missed approach shall be flown during the conduct of the operators proficiency check. If the operator is authorised to conduct take-off with RVR less than 150/200 m at least one LVTO to the lowest applicable minima shall be flown during the conduct of the operators proficiency check.

(2) For Category III operations an operator must use a Flight Simulator.

(3) An operator must ensure that, for Category III operations on aeroplanes with a fail passive flight control system, a missed approach is completed at least once over the period of three consecutive operator proficiency checks as the result of an autopilot failure at or below decision height when the last reported RVR was 300 m or less.

(4) The Authority may authorise recurrent training and checking for Category II and LVTO operations in an aeroplane type where no Flight Simulator to represent that specific aeroplane or an acceptable alternate is available.

Note: Recency for LTVO and Category II/III based upon automatic approaches and/or auto-lands is maintained by the recurrent training and checking as prescribed in this paragraph.

Appendix 1 to OPS 1.455
Low Visibility Operations — Operating procedures

(a) General. Low Visibility Operations include:

(1) Manual take-off (with or without electronic guidance systems);

(2) Auto-coupled approach to below DH, with manual flare, landing and roll-out;

(3) Auto-coupled approach followed by auto-flare, auto landing and manual roll-out; and
(4) Auto-coupled approach followed by auto-flare, auto landing and auto-roll-out, when the applicable RVR is less than 400 m.

Note 1: A hybrid system may be used with any of these modes of operations.

Note 2: Other forms of guidance systems or displays may be certificated and approved.

(b) Procedures and Operating Instructions

(1) The precise nature and scope of procedures and instructions given depend upon the airborne equipment used and the flight deck procedures followed. An operator must clearly define flight crew member duties during take-off, approach, flare, roll-out and missed approach in the Operations Manual. Particular emphasis must be placed on flight crew responsibilities during transition from non-visual conditions to visual conditions, and on the procedures to be used in deteriorating visibility or when failures occur. Special attention must be paid to the distribution of flight deck duties so as to ensure that the workload of the pilot making the decision to land or execute a missed approach enables him/her to devote himself/herself to supervision and the decision making process.

(2) An operator must specify the detailed operating procedures and instructions in the Operations Manual. The instructions must be compatible with the limitations and mandatory procedures contained in the Aeroplane Flight Manual and cover the following items in particular:

(i) Checks for the satisfactory functioning of the aeroplane equipment, both before departure and in flight;

(ii) Effect on minima caused by changes in the status of the ground installations and airborne equipment;

(iii) Procedures for the take-off, approach, flare, landing, roll-out and missed approach;

(iv) Procedures to be followed in the event of failures, warnings and other non-normal situations;

(v) The minimum visual reference required;

(vi) The importance of correct seating and eye position;

(vii) Action which may be necessary arising from a deterioration of the visual reference;

(viii) Allocation of crew duties in the carrying out of the procedures according to sub-paragraphs (i) to (iv) and (vi) above, to allow the Commander to devote himself/herself mainly to supervision and decision making;

(ix) The requirement for all height calls below 200 ft to be based on the radio altimeter and for one pilot to continue to monitor the aeroplane instruments until the landing is completed;

(x) The requirement for the Localiser Sensitive Area to be protected;

(xi) The use of information relating to wind velocity, wind shear, turbulence, runway contamination and use of multiple RVR assessments;

(xii) Procedures to be used for practice approaches and landing on runways at which the full Category II or Category III aerodrome procedures are not in force;

(xiii) Operating limitations resulting from airworthiness certification; and

(xiv) Information on the maximum deviation allowed from the ILS glide path and/or localiser.
Appendix 1 to OPS 1.465
Minimum Visibilities for VFR Operations

<table>
<thead>
<tr>
<th>Airspace class</th>
<th>A B C D E [Note 1]</th>
<th>F G</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Above 900 m (3 000 ft) AMSL or above 300 m (1 000 ft) above terrain, whichever is the higher</td>
<td>At and below 900 m (3 000 ft) AMSL or 100 m (1 000 ft) above terrain, whichever is the higher</td>
</tr>
<tr>
<td>Distance from cloud</td>
<td>1 500 m horizontally 300 m (1 000 ft) vertically</td>
<td>Clear of cloud and in sight of the surface</td>
</tr>
<tr>
<td>Flight visibility</td>
<td>8 km at and above 3 050 m (10 000 ft) AMSL (Note 2) 5 km below 3 050 m (10 000 ft) AMSL</td>
<td>5 km (Note 3)</td>
</tr>
</tbody>
</table>

Note 1: VMC Minima for Class A airspace are included for guidance but do not imply acceptance of VFR Flights in Class A airspace.

Note 2: When the height of the transition altitude is lower than 3 050 m (10 000 ft) AMSL, FL 100 should be used in lieu of 10 000 ft.

Note 3: Cat A and B aeroplanes may be operated in flight visibilities down to 3 000 m, provided the appropriate ATS authority permits use of a flight visibility less than 5 km, and the circumstances are such, that the probability of encounters with other traffic is low, and the IAS is 140 kt or less.

SUBPART F
PERFORMANCE GENERAL

OPS 1.470
Applicability

(a) An operator shall ensure that multi-engine aeroplanes powered by turbo propeller engines with a maximum approved passenger seating configuration of more than 9 or a maximum take-off mass exceeding 5 700 kg, and all multi-engine turbojet powered aeroplanes are operated in accordance with Subpart G (Performance Class A).

(b) An operator shall ensure that propeller driven aeroplanes with a maximum approved passenger seating configuration of 9 or less, and a maximum take-off mass of 5 700 kg or less are operated in accordance with Subpart H (Performance Class B).

(c) An operator shall ensure that aeroplanes powered by reciprocating engines with a maximum approved passenger seating configuration of more than 9 or a maximum take-off mass exceeding 5 700 kg are operated in accordance with Subpart I (Performance Class C).

(d) Where full compliance with the requirements of the appropriate Subpart cannot be shown due to specific design characteristics (e.g. supersonic aeroplanes or seaplanes), the operator shall apply approved performance standards that ensure a level of safety equivalent to that of the appropriate Subpart.

OPS 1.475
General

(a) An operator shall ensure that the mass of the aeroplane:

(1) At the start of the take-off; or, in the event of in-flight replanning

(2) At the point from which the revised operational flight plan applies, is not greater than the mass at which the requirements of the appropriate Subpart can be complied with for the flight to be undertaken, allowing for expected reductions in mass as the flight proceeds, and for such fuel jettisoning as is provided for in the particular requirement.
(b) An operator shall ensure that the approved performance data contained in the Aeroplane Flight Manual is used to determine compliance with the requirements of the appropriate Subpart, supplemented as necessary with other data acceptable to the Authority as prescribed in the relevant Subpart. When applying the factors prescribed in the appropriate Subpart, account may be taken of any operational factors already incorporated in the Aeroplane Flight Manual performance data to avoid double application of factors.

(c) When showing compliance with the requirements of the appropriate Subpart, due account shall be taken of aeroplane configuration, environmental conditions and the operation of systems which have an adverse effect on performance.

(d) For performance purposes, a damp runway, other than a grass runway, may be considered to be dry.

(e) An operator shall take account of charting accuracy when assessing compliance with the take-off requirements of the applicable subpart.

OPS 1.480
Terminology

(a) The following terms used in Subparts F, G, H, I and J, have the following meaning:

(1) Accelerate-stop distance available (ASDA). The length of the take-off run available plus the length of stop way, if such stop way is declared available by the appropriate Authority and is capable of bearing the mass of the aeroplane under the prevailing operating conditions.

(2) Contaminated runway. A runway is considered to be contaminated when more than 25% of the runway surface area (whether in isolated areas or not) within the required length and width being used is covered by the following:

(i) Surface water more than 3 mm (0.125 in) deep, or by slush, or loose snow, equivalent to more than 3 mm (0.125 in) of water;

(ii) Snow which has been compressed into a solid mass which resists further compression and will hold together or break into lumps if picked up (compacted snow); or

(iii) Ice, including wet ice.

(3) Damp runway. A runway is considered damp when the surface is not dry, but when the moisture on it does not give it a shiny appearance.

(4) Dry runway. A dry runway is one which is neither wet nor contaminated, and includes those paved runways which have been specially prepared with grooves or porous pavement and maintained to retain “effectively dry” braking action even when moisture is present.

(5) Landing distance available (LDA). The length of the runway which is declared available by the appropriate Authority and suitable for the ground run of an aeroplane landing.

(6) Maximum approved passenger seating configuration. The maximum passenger seating capacity of an individual aeroplane, excluding pilot seats or flight deck seats and cabin crew seats as applicable, used by the operator, approved by the Authority and specified in the Operations Manual.
(7) Take-off distance available (TODA). The length of the take-off run available plus the length of the clearway available.

(8) Take-off mass. The take-off mass of the aeroplane shall be taken to be its mass, including everything and everyone carried at the commencement of the take-off run.

(9) Take-off run available (TORA). The length of runway which is declared available by the appropriate Authority and suitable for the ground run of an aeroplane taking off.

(10) Wet runway. A runway is considered wet when the runway surface is covered with water, or equivalent, less than specified in sub-paragraph (a)(2) above or when there is sufficient moisture on the runway surface to cause it to appear reflective, but without significant areas of standing water.

(b) The terms “accelerate-stop distance”, “take-off distance”, “take-off run”, “net take-off flight path”, “one engine inoperative en-route net flight path” and “two engines inoperative en-route net flight path” as relating to the aeroplane have their meanings defined in the airworthiness requirements under which the aeroplane was certificated, or as specified by the Authority if it finds that definition inadequate for showing compliance with the performance operating limitations.

SUBPART G

PERFORMANCE CLASS A

OPS 1.485

General

(a) An operator shall ensure that, for determining compliance with the requirements of this Subpart, the approved performance data in the Aeroplane Flight Manual is supplemented as necessary with other data acceptable to the Authority if the approved performance Data in the Aeroplane Flight Manual is insufficient in respect of items such as:

(1) Accounting for reasonably expected adverse operating conditions such as take-off and landing on contaminated runways; and

(2) Consideration of engine failure in all flight phases.

(b) An operator shall ensure that, for the wet and contaminated runway case, performance data determined in accordance with applicable requirements on certification of large aeroplanes or equivalent acceptable to the Authority is used.

OPS 1.490

Take-off

(a) An operator shall ensure that the take-off mass does not exceed the maximum take-off mass specified in the Aeroplane Flight Manual for the pressure altitude and the ambient temperature at the aerodrome at which the take-off is to be made.

(b) An operator must meet the following requirements when determining the maximum permitted take-off mass:

(1) The accelerate-stop distance must not exceed the accelerate-stop distance available;

(2) The take-off distance must not exceed the take-off distance available, with a clearway distance not exceeding half of the take-off run available;

(3) The take-off run must not exceed the take-off run available;

(4) Compliance with this paragraph must be shown using a single value of $V_1$ for the rejected and continued take-off; and

(5) On a wet or contaminated runway, the take-off mass must not exceed that permitted for a take-off on a dry runway under the same conditions.
(c) When showing compliance with sub-paragraph (b) above, an operator must take account of the following:

1. The pressure altitude at the aerodrome;
2. The ambient temperature at the aerodrome;
3. The runway surface condition and the type of runway surface;
4. The runway slope in the direction of take-off;
5. Not more than 50% of the reported head-wind component or not less than 150% of the reported tailwind component; and
6. The loss, if any, of runway length due to alignment of the aeroplane prior to take-off.

OPS 1.495

Take-off obstacle clearance

(a) An operator shall ensure that the net take-off flight path clears all obstacles by a vertical distance of at least 35 ft or by a horizontal distance of at least 90 m plus 0.125 × D, where D is the horizontal distance the aeroplane has travelled from the end of the take-off distance available or the end of the take-off distance if a turn is scheduled before the end of the take-off distance available. For aeroplanes with a wingspan of less than 60 m a horizontal obstacle clearance of half the aeroplane wingspan plus 60 m, plus 0.125 × D may be used.

(b) When showing compliance with sub-paragraph (a) above, an operator must take account of the following:

1. The mass of the aeroplane at the commencement of the take-off run;
2. The pressure altitude at the aerodrome;
3. The ambient temperature at the aerodrome; and
4. Not more than 50% of the reported head-wind component or not less than 150% of the reported tailwind component.

(c) When showing compliance with sub-paragraph (a) above:

1. Track changes shall not be allowed up to the point at which the net take-off flight path has achieved a height equal to one half the wingspan but not less than 50 ft above the elevation of the end of the take-off run available. Thereafter, up to a height of 400 ft it is assumed that the aeroplane is banked by no more than 15°. Above 400 ft height bank angles greater than 15°, but not more than 25° may be scheduled;
2. Any part of the net take-off flight path in which the aeroplane is banked by more than 15° must clear all obstacles within the horizontal distances specified in sub-paragraphs (a), (d) and (e) of this paragraph by a vertical distance of at least 50 ft; and
3. An operator must use special procedures, subject to the approval of the Authority, to apply increased bank angles of not more than 20° between 200 ft and 400 ft, or not more than 30° above 400 ft (See Appendix 1 to OPS 1.495 (c) (3)).
4. Adequate allowance must be made for the effect of bank angle on operating speeds and flight path including the distance increments resulting from increased operating speeds.
(d) When showing compliance with sub-paragraph (a) above for those cases where the intended flight path does not require track changes of more than 15°, an operator need not consider those obstacles which have a lateral distance greater than:

1. 300 m, if the pilot is able to maintain the required navigational accuracy through the obstacle accountability area; or
2. 600 m, for flights under all other conditions.

(e) When showing compliance with sub-paragraph (a) above for those cases where the intended flight path does require track changes of more than 15°, an operator need not consider those obstacles which have a lateral distance greater than:

1. 600 m, if the pilot is able to maintain the required navigational accuracy through the obstacle accountability area; or
2. 900 m for flights under all other conditions.

(f) An operator shall establish contingency procedures to satisfy the requirements of OPS 1.495 and to provide a safe route, avoiding obstacles, to enable the aeroplane to either comply with the en-route requirements of OPS 1.500, or land at either the aerodrome of departure or at a take-off alternate aerodrome.

**OPS 1.500**

En-route — One Engine Inoperative

(a) An operator shall ensure that the one engine inoperative en-route net flight path data shown in the Aeroplane Flight Manual, appropriate to the meteorological conditions expected for the flight, complies with either sub-paragraph (b) or (c) at all points along the route. The net flight path must have a positive gradient at 1 500 ft above the aerodrome where the landing is assumed to be made after engine failure. In meteorological conditions requiring the operation of ice protection systems, the effect of their use on the net flight path must be taken into account.

(b) The gradient of the net flight path must be positive at least 1 000 ft above all terrain and obstructions along the route within 9.3 km (5 nm) on either side of the intended track.

(c) The net flight path must permit the aeroplane to continue flight from the cruising altitude to an aerodrome where a landing can be made in accordance with OPS 1.515 or 1.520 as appropriate, the net flight path clearing vertically, by at least 2 000 ft, all terrain and obstructions along the route within 9.3 km (5 nm) on either side of the intended track in accordance with sub-paragraphs (1) to (4) below:

1. The engine is assumed to fail at the most critical point along the route;
2. Account is taken of the effects of winds on the flight path;
3. Fuel jettisoning is permitted to an extent consistent with reaching the aerodrome with the required fuel reserves, if a safe procedure is used; and
4. The aerodrome where the aeroplane is assumed to land after engine failure must meet the following criteria:
   (i) The performance requirements at the expected landing mass are met; and
   (ii) Weather reports or forecasts, or any combination thereof, and field condition reports indicate that a safe landing can be accomplished at the estimated time of landing.

(d) When showing compliance with OPS 1.500, an operator must increase the width margins of sub-paragraphs (b) and (c) above to 18.5 km (10 nm) if the navigational accuracy does not meet the 95% containment level.
OPS 1.505

En-route — Aeroplanes With Three Or More Engines, Two Engines Inoperative

(a) An operator shall ensure that at no point along the intended track will an aeroplane having three or more engines be more than 90 minutes, at the all-engines long range cruising speed at standard temperature in still air, away from an aerodrome at which the performance requirements applicable at the expected landing mass are met unless it complies with sub-paragraphs (b) to (f) below.

(b) The two engines inoperative en-route net flight path data must permit the aeroplane to continue the flight, in the expected meteorological conditions, from the point where two engines are assumed to fail simultaneously, to an aerodrome at which it is possible to land and come to a complete stop when using the prescribed procedure for a landing with two engines inoperative. The net flight path must clear vertically, by at least 2 000 ft all terrain and obstructions along the route within 9.3 km (5 nm) on either side of the intended track. At altitudes and in meteorological conditions requiring ice protection systems to be operable, the effect of their use on the net flight path data must be taken into account. If the navigational accuracy does not meet the 95% containment level, an operator must increase the width margin given above to 18.5 km (10 nm).

(c) The two engines are assumed to fail at the most critical point of that portion of the route where the aeroplane is more than 90 minutes, at the all engines long range cruising speed at standard temperature in still air, away from an aerodrome at which the performance requirements applicable at the expected landing mass are met.

(d) The net flight path must have a positive gradient at 1 500 ft above the aerodrome where the landing is assumed to be made after the failure of two engines.

(e) Fuel jettisoning is permitted to an extent consistent with reaching the aerodrome with the required fuel reserves, if a safe procedure is used.

(f) The expected mass of the aeroplane at the point where the two engines are assumed to fail must not be less than that which would include sufficient fuel to proceed to an aerodrome where the landing is assumed to be made, and to arrive there at least 1 500 ft directly over the landing area and thereafter to fly level for 15 minutes.

OPS 1.510

Landing — Destination And Alternate Aerodromes

(a) An operator shall ensure that the landing mass of the aeroplane determined in accordance with OPS 1.475 (a) does not exceed the maximum landing mass specified for the altitude and the ambient temperature expected for the estimated time of landing at the destination and alternate aerodrome.

(b) For instrument approaches with a missed approach gradient greater than 2.5% an operator shall verify that the expected landing mass of the aeroplane allows a missed approach with a climb gradient equal to or greater than the applicable missed approach gradient in the one-engine inoperative missed approach configuration and speed (see applicable requirements on certification of large aeroplanes). The use of an alternative method must be approved by the Authority.

(c) For instrument approaches with decision heights below 200 ft, an operator must verify that the expected landing mass of the aeroplane allows a missed approach gradient of climb, with the critical engine failed and with the speed and configuration used for go-around of at least 2.5%, or the published gradient, whichever is the greater (see CS AWO 243). The use of an alternative method must be approved by the Authority.
(a) An operator shall ensure that the landing mass of the aeroplane determined in accordance with OPS 1.475 (a) for the estimated time of landing at the destination aerodrome and at any alternate aerodrome allows a full stop landing from 50 ft above the threshold:

(1) For turbo-jet powered aeroplanes, within 60% of the landing distance available; or

(2) For turbo-propeller powered aeroplanes, within 70% of the landing distance available;

(3) For Steep Approach procedures the Authority may approve the use of landing distance Data factored in accordance with sub-paragraphs (a)(1) and (a)(2) above as appropriate, based on a screen height of less than 50 ft, but not less than 35 ft (See Appendix 1 to OPS 1.515(a)(3));

(4) When showing compliance with sub-paragraphs (a)(1) and (a)(2) above, the Authority may exceptionally approve, when satisfied that there is a need (see Appendix 1), the use of Short Landing Operations, in accordance with Appendices 1 and 2 together with any other supplementary conditions that the Authority considers necessary in order to ensure an acceptable level of safety in the particular case.

(b) When showing compliance with sub-paragraph (a) above, an operator must take account of the following:

(1) The altitude at the aerodrome;

(2) Not more than 50% of the head-wind component or not less than 150% of the tailwind component; and

(3) The runway slope in the direction of landing if greater than +/- 2%.

(c) When showing compliance with sub-paragraph (a) above, it must be assumed that:

(1) The aeroplane will land on the most favourable runway, in still air; and

(2) The aeroplane will land on the runway most likely to be assigned considering the probable wind speed and direction and the ground handling characteristics of the aeroplane, and considering other conditions such as landing aids and terrain.

(d) If an operator is unable to comply with sub-paragraph (c)(1) above for a destination aerodrome having a single runway where a landing depends upon a specified wind component, an aeroplane may be despatched if 2 alternate aerodromes are designated which permit full compliance with sub-paragraphs (a), (b) and (c). Before commencing an approach to land at the destination aerodrome the commander must satisfy himself/herself that a landing can be made in full compliance with OPS 1.510 and sub-paragraphs (a) and (b) above.

(e) If an operator is unable to comply with sub-paragraph (c)(2) above for the destination aerodrome, the aeroplane may be despatched if an alternate aerodrome is designated which permits full compliance with sub-paragraphs (a), (b) and (c).

OPS 1.520
Landing — Wet and contaminated runways

(a) An operator shall ensure that when the appropriate weather reports or forecasts, or a combination thereof, indicate that the runway at the estimated time of arrival may be wet, the landing distance available is at least 115% of the required landing distance, determined in accordance with OPS 1.515.
An operator shall ensure that when the appropriate weather reports or forecasts, or a combination thereof, indicate that the runway at the estimated time of arrival may be contaminated, the landing distance available must be at least the landing distance determined in accordance with sub-paragraph (a) above, or at least 115% of the landing distance determined in accordance with approved contaminated landing distance data or equivalent, accepted by the Authority, whichever is greater.

A landing distance on a wet runway shorter than that required by sub-paragraph (a) above, but not less than that required by OPS 1.515 (a), may be used if the Aeroplane Flight Manual includes specific additional information about landing distances on wet runways.

A landing distance on a specially prepared contaminated runway shorter than that required by sub-paragraph (b) above, but not less than that required by OPS 1.515 (a), may be used if the Aeroplane Flight Manual includes specific additional information about landing distances on contaminated runways.

When showing compliance with sub-paragraphs (b), (c) and (d) above, the criteria of OPS 1.515 shall be applied accordingly except that OPS 1.515 (a)(1) and (2) shall not be applied to sub-paragraph (b) above.

Appendix 1 to OPS 1.495 (c)(3)
Approval of increased bank angles

(a) For the use of the increased bank angles requiring special approval, the following criteria shall be met:

(1) The Aeroplane Flight Manual must contain approved data for the required increase of operating speed and data to allow the construction of the flight path considering the increased bank angles and speeds.

(2) Visual guidance must be available for navigation accuracy.

(3) Weather minima and wind limitations must be specified for each runway and approved by the Authority.

(4) Training in accordance with OPS 1.975.

Appendix 1 to OPS 1.515 (a)(3)
Steep Approach Procedures

(a) The Authority may approve the application of Steep Approach procedures using glide slope angles of 4.5° or more and with screen heights of less than 50 ft but not less than 35 ft, provided that the following criteria are met:

(1) The Aeroplane Flight Manual must state the maximum approved glide slope angle, any other limitations, normal, abnormal or emergency procedures for the steep approach as well as amendments to the field length data when using steep approach criteria;

(2) A suitable glide path reference system comprising at least a visual glide path indicating system must be available at each aerodrome at which steep approach procedures are to be conducted; and

(3) Weather minima must be specified and approved for each runway to be used with a steep approach. Consideration must be given to the following:

(i) The obstacle situation;

(ii) The type of glide path reference and runway guidance such as visual aids, MLS, 3D-NAV, ILS, LLZ, VOR, NDB;

(iii) The minimum visual reference to be required at DH and MDA:
(iv) Available airborne equipment;
(v) Pilot qualification and special aerodrome familiarisation;
(vi) Aeroplane Flight Manual limitations and procedures; and
(vii) Missed approach criteria.

Appendix 1 to OPS 1.515 (a)(4)

Short Landing Operations

(a) For the purpose of OPS 1.515 (a)(4), the distance used for the calculation of the permitted landing mass may consist of the usable length of the declared safe area plus the declared landing distance available. The Authority may approve such operations in accordance with the following criteria:

(1) Demonstration of the need for Short Landing Operations. There must be a clear public interest and operational necessity for the operation, either due to the remoteness of the airport or to physical limitations relating to extending the runway.

(2) Aeroplane and Operational Criteria.

(i) Short landing operations will only be approved for aeroplanes where the vertical distance between the path of the pilot's eye and the path of the lowest part of the wheels, with the aeroplane established on the normal glide path, does not exceed 3 metres.

(ii) When establishing aerodrome operating minima the visibility/RVR must not be less than 1,5 km. In addition, wind limitations must be specified in the Operations Manual.

(iii) Minimum pilot experience, training requirements and special aerodrome familiarisation must be specified for such operations in the Operations Manual.

(3) It is assumed that the crossing height over the beginning of the usable length of the declared safe area is 50 ft.

(4) Additional criteria. The Authority may impose such additional conditions as are deemed necessary for a safe operation taking into account the aeroplane type characteristics, orographic characteristics in the approach area, available approach aids and missed approach/baulked landing considerations. Such additional conditions may be, for instance, the requirement for VASI/PAPI-type visual slope indicator system.

Appendix 2 to OPS 1.515 (a)(4)

Airfield Criteria for Short Landing Operations

(a) The use of the safe area must be approved by the airport authority.

(b) The useable length of the declared safe area under the provisions of 1.515 (a)(4), and this Appendix, must not exceed 90 meters.

(c) The width of the declared safe area shall not be less than twice the runway width or twice the wing span, whichever is the greater, centred on the extended runway centre line.
(d) The declared safe area must be clear of obstructions or depressions which would endanger an aeroplane undershooting the runway and no mobile object shall be permitted on the declared safety area while the runway is being used for short landing operations.

(e) The slope of the declared safety area must not exceed 5 % upward nor 2 % downward in the direction of landing.

(f) For the purpose of this operation, the bearing strength requirement of OPS 1.480 (a)(5) need not apply to the declared safe area.

SUBPART H

PERFORMANCE CLASS B

OPS 1.525

General

(a) An operator shall not operate a single-engine aeroplane:

(1) At night; or

(2) In Instrument Meteorological Conditions except under Special Visual Flight Rules.

Note: Limitations on the operation of single-engine aeroplanes are covered by OPS 1.240 (a)(6).

(b) An operator shall treat two-engine aeroplanes which do not meet the climb requirements of Appendix 1 to OPS 1.525 (b) as single-engine aeroplanes.

OPS 1.530

Take-off

(a) An operator shall ensure that the take-off mass does not exceed the maximum take-off mass specified in the Aeroplane Flight Manual for the pressure altitude and the ambient temperature at the aerodrome at which the take-off is to be made.

(b) An operator shall ensure that the unfactored take-off distance, as specified in the Aeroplane Flight Manual does not exceed:

(1) When multiplied by a factor of 1.25, the take-off run available; or

(2) When stop way and/or clearway is available, the following:

   (i) The take-off run available;

   (ii) When multiplied by a factor of 1.15, the take-off distance available; and

   (iii) When multiplied by a factor of 1.3, the accelerate-stop distance available.

(c) When showing compliance with sub-paragraph (b) above, an operator shall take account of the following:

(1) The mass of the aeroplane at the commencement of the take-off run;

(2) The pressure altitude at the aerodrome;

(3) The ambient temperature at the aerodrome;

(4) The runway surface condition and the type of runway surface

(5) The runway slope in the direction of take-off and

(6) Not more than 50 % of the reported head-wind component or not less than 150 % of the reported tail-wind component.
OPS 1.535
Take-off Obstacle Clearance — Multi-Engined Aeroplanes

(a) An operator shall ensure that the take-off flight path of aeroplanes with two or more engines, determined in accordance with this sub-paragraph, clears all obstacles by a vertical margin of at least 50 ft, or by a horizontal distance of at least 90 m plus 0.125 × D, where D is the horizontal distance travelled by the aeroplane from the end of the take-off distance available or the end of the take-off distance if a turn is scheduled before the end of the take-off distance available except as provided in sub-paragraphs (b) and (c) below. For aeroplanes with a wingspan of less than 60 m a horizontal obstacle clearance of half the aeroplane wingspan plus 60 m, plus 0.125 × D may be used. When showing compliance with this sub-paragraph it must be assumed that:

1. The take-off flight path begins at a height of 50 ft above the surface at the end of the take-off distance required by OPS 1.530 (b) and ends at a height of 1,500 ft above the surface;
2. The aeroplane is not banked before the aeroplane has reached a height of 50 ft above the surface, and that thereafter the angle of bank does not exceed 15°;
3. Failure of the critical engine occurs at the point on the all engine take-off flight path where visual reference for the purpose of avoiding obstacles is expected to be lost;
4. The gradient of the take-off flight path from 50 ft to the assumed engine failure height is equal to the average all-engine gradient during climb and transition to the en-route configuration, multiplied by a factor of 0.77; and
5. The gradient of the take-off flight path from the height reached in accordance with sub-paragraph (4) above to the end of the take-off flight path is equal to the one engine inoperative en-route climb gradient shown in the Aeroplane Flight Manual.

(b) When showing compliance with sub-paragraph (a) above for those cases where the intended flight path does not require track changes of more than 15°, an operator need not consider those obstacles which have a lateral distance greater than:

1. 300 m, if the flight is conducted under conditions allowing visual course guidance navigation, or if navigational aids are available enabling the pilot to maintain the intended flight path with the same accuracy (see Appendix 1 to OPS 1.535 (b)(1) & (c)(1)); or
2. 600 m, for flights under all other conditions.

(c) When showing compliance with sub-paragraph (a) above for those cases where the intended flight path requires track changes of more than 15°, an operator need not consider those obstacles which have a lateral distance greater than:

1. 600 m for flights under conditions allowing visual course guidance navigation (see Appendix 1 to OPS 1.535 (b)(1) & (c)(1));
2. 900 m for flights under all other conditions.

(d) When showing compliance with sub-paragraphs (a), (b) and (c) above, an operator must take account of the following:

1. The mass of the aeroplane at the commencement of the take-off run;
2. The pressure altitude at the aerodrome;
3. The ambient temperature at the aerodrome; and
4. Not more than 50% of the reported head-wind component or not less than 150% of the reported tail-wind component.
OPS 1.540
En-Route — Multi-engined aeroplanes

(a) An operator shall ensure that the aeroplane, in the meteorological conditions expected for the flight, and in the event of the failure of one engine, with the remaining engines operating within the maximum continuous power conditions specified, is capable of continuing flight at or above the relevant minimum altitudes for safe flight stated in the Operations Manual to a point 1 000 ft above an aerodrome at which the performance requirements can be met.

(b) When showing compliance with sub-paragraph (a) above:

(1) The aeroplane must not be assumed to be flying at an altitude exceeding that at which the rate of climb equals 300 ft per minute with all engines operating within the maximum continuous power conditions specified; and

(2) The assumed en-route gradient with one engine inoperative shall be the gross gradient of descent or climb, as appropriate, respectively increased by a gradient of 0.5 %, or decreased by a gradient of 0.5 %.

OPS 1.542
En-Route — Single-engine aeroplanes

(a) An operator shall ensure that the aeroplane, in the meteorological conditions expected for the flight, and in the event of engine failure, is capable of reaching a place at which a safe forced landing can be made. For landplanes, a place on land is required, unless otherwise approved by the Authority.

(b) When showing compliance with sub-paragraph (a) above:

(1) The aeroplane must not be assumed to be flying, with the engine operating within the maximum continuous power conditions specified, at an altitude exceeding that at which the rate of climb equals 300 ft per minute; and

(2) The assumed en-route gradient shall be the gross gradient of descent increased by a gradient of 0.5 %.

OPS 1.545
Landing — Destination and Alternate Aerodromes

An operator shall ensure that the landing mass of the aeroplane determined in accordance with OPS 1.475 (a) does not exceed the maximum landing mass specified for the altitude and the ambient temperature expected for the estimated time of landing at the destination and alternate aerodrome.

OPS 1.550
Landing — Dry runway

(a) An operator shall ensure that the landing mass of the aeroplane determined in accordance with OPS 1.475 (a) for the estimated time of landing allows a full stop landing from 50 ft above the threshold within 70 % of the landing distance available at the destination aerodrome and at any alternate aerodrome.

(1) The Authority may approve the use of landing distance data factored in accordance with this paragraph based on a screen height of less than 50 ft, but not less than 35 ft (see Appendix 1 to OPS 1.550 (a);

(2) The Authority may approve Short Landing Operations, in accordance with the criteria in Appendix 2 to OPS 1.550 (a).
When showing compliance with sub-paragraph (a) above, an operator shall take account of the following:

1. The altitude at the aerodrome;
2. Not more than 50% of the head-wind component or not less than 150% of the tail-wind component;
3. The runway surface condition and the type of runway surface; and
4. The runway slope in the direction of landing;

For despatching an aeroplane in accordance with sub-paragraph (a) above, it must be assumed that:

1. The aeroplane will land on the most favourable runway, in still air; and
2. The aeroplane will land on the runway most likely to be assigned considering the probable wind speed and direction and the ground handling characteristics of the aeroplane, and considering other conditions such as landing aids and terrain.

If an operator is unable to comply with sub-paragraph (c)(2) above for the destination aerodrome, the aeroplane may be despatched if an alternate aerodrome is designated which permits full compliance with sub-paragraphs (a), (b) and (c) above.

### OPS 1.555

Landing — Wet and Contaminated Runways

An operator shall ensure that when the appropriate weather reports or forecasts, or a combination thereof, indicate that the runway at the estimated time of arrival may be wet, the landing distance available is equal to or exceeds the required landing distance, determined in accordance with OPS 1.550, multiplied by a factor of 1.15.

An operator shall ensure that when the appropriate weather reports or forecasts, or a combination thereof, indicate that the runway at the estimated time of arrival may be contaminated, the landing distance, determined by using data acceptable to the Authority for these conditions, does not exceed the landing distance available.

A landing distance on a wet runway shorter than that required by sub-paragraph (a) above, but not less than that required by OPS 1.550 (a), may be used if the Aeroplane Flight Manual includes specific additional information about landing distances on wet runways.

### Appendix 1 to OPS 1.525 (b)

General — Take-off and Landing Climb

The requirements of this Appendix are based on JAR-23.63 (c)(1) and JAR-23.63 (c)(2), effective 11 March 1994.

(a) Take-off Climb

1. All Engines Operating

   (i) The steady gradient of climb after take-off must be at least 4% with:

      (A) Take-off power on each engine;

      (B) The landing gear extended except that if the landing gear can be retracted in not more than 7 seconds, it may be assumed to be retracted;

      (C) The wing flaps in the take-off position(s); and

      (D) A climb speed not less than the greater of 1.1 $V_{tas}$ and 1.2 $V_{s1}$.
(2) One Engine Inoperative

(i) The steady gradient of climb at an altitude of 400 ft above the take-off surface must be measurably positive with:

(A) The critical engine inoperative and its propeller in the minimum drag position;

(B) The remaining engine at take-off power;

(C) The landing gear retracted;

(D) The wing flaps in the take-off position(s); and

(E) A climb speed equal to that achieved at 50 ft.

(ii) The steady gradient of climb must be not less than 0.75 % at an altitude of 1 500 ft above the take-off surface with:

(A) The critical engine inoperative and its propeller in the minimum drag position;

(B) The remaining engine at not more than maximum continuous power;

(C) The landing gear retracted;

(D) The wing flaps retracted; and

(E) A climb speed not less than 1.2 $V_{st}$.

(b) Landing Climb

(1) All Engines Operating

(i) The steady gradient of climb must be at least 2.5 % with:

(A) Not more than the power or thrust that is available 8 seconds after initiation of movement of the power controls from the minimum flight idle position;

(B) The landing gear extended;

(C) The wing flaps in the landing position; and

(D) A climb speed equal to $V_{REF}$.

(2) One engine Inoperative

(i) The steady gradient of climb must be not less than 0.75 % at an altitude of 1 500 ft above the landing surface with:

(A) The critical engine inoperative and its propeller in the minimum drag position;

(B) The remaining engine at not more than maximum continuous power;

(C) The landing gear retracted;

(D) The wing flaps retracted; and

(E) A climb speed not less than 1.2 $V_{st}$. 
In order to allow visual course guidance navigation, an operator must ensure that the weather conditions prevailing at the time of operation, including ceiling and visibility, are such that the obstacle and/or ground reference points can be seen and identified. The Operations Manual must specify, for the aerodrome(s) concerned, the minimum weather conditions which enable the flight crew to continuously determine and maintain the correct flight path with respect to ground reference points, so as to provide a safe clearance with respect to obstructions and terrain as follows:

(a) The procedure must be well defined with respect to ground reference points so that the track to be flown can be analysed for obstacle clearance requirements;

(b) The procedure must be within the capabilities of the aeroplane with respect to forward speed, bank angle and wind effects;

(c) A written and/or pictorial description of the procedure must be provided for crew use; and

(d) The limiting environmental conditions must be specified (e.g. wind, cloud, visibility, day/night, ambient lighting, obstruction lighting).

Appendix 1 to OPS 1.550 (a)
Steep Approach Procedures

(a) The Authority may approve the application of Steep Approach procedures using glide slope angles of 4.5° or more, and with screen heights of less than 50 ft but not less than 35 ft, provided that the following criteria are met:

1. The Aeroplane Flight Manual must state the maximum approved glide slope angle, any other limitations, normal, abnormal or emergency procedures for the steep approach as well as amendments to the field length data when using steep approach criteria;

2. A suitable glide path reference system, comprising at least a visual glide path indicating system, must be available at each aerodrome at which steep approach procedures are to be conducted; and

3. Weather minima must be specified and approved for each runway to be used with a steep approach. Consideration must be given to the following:

   (i) The obstacle situation;

   (ii) The type of glide path reference and runway guidance such as visual aids, MLS, 3D-NAV, ILS, LLZ, VOR, NDB;

   (iii) The minimum visual reference to be required at DH and MDA;

   (iv) Available airborne equipment;

   (v) Pilot qualification and special aerodrome familiarisation;

   (vi) Aeroplane Flight Manual limitations and procedures; and

   (vii) Missed approach criteria.
Appendix 2 to OPS 1.550 (a)
Short Landing Operations

(a) For the purpose of OPS 1.550 (a)(2), the distance used for the calculation of the permitted landing mass may consist of the usable length of the declared safe area plus the declared landing distance available. The Authority may approve such operations in accordance with the following criteria:

1. The use of the declared safe area must be approved by the aerodrome Authority;

2. The declared safe area must be clear of obstructions or depressions which would endanger an aeroplane undershooting the runway, and no mobile object shall be permitted on the declared safe area while the runway is being used for short landing operations;

3. The slope of the declared safe area must not exceed 5% upward slope nor 2% downward slope in the direction of landing;

4. The useable length of the declared safe area under the provisions of this Appendix shall not exceed 90 metres;

5. The width of the declared safe area shall not be less than twice the runway width, centred on the extended runway centreline;

6. It is assumed that the crossing height over the beginning of the usable length of the declared safe area shall not be less than 50 ft;

7. For the purpose of this operation, the bearing strength requirement of OPS 1.480 (a)(5) need not apply to the declared safe area;

8. Weather minima must be specified and approved for each runway to be used and shall not be less than the greater of VFR or non-precision approach minima;

9. Pilot requirements must be specified (OPS 1.975 (a) refers);

10. The Authority may impose such additional conditions as are necessary for safe operation taking into account the aeroplane type characteristics, approach aids and missed approach/baulked landing considerations.

SUBPART I

PERFORMANCE CLASS C

OPS 1.560
General

An operator shall ensure that, for determining compliance with the requirements of this Subpart, the approved performance Data in the Aeroplane Flight Manual is supplemented, as necessary, with other Data acceptable to the Authority if the approved performance Data in the Aeroplane Flight Manual is insufficient.

OPS 1.565
Take-off

(a) An operator shall ensure that the take-off mass does not exceed the maximum take-off mass specified in the Aeroplane Flight Manual for the pressure altitude and the ambient temperature at the aerodrome at which the take-off is to be made.

(b) An operator shall ensure that, for aeroplanes which have take-off field length data contained in their Aeroplane Flight Manuals that do not include engine failure accountability, the distance from the start of the take-off roll required by the aeroplane to reach a height of 50 ft above the surface with all engines operating within the maximum take-off power conditions specified, when multiplied by a factor of either:

1. 1.33 for aeroplanes having two engines; or
(2) 1,25 for aeroplanes having three engines; or

(3) 1,18 for aeroplanes having four engines, does not exceed the take-off run available at the aerodrome at which the take-off is to be made.

(c) An operator shall ensure that, for aeroplanes which have take-off field length data contained in their Aeroplane Flight Manuals which accounts for engine failure, the following requirements are met in accordance with the specifications in the Aeroplane Flight Manual:

(1) The accelerate-stop distance must not exceed the accelerate-stop distance available;

(2) The take-off distance must not exceed the take-off distance available, with a clearway distance not exceeding half of the take-off run available;

(3) The take-off run must not exceed the take-off run available;

(4) Compliance with this paragraph must be shown using a single value of $V_1$ for the rejected and continued take-off; and

(5) On a wet or contaminated runway the take-off mass must not exceed that permitted for a take-off on a dry runway under the same conditions.

(d) When showing compliance with sub-paragraphs (b) and (c) above, an operator must take account of the following:

(1) The pressure altitude at the aerodrome;

(2) The ambient temperature at the aerodrome;

(3) The runway surface condition and the type of runway surface;

(4) The runway slope in the direction of take-off;

(5) Not more than 50% of the reported head-wind component or not less than 150% of the reported tail-wind component; and

(6) The loss, if any, of runway length due to alignment of the aeroplane prior to take-off.

OPS 1.570
Take-off Obstacle Clearance

(a) An operator shall ensure that the take-off flight path with one engine inoperative clears all obstacles by a vertical distance of at least 50 ft plus 0,01 × D, or by a horizontal distance of at least 90 m plus 0,125 × D, where D is the horizontal distance the aeroplane has travelled from the end of the take-off distance available. For aeroplanes with a wingspan of less than 60 m a horizontal obstacle clearance of half the aeroplane wingspan plus 60 m, plus 0,125 × D may be used.

(b) The take-off flight path must begin at a height of 50 ft above the surface at the end of the take-off distance required by OPS 1.565 (b) or (c) as applicable, and end at a height of 1 500 ft above the surface.

(c) When showing compliance with sub-paragraph (a), an operator must take account of the following:

(1) The mass of the aeroplane at the commencement of the take-off run;

(2) The pressure altitude at the aerodrome;

(3) The ambient temperature at the aerodrome; and

(4) Not more than 50% of the reported head-wind component or not less than 150% of the reported tail-wind component.
(d) When showing compliance with sub-paragraph (a) above, track changes shall not be allowed up to that point of the take-off flight path where a height of 50 ft above the surface has been achieved. Thereafter, up to a height of 400 ft it is assumed that the aeroplane is banked by no more than 15°. Above 400 ft height bank angles greater than 15°, but not more than 25° may be scheduled. Adequate allowance must be made for the effect of bank angle on operating speeds and flight path including the distance increments resulting from increased operating speeds.

(e) When showing compliance with sub-paragraph (a) above for those cases which do not require track changes of more than 15°, an operator need not consider those obstacles which have a lateral distance greater than:

1. 300 m, if the pilot is able to maintain the required navigational accuracy through the obstacle accountability area; or
2. 600 m, for flights under all other conditions.

(f) When showing compliance with sub-paragraph (a) above for those cases which do require track changes of more than 15°, an operator need not consider those obstacles which have a lateral distance greater than:

1. 600 m, if the pilot is able to maintain the required navigational accuracy through the obstacle accountability area; or
2. 900 m for flights under all other conditions.

(g) An operator shall establish contingency procedures to satisfy the requirements of OPS 1.570 and to provide a safe route, avoiding obstacles, to enable the aeroplane to either comply with the en-route requirements of OPS 1.580, or land at either the aerodrome of departure or at a take-off alternate aerodrome.

OPS 1.575
En-Route — All Engines Operating

(a) An operator shall ensure that the aeroplane will, in the meteorological conditions expected for the flight, at any point on its route or on any planned diversion therefrom, be capable of a rate of climb of at least 300 ft per minute with all engines operating within the maximum continuous power conditions specified at:

1. The minimum altitudes for safe flight on each stage of the route to be flown or of any planned diversion therefrom specified in, or calculated from the information contained in, the Operations Manual relating to the aeroplane; and
2. The minimum altitudes necessary for compliance with the conditions prescribed in OPS 1.580 and 1.585, as appropriate.

OPS 1.580
En-Route — One Engine Inoperative

(a) An operator shall ensure that the aeroplane will, in the meteorological conditions expected for the flight, in the event of any one engine becoming inoperative at any point on its route or on any planned diversion therefrom and with the other engine or engines operating within the maximum continuous power conditions specified, be capable of continuing the flight from the cruising altitude to an aerodrome where a landing can be made in accordance with OPS 1.595 or OPS 1.600 as appropriate, clearing obstacles within 9.3 km (5 nm) either side of the intended track by a vertical interval of at least:

1. 1 000 ft when the rate of climb is zero or greater; or
2. 2 000 ft when the rate of climb is less than zero.
(b) The flight path shall have a positive slope at an altitude of 450 m (1500 ft) above the aerodrome where
the landing is assumed to be made after the failure of one engine.

(c) For the purpose of this sub-paragraph the available rate of climb of the aeroplane shall be taken to be
150 ft per minute less than the gross rate of climb specified.

(d) When showing compliance with this paragraph, an operator must increase the width margins of sub-
paragraph (a) above to 18.5 km (10 nm) if the navigational accuracy does not meet the 95% contain-
ment level.

(e) Fuel jettisoning is permitted to an extent consistent with reaching the aerodrome with the required fuel
reserves, if a safe procedure is used.

OPS 1.585
En-Route — Aeroplanes With Three Or More Engines, Two Engines
Inoperative

(a) An operator shall ensure that, at no point along the intended track, will an aeroplane having three or
more engines be more than 90 minutes at the all-engine long range cruising speed at standard tempera-
ture in still air, away from an aerodrome at which the performance requirements applicable at the
expected landing mass are met unless it complies with sub-paragraphs (b) to (e) below.

(b) The two-engines inoperative flight path shown must permit the aeroplane to continue the flight, in the
expected meteorological conditions, clearing all obstacles within 9.3 km (5 nm) either side of the
intended track by a vertical interval of at least 2000 ft, to an aerodrome at which the performance
requirements applicable at the expected landing mass are met.

(c) The two engines are assumed to fail at the most critical point of that portion of the route where the
aeroplane is more than 90 minutes, at the all engines long range cruising speed at standard temperature
in still air, away from an aerodrome at which the performance requirements applicable at the expected
landing mass are met.

(d) The expected mass of the aeroplane at the point where the two engines are assumed to fail must not be
less than that which would include sufficient fuel to proceed to an aerodrome where the landing is
assumed to be made, and to arrive there at an altitude of a least 450 m (1500 ft) directly over the
landing area and thereafter to fly level for 15 minutes.

(e) For the purpose of this sub-paragraph the available rate of climb of the aeroplane shall be taken to be
150 ft per minute less than that specified.

(f) When showing compliance with this paragraph, an operator must increase the width margins of sub-
paragraph (a) above to 18.5 km (10 nm) if the navigational accuracy does not meet the 95% contain-
ment level.

(g) Fuel jettisoning is permitted to an extent consistent with reaching the aerodrome with the required fuel
reserves, if a safe procedure is used.

OPS 1.590
Landing — Destination and Alternate Aerodromes

An operator shall ensure that the landing mass of the aeroplane determined in accordance with
OPS 1.475 (a) does not exceed the maximum landing mass specified in the Aeroplane Flight Manual for the
altitude and, if accounted for in the Aeroplane Flight Manual, the ambient temperature expected for the esti-
mated time of landing at the destination and alternate aerodrome.
OPS 1.595
Landing — Dry Runways

(a) An operator shall ensure that the landing mass of the aeroplane determined in accordance with OPS 1.475 (a) for the estimated time of landing allows a full stop landing from 50 ft above the threshold within 70% of the landing distance available at the destination and any alternate aerodrome.

(b) When showing compliance with sub-paragraph (a) above, an operator must take account of the following:

(1) The altitude at the aerodrome;

(2) Not more than 50% of the head-wind component or not less than 150% of the tail-wind component;

(3) The type of runway surface; and

(4) The slope of the runway in the direction of landing.

(c) For despatching an aeroplane in accordance with sub-paragraph (a) above it must be assumed that:

(1) The aeroplane will land on the most favourable runway in still air; and

(2) The aeroplane will land on the runway most likely to be assigned considering the probable wind speed and direction and the ground handling characteristics of the aeroplane, and considering other conditions such as landing aids and terrain.

(d) If an operator is unable to comply with sub-paragraph (c)(2) above for the destination aerodrome, the aeroplane may be despatched if an alternate aerodrome is designated which permits full compliance with sub-paragraphs (a), (b) and (c).

OPS 1.600
Landing — Wet and Contaminated Runways

(a) An operator shall ensure that when the appropriate weather reports or forecasts, or a combination thereof, indicate that the runway at the estimated time of arrival may be wet, the landing distance available is equal to or exceeds the required landing distance, determined in accordance with OPS 1.595, multiplied by a factor of 1.15.

(b) An operator shall ensure that when the appropriate weather reports or forecasts, or a combination thereof, indicate that the runway at the estimated time of arrival may be contaminated, the landing distance determined by using data acceptable to the Authority for these conditions, does not exceed the landing distance available.

SUBPART J

MASS AND BALANCE

OPS 1.605
General

(See Appendix 1 to OPS 1.605)

(a) An operator shall ensure that during any phase of operation, the loading, mass and centre of gravity of the aeroplane complies with the limitations specified in the approved Aeroplane Flight Manual, or the Operations Manual if more restrictive.
(b) An operator must establish the mass and the centre of gravity of any aeroplane by actual weighing prior to initial entry into service and thereafter at intervals of 4 years if individual aeroplane masses are used and 9 years if fleet masses are used. The accumulated effects of modifications and repairs on the mass and balance must be accounted for and properly documented. Furthermore, aeroplanes must be reweighed if the effect of modifications on the mass and balance is not accurately known.

(c) An operator must determine the mass of all operating items and crew members included in the aeroplane dry operating mass by weighing or by using standard masses. The influence of their position on the aeroplane centre of gravity must be determined.

(d) An operator must establish the mass of the traffic load, including any ballast, by actual weighing or determine the mass of the traffic load in accordance with standard passenger and baggage masses as specified in OPS 1.620.

(e) An operator must determine the mass of the fuel load by using the actual density or, if not known, the density calculated in accordance with a method specified in the Operations Manual.

**OPS 1.607**

**Terminology**

(a) Dry Operating Mass. The total mass of the aeroplane ready for a specific type of operation excluding all usable fuel and traffic load. This mass includes items such as:

1. Crew and crew baggage;
2. Catering and removable passenger service equipment; and
3. Potable water and lavatory chemicals.

(b) Maximum Zero Fuel Mass. The maximum permissible mass of an aeroplane with no usable fuel. The mass of the fuel contained in particular tanks must be included in the zero fuel mass when it is explicitly mentioned in the Aeroplane Flight Manual limitations.

(c) Maximum Structural Landing Mass. The maximum permissible total aeroplane mass upon landing under normal circumstances.

(d) Maximum Structural Take Off Mass. The maximum permissible total aeroplane mass at the start of the take-off run.

(e) Passenger classification.

1. Adults, male and female, are defined as persons of an age of 12 years and above.
2. Children are defined as persons who are of an age of two years and above but who are less than 12 years of age.
3. Infants are defined as persons who are less than 2 years of age.

(f) Traffic Load. The total mass of passengers, baggage and cargo, including any non-revenue load.
An operator shall specify, in the Operations Manual, the principles and methods involved in the loading and in the mass and balance system that meet the requirements of OPS 1.605. This system must cover all types of intended operations.

(a) An operator shall use the following mass values to determine the dry operating mass:

(1) Actual masses including any crew baggage; or

(2) Standard masses, including hand baggage, of 85 kg for flight crew members and 75 kg for cabin crew members; or

(3) Other standard masses acceptable to the Authority.

(b) An operator must correct the dry operating mass to account for any additional baggage. The position of this additional baggage must be accounted for when establishing the centre of gravity of the aeroplane.

An operator shall compute the mass of passengers and checked baggage using either the actual weighed mass of each person and the actual weighed mass of baggage or the standard mass values specified in Tables 1 to 3 below except where the number of passenger seats available is less than 10. In such cases passenger mass may be established by use of a verbal statement by, or on behalf of, each passenger and adding to it a predetermined constant to account for hand baggage and clothing. (The procedure specifying when to select actual or standard masses and the procedure to be followed when using verbal statements must be included in the Operations Manual.)

(b) If determining the actual mass by weighing, an operator must ensure that passengers’ personal belongings and hand baggage are included. Such weighing must be conducted immediately prior to boarding and at an adjacent location.

(c) If determining the mass of passengers using standard mass values, the standard mass values in Tables 1 and 2 below must be used. The standard masses include hand baggage and the mass of any infant below 2 years of age carried by an adult on one passenger seat. Infants occupying separate passenger seats must be considered as children for the purpose of this sub-paragraph.

(d) Mass values for passengers — 20 seats or more

(1) Where the total number of passenger seats available on an aeroplane is 20 or more, the standard masses of male and female in Table 1 are applicable. As an alternative, in cases where the total number of passenger seats available is 30 or more, the “All Adult” mass values in Table 1 are applicable.

(2) For the purpose of Table 1, holiday charter means a charter flight solely intended as an element of a holiday travel package. The holiday charter mass values apply provided that not more than 5% of passenger seats installed in the aeroplane are used for the non-revenue carriage of certain categories of passengers.
### Table 1

<table>
<thead>
<tr>
<th>Passenger seats:</th>
<th>20 and more</th>
<th>30 and more</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>All flights except holiday charters</td>
<td>88 kg</td>
<td>70 kg</td>
</tr>
<tr>
<td>Holiday charters</td>
<td>83 kg</td>
<td>69 kg</td>
</tr>
<tr>
<td>Children</td>
<td>35 kg</td>
<td>35 kg</td>
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</tbody>
</table>

(e) Mass values for passengers — 19 seats or less.

1. Where the total number of passenger seats available on an aeroplane is 19 or less, the standard masses in Table 2 are applicable.

2. On flights where no hand baggage is carried in the cabin or where hand baggage is accounted for separately, 6 kg may be deducted from the above male and female masses. Articles such as an overcoat, an umbrella, a small handbag or purse, reading material or a small camera are not considered as hand baggage for the purpose of this sub-paragraph.

### Table 2

<table>
<thead>
<tr>
<th>Passenger seats</th>
<th>1-5</th>
<th>6-9</th>
<th>10-19</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>104 kg</td>
<td>96 kg</td>
<td>92 kg</td>
</tr>
<tr>
<td>Female</td>
<td>86 kg</td>
<td>78 kg</td>
<td>74 kg</td>
</tr>
<tr>
<td>Children</td>
<td>35 kg</td>
<td>35 kg</td>
<td>35 kg</td>
</tr>
</tbody>
</table>

(f) Mass values for baggage

1. Where the total number of passenger seats available on the aeroplane is 20 or more the standard mass values given in Table 3 are applicable for each piece of checked baggage. For aeroplanes with 19 passenger seats or less, the actual mass of checked baggage, determined by weighing, must be used.

2. For the purpose of Table 3:

   (i) Domestic flight means a flight with origin and destination within the borders of one State;

   (ii) Flights within the European region means flights, other than Domestic flights, whose origin and destination are within the area specified in Appendix 1 to OPS 1.620 (f); and

   (iii) Intercontinental flight, other than flights within the European region, means a flight with origin and destination in different continents.

### Table 3

<table>
<thead>
<tr>
<th>Type of flight</th>
<th>Baggage standard mass</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic</td>
<td>11 kg</td>
</tr>
<tr>
<td>Within the European region</td>
<td>13 kg</td>
</tr>
<tr>
<td>Intercontinental</td>
<td>15 kg</td>
</tr>
<tr>
<td>All other</td>
<td>13 kg</td>
</tr>
</tbody>
</table>
(g) If an operator wishes to use standard mass values other than those contained in Tables 1 to 3 above, he must advise the Authority of his reasons and gain its approval in advance. He must also submit for approval a detailed weighing survey plan and apply the statistical analysis method given in Appendix 1 to OPS 1.620 (g). After verification and approval by the Authority of the results of the weighing survey, the revised standard mass values are only applicable to that operator. The revised standard mass values can only be used in circumstances consistent with those under which the survey was conducted. Where revised standard masses exceed those in Tables 1-3, then such higher values must be used.

(h) On any flight identified as carrying a significant number of passengers whose masses, including hand baggage, are expected to exceed the standard passenger mass, an operator must determine the actual mass of such passengers by weighing or by adding an adequate mass increment.

(i) If standard mass values for checked baggage are used and a significant number of passengers check in baggage that is expected to exceed the standard baggage mass, an operator must determine the actual mass of such baggage by weighing or by adding an adequate mass increment.

(j) An operator shall ensure that a commander is advised when a non-standard method has been used for determining the mass of the load and that this method is stated in the mass and balance documentation.

OPS 1.625
Mass and balance documentation

(See Appendix 1 to OPS 1.625)

(a) An operator shall establish mass and balance documentation prior to each flight specifying the load and its distribution. The mass and balance documentation must enable the commander to determine that the load and its distribution is such that the mass and balance limits of the aeroplane are not exceeded. The person preparing the mass and balance documentation must be named on the document. The person supervising the loading of the aeroplane must confirm by signature that the load and its distribution are in accordance with the mass and balance documentation. This document must be acceptable to the commander, his/her acceptance being indicated by countersignature or equivalent. (See also OPS 1.1055 (a)(12)).

(b) An operator must specify procedures for Last Minute Changes to the load.

(c) Subject to the approval of the Authority, an operator may use an alternative to the procedures required by paragraphs (a) and (b) above.

Appendix 1 to OPS 1.605
Mass and Balance — General

(See OPS 1.605)

(a) Determination of the dry operating mass of an aeroplane

(1) Weighing of an aeroplane

(i) New aeroplanes are normally weighed at the factory and are eligible to be placed into operation without reweighing if the mass and balance records have been adjusted for alterations or modifications to the aeroplane. Aeroplanes transferred from one operator with an approved mass control programme to another operator with an approved programme need not be weighed prior to use by the receiving operator unless more than 4 years have elapsed since the last weighing.
(i) The individual mass and centre of gravity (CG) position of each aeroplane shall be re-established periodically. The maximum interval between two weighings must be defined by the operator and must meet the requirements of OPS 1.605 (b). In addition, the mass and the CG of each aeroplane shall be re-established either by:

(A) Weighing; or

(B) Calculation, if the operator is able to provide the necessary justification to prove the validity of the method of calculation chosen, whenever the cumulative changes to the dry operating mass exceed ± 0.5 % of the maximum landing mass or the cumulative change in CG position exceeds 0.5 % of the mean aerodynamic chord.

(2) Fleet mass and CG position

(i) For a fleet or group of aeroplanes of the same model and configuration, an average dry operating mass and CG position may be used as the fleet mass and CG position, provided that the dry operating masses and CG positions of the individual aeroplanes meet the tolerances specified in sub-paragraph (ii) below. Furthermore, the criteria specified in sub-paragraphs (iii), (iv) and (a)(3) below are applicable.

(ii) Tolerances

(A) If the dry operating mass of any aeroplane weighed, or the calculated dry operating mass of any aeroplane of a fleet, varies by more than ± 0.5 % of the maximum structural landing mass from the established dry operating fleet mass or the CG position varies by more than ± 0.5 % of the mean aerodynamic chord from the fleet CG, that aeroplane shall be omitted from that fleet. Separate fleets may be established, each with differing fleet mean masses.

(B) In cases where the aeroplane mass is within the dry operating fleet mass tolerance but its CG position falls outside the permitted fleet tolerance, the aeroplane may still be operated under the applicable dry operating fleet mass but with an individual CG position.

(C) If an individual aeroplane has, when compared with other aeroplanes of the fleet, a physical, accurately accountable difference (e.g. galley or seat configuration), that causes exceedance of the fleet tolerances, this aeroplane may be maintained in the fleet provided that appropriate corrections are applied to the mass and/or CG position for that aeroplane.

(D) Aeroplanes for which no mean aerodynamic chord has been published must be operated with their individual mass and CG position values or must be subjected to a special study and approval.

(iii) Use of fleet values

(A) After the weighing of an aeroplane, or if any change occurs in the aeroplane equipment or configuration, the operator must verify that this aeroplane falls within the tolerances specified in sub-paragraph (2)(ii) above.

(B) Aeroplanes which have not been weighed since the last fleet mass evaluation can still be kept in a fleet operated with fleet values, provided that the individual values are revised by computation and stay within the tolerances defined in sub-paragraph (2)(ii) above. If these individual values no longer fall within the permitted tolerances, the operator must either determine new fleet values fulfilling the conditions of sub-paragraphs (2)(i) and (2)(ii) above, or operate the aeroplanes not falling within the limits with their individual values.
(C) To add an aeroplane to a fleet operated with fleet values, the operator must verify by weighing or computation that its actual values fall within the tolerances specified in sub-paragraph (2)(ii) above.

(iv) To comply with sub-paragraph (2)(i) above, the fleet values must be updated at least at the end of each fleet mass evaluation.

(3) Number of aeroplanes to be weighed to obtain fleet values

(i) If “n” is the number of aeroplanes in the fleet using fleet values, the operator must at least weigh, in the period between two fleet mass evaluations, a certain number of aeroplanes defined in the table below:

<table>
<thead>
<tr>
<th>Number of aeroplanes in the fleet</th>
<th>Minimum number of weighings</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 or 3</td>
<td>N</td>
</tr>
<tr>
<td>4 to 9</td>
<td>(n + 3)/2</td>
</tr>
<tr>
<td>10 or more</td>
<td>(n + 51)/10</td>
</tr>
</tbody>
</table>

(ii) In choosing the aeroplanes to be weighed, aeroplanes in the fleet which have not been weighed for the longest time should be selected.

(iii) The interval between 2 fleet mass evaluations must not exceed 48 months.

(4) Weighing procedure

(i) The weighing must be accomplished either by the manufacturer or by an approved maintenance organisation.

(ii) Normal precautions must be taken consistent with good practices such as:

(A) Checking for completeness of the aeroplane and equipment;

(B) Determining that fluids are properly accounted for;

(C) Ensuring that the aeroplane is clean; and

(D) Ensuring that weighing is accomplished in an enclosed building.

(iii) Any equipment used for weighing must be properly calibrated, zeroed, and used in accordance with the manufacturer’s instructions. Each scale must be calibrated either by the manufacturer, by a civil department of weights and measures or by an appropriately authorised organisation within 2 years or within a time period defined by the manufacturer of the weighing equipment, whichever is less. The equipment must enable the mass of the aeroplane to be established accurately.

(b) Special standard masses for the traffic load. In addition to standard masses for passengers and checked baggage, an operator can submit for approval to the Authority standard masses for other load items.

(c) Aeroplane loading

(1) An operator must ensure that the loading of its aeroplanes is performed under the supervision of qualified personnel.

(2) An operator must ensure that the loading of the freight is consistent with the data used for the calculation of the aeroplane mass and balance.

(3) An operator must comply with additional structural limits such as the floor strength limitations, the maximum load per running metre, the maximum mass per cargo compartment, and/or the maximum seating limits.
(d) Centre of gravity limits

(1) Operational CG envelope. Unless seat allocation is applied and the effects of the number of passengers per seat row, of cargo in individual cargo compartments and of fuel in individual tanks is accounted for accurately in the balance calculation, operational margins must be applied to the certified centre of gravity envelope. In determining the CG margins, possible deviations from the assumed load distribution must be considered. If free seating is applied, the operator must introduce procedures to ensure corrective action by flight or cabin crew if extreme longitudinal seat selection occurs. The CG margins and associated operational procedures, including assumptions with regard to passenger seating, must be acceptable to the Authority.

(2) In-flight centre of gravity. Further to sub-paragraph (d)(1) above, the operator must show that the procedures fully account for the extreme variation in CG travel during flight caused by passenger/crew movement and fuel consumption/transfer.

Appendix 1 to OPS 1.620 (f)

Definition of the area for flights within the European region

For the purposes of OPS 1.620 (f), flights within the European region, other than domestic flights, are flights conducted within the area bounded by rhumb lines between the following points:

- N7200 E04500
- N4000 E04500
- N3500 E03700
- N3000 E03700
- N3000 W00600
- N2700 W00900
- N2700 W03000
- N6700 W03000
- N7200 W01000
- N7200 E04500

as depicted in Figure 1 below:

Figure 1

European region
Appendix 1 to OPS 1.620 (g)

Procedure for establishing revised standard mass values for passengers and baggage

(a) Passengers

(1) Weight sampling method. The average mass of passengers and their hand baggage must be determined by weighing, taking random samples. The selection of random samples must by nature and extent be representative of the passenger volume, considering the type of operation, the frequency of flights on various routes, in/outbound flights, applicable season and seat capacity of the aeroplane.

(2) Sample size. The survey plan must cover the weighing of at least the greatest of:

(i) A number of passengers calculated from a pilot sample, using normal statistical procedures and based on a relative confidence range (accuracy) of 1 % for all adult and 2 % for separate male and female average masses; and

(ii) For aeroplanes:

(A) With a passenger seating capacity of 40 or more, a total of 2 000 passengers; or

(B) With a passenger seating capacity of less than 40, a total number of 50 × (the passenger seating capacity).

(3) Passenger masses. Passenger masses must include the mass of the passengers’ belongings which are carried when entering the aeroplane. When taking random samples of passenger masses, infants shall be weighted together with the accompanying adult (See also OPS 1620 (c) (d) and (e).

(4) Weighing location. The location for the weighing of passengers shall be selected as close as possible to the aeroplane, at a point where a change in the passenger mass by disposing of or by acquiring more personal belongings is unlikely to occur before the passengers board the aeroplane.

(5) Weighing machine. The weighing machine to be used for passenger weighing shall have a capacity of at least 150 kg. The mass shall be displayed at minimum graduations of 500 g. The weighing machine must be accurate to within 0,5 % or 200 g whichever is the greater.

(6) Recording of mass values. For each flight included in the survey the mass of the passengers, the corresponding passenger category (i.e. male/female/children) and the flight number must be recorded.

(b) Checked baggage. The statistical procedure for determining revised standard baggage mass values based on average baggage masses of the minimum required sample size is basically the same as for passengers and as specified in sub-paragraph (a)(1). For baggage, the relative confidence range (accuracy) amounts to 1 %. A minimum of 2 000 pieces of checked baggage must be weighed.

(c) Determination of revised standard mass values for passengers and checked baggage

(1) To ensure that, in preference to the use of actual masses determined by weighing, the use of revised standard mass values for passengers and checked baggage does not adversely affect operational safety, a statistical analysis must be carried out. Such an analysis will generate average mass values for passengers and baggage as well as other data.
(2) On aeroplanes with 20 or more passenger seats, these averages apply as revised standard male and female mass values.

(3) On smaller aeroplanes, the following increments must be added to the average passenger mass to obtain the revised standard mass values:

<table>
<thead>
<tr>
<th>Number of passenger seats</th>
<th>Required mass increment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-5 incl.</td>
<td>16 kg</td>
</tr>
<tr>
<td>6-9 incl.</td>
<td>8 kg</td>
</tr>
<tr>
<td>10-19 incl.</td>
<td>4 kg</td>
</tr>
</tbody>
</table>

Alternatively, all adult revised standard (average) mass values may be applied on aeroplanes with 30 or more passenger seats. Revised standard (average) checked baggage mass values are applicable to aeroplanes with 20 or more passenger seats.

(4) Operators have the option to submit a detailed survey plan to the Authority for approval and subsequently a deviation from the revised standard mass value provided this deviating value is determined by use of the procedure explained in this Appendix. Such deviations must be reviewed at intervals not exceeding 5 years.

(5) All adult revised standard mass values must be based on a male/female ratio of 80/20 in respect of all flights except holiday charters which are 50/50. If an operator wishes to obtain approval for use of a different ratio on specific routes or flights then data must be submitted to the Authority showing that the alternative male/female ratio is conservative and covers at least 84% of the actual male/female ratios on a sample of at least 100 representative flights.

(6) The average mass values found are rounded to the nearest whole number in kg. Checked baggage mass values are rounded to the nearest 0,5 kg figure, as appropriate.

Appendix 1 to OPS 1.625
Mass and Balance Documentation

(a) Mass and balance documentation

(1) Contents

(i) The mass and balance documentation must contain the following information:

(A) The aeroplane registration and type;

(B) The flight identification number and date;

(C) The identity of the Commander;

(D) The identity of the person who prepared the document;

(E) The dry operating mass and the corresponding CG of the aeroplane;

(F) The mass of the fuel at take-off and the mass of trip fuel;

(G) The mass of consumables other than fuel;

(H) The components of the load including passengers, baggage, freight and ballast;
The Take-off Mass, Landing Mass and Zero Fuel Mass;

(j) The load distribution;

(K) The applicable aeroplane CG positions; and

(L) The limiting mass and CG values.

(ii) Subject to the approval of the Authority, an operator may omit some of this Data from the mass and balance documentation.

(2) Last Minute Change. If any last minute change occurs after the completion of the mass and balance documentation, this must be brought to the attention of the commander and the last minute change must be entered on the mass and balance documentation. The maximum allowed change in the number of passengers or hold load acceptable as a last minute change must be specified in the Operations Manual. If this number is exceeded, new mass and balance documentation must be prepared.

(b) Computerised systems. Where mass and balance documentation is generated by a computerised mass and balance system, the operator must verify the integrity of the output data. He must establish a system to check that amendments of his input data are incorporated properly in the system and that the system is operating correctly on a continuous basis by verifying the output data at intervals not exceeding 6 months.

(c) Onboard mass and balance systems. An operator must obtain the approval of the Authority if he wishes to use an onboard mass and balance computer system as a primary source for despatch.

(d) Datalink. When mass and balance documentation is sent to aeroplanes via datalink, a copy of the final mass and balance documentation as accepted by the commander must be available on the ground.

SUBPART K

INSTRUMENTS AND EQUIPMENT

OPS 1.630

General introduction

(a) An operator shall ensure that a flight does not commence unless the instruments and equipment required under this Subpart are:

(1) Approved, except as specified in sub-paragraph (c), and installed in accordance with the requirements applicable to them, including the minimum performance standard and the operational and airworthiness requirements; and

(2) In operable condition for the kind of operation being conducted except as provided in the MEL (OPS 1.030 refers).

(b) Instruments and equipment minimum performance standards are those prescribed in the applicable European Technical Standard Orders (ETSO) as listed in applicable Specifications on European Technical Standard Orders (CS-TSO), unless different performance standards are prescribed in the operational or airworthiness codes. Instruments and equipment complying with design and performance specifications other than ETSO on the date of OPS implementation may remain in service, or be installed, unless additional requirements are prescribed in this Subpart. Instruments and equipment that have already been approved do not need to comply with a revised ETSO or a revised specification, other than ETSO, unless a retroactive requirement is prescribed.
(c) The following items shall not be required to have an equipment approval:

(1) Fuses referred to in OPS 1.635;

(2) Electric torches referred to in OPS 1.640 (a)(4);

(3) An accurate time piece referred to in OPS 1.650 (b) & 1.652 (b);

(4) Chart holder referred to in OPS 1.652 (n).

(5) First-aid kits referred to in OPS 1.745;

(6) Emergency medical kit referred to in OPS 1.755;

(7) Megaphones referred to in OPS 1.810;

(8) Survival and pyrotechnic signalling equipment referred to in OPS 1.835 (a) and (c); and

(9) Sea anchors and equipment for mooring, anchoring or manoeuvring seaplanes and amphibians on water referred to in OPS 1.840.

(d) If equipment is to be used by one flight crew member at his/her station during flight, it must be readily operable from his/her station. When a single item of equipment is required to be operated by more than one flight crew member it must be installed so that the equipment is readily operable from any station at which the equipment is required to be operated.

(e) Those instruments that are used by any one flight crew member shall be so arranged as to permit the flight crew member to see the indications readily from his/her station, with the minimum practicable deviation from the position and line of vision which he/she normally assumes when looking forward along the flight path. Whenever a single instrument is required in an aeroplane operated by more than 1 flight crew member it must be installed so that the instrument is visible from each applicable flight crew station.

OPS 1.635
Circuit protection devices

An operator shall not operate an aeroplane in which fuses are used unless there are spare fuses available for use in flight equal to at least 10% of the number of fuses of each rating or three of each rating whichever is the greater.

OPS 1.640
Aeroplane operating lights

An operator shall not operate an aeroplane unless it is equipped with:

(a) For flight by day:

(1) Anti-collision light system;

(2) Lighting supplied from the aeroplane's electrical system to provide adequate illumination for all instruments and equipment essential to the safe operation of the aeroplane;

(3) Lighting supplied from the aeroplane's electrical system to provide illumination in all passenger compartments; and

(4) An electric torch for each required crew member readily accessible to crew members when seated at their designated station.
(b) For flight by night, in addition to equipment specified in paragraph (a) above:

(1) Navigation/position lights; and

(2) Two landing lights or a single light having two separately energised filaments; and

(3) Lights to conform with the International regulations for preventing collisions at sea if the aeroplane is a Seaplane or an Amphibian.

**OPS 1.645**

Windshield wipers

An operator shall not operate an aeroplane with a maximum certificated take-off mass of more than 5700 kg unless it is equipped at each pilot station with a windshield wiper or equivalent means to maintain a clear portion of the windshield during precipitation.

**OPS 1.650**

Day VFR operations — Flight and navigational instruments and associated equipment

An operator shall not operate an aeroplane by day in accordance with Visual Flight Rules (VFR) unless it is equipped with the flight and navigational instruments and associated equipment and, where applicable, under the conditions stated in the following sub-paragraphs:

(a) A magnetic compass;

(b) An accurate timepiece showing the time in hours, minutes, and seconds;

(c) A sensitive pressure altimeter calibrated in feet with a sub-scale setting, calibrated in hectopascals/millibars, adjustable for any barometric pressure likely to be set during flight;

(d) An airspeed indicator calibrated in knots;

(e) A vertical speed indicator;

(f) A turn and slip indicator, or a turn coordinator incorporating a slip indicator;

(g) An attitude indicator;

(h) A stabilised direction indicator; and

(i) A means of indicating in the flight crew compartment the outside air temperature calibrated in degrees Celsius.

(j) For flights which do not exceed 60 minutes duration, which take off and land at the same aerodrome, and which remain within 50 nm of that aerodrome, the instruments prescribed in sub-paragraphs (f), (g) and (h) above, and sub-paragraphs (k)(4), (k)(5) and (k)(6) below, may all be replaced by either a turn and slip indicator, or a turn co-ordinator incorporating a slip indicator, or both an attitude indicator and a slip indicator.

(k) Whenever two pilots are required the second pilot's station shall have separate instruments as follows:

(1) A sensitive pressure altimeter calibrated in feet with a sub-scale setting calibrated in hectopascals/millibars, adjustable for any barometric pressure likely to be set during flight;

(2) An airspeed indicator calibrated in knots;

(3) A vertical speed indicator;

(4) A turn and slip indicator, or a turn coordinator incorporating a slip indicator;

(5) An attitude indicator; and

(6) A stabilised direction indicator.
Each airspeed indicating system must be equipped with a heated pitot tube or equivalent means for preventing malfunction due to either condensation or icing for:

1. aeroplanes with a maximum certificated take-off mass in excess of 5 700 kg or having a maximum approved passenger seating configuration of more than 9;

2. aeroplanes first issued with an individual certificate of airworthiness on or after 1 April 1999.

Whenever duplicate instruments are required, the requirement embraces separate displays for each pilot and separate selectors or other associated equipment where appropriate.

All aeroplanes must be equipped with means for indicating when power is not adequately supplied to the required flight instruments; and

All aeroplanes with compressibility limitations not otherwise indicated by the required airspeed indicators shall be equipped with a Mach number indicator at each pilot's station.

An operator shall not conduct Day VFR operations unless the aeroplane is equipped with a headset with boom microphone or equivalent for each flight crew member on flight deck duty.

OPS 1.652

IFR or night operations — Flight and navigational instruments and associated equipment

An operator shall not operate an aeroplane in accordance with Instrument Flight Rules (IFR) or by night in accordance with Visual Flight Rules (VFR) unless it is equipped with the flight and navigational instruments and associated equipment and, where applicable, under the conditions stated in the following sub-paragraphs:

a. A magnetic compass;

b. An accurate time-piece showing the time in hours, minutes and seconds;

c. Two sensitive pressure altimeters calibrated in feet with sub-scale settings, calibrated in hectopascals/millibars, adjustable for any barometric pressure likely to be set during flight; These altimeters must have counter drum-pointer or equivalent presentation.

d. An airspeed indicating system with heated pitot tube or equivalent means for preventing malfunctioning due to either condensation or icing including a warning indication of pitot heater failure. The pitot heater failure warning indication requirement does not apply to those aeroplanes with a maximum approved passenger seating configuration of 9 or less or a maximum certificated take-off mass of 5 700 kg or less and issued with an individual Certificate of Airworthiness prior to 1 April 1998;

e. A vertical speed indicator;

f. A turn and slip indicator;

g. An attitude indicator;

h. A stabilised direction indicator;

i. A means of indicating in the flight crew compartment the outside air temperature calibrated in degrees Celsius; and

j. Two independent static pressure systems, except that for propeller driven aeroplanes with maximum certificated take-off mass of 5 700 kg or less, one static pressure system and one alternate source of static pressure is allowed.
(k) Whenever two pilots are required the second pilot's station shall have separate instruments as follows:

(1) A sensitive pressure altimeter calibrated in feet with a sub-scale setting, calibrated in hectopascals/millibars, adjustable for any barometric pressure likely to be set during flight and which may be one of the 2 altimeters required by sub-paragraph (c) above. These altimeters must have counter drum-pointer or equivalent presentation.

(2) An airspeed indicating system with heated pitot tube or equivalent means for preventing malfunctioning due to either condensation or icing including a warning indication of pitot heater failure. The pitot heater failure warning indication requirement does not apply to those aeroplanes with a maximum approved passenger seating configuration of 9 or less or a maximum certificated take-off mass of 5 700 kg or less and issued with an individual Certificate of Airworthiness prior to 1 April 1998;

(3) A vertical speed indicator;

(4) A turn and slip indicator;

(5) An attitude indicator; and

(6) A stabilised direction indicator.

(l) Those aeroplanes with a maximum certificated take-off mass in excess of 5 700 kg or having a maximum approved passenger seating configuration of more than 9 seats must be equipped with an additional, standby attitude indicator (artificial horizon), capable of being used from either pilot's station, that:

(1) Is powered continuously during normal operation and, after a total failure of the normal electrical generating system is powered from a source independent of the normal electrical generating system;

(2) Provides reliable operation for a minimum of 30 minutes after total failure of the normal electrical generating system, taking into account other loads on the emergency power supply and operational procedures;

(3) Operates independently of any other attitude indicating system;

(4) Is operative automatically after total failure of the normal electrical generating system; and

(5) Is appropriately illuminated during all phases of operation,

except for aeroplanes with a maximum certificated take-off mass of 5 700 kg or less, already registered in a Member State on 1 April 1995, equipped with a standby attitude indicator in the left-hand instrument panel.

(m) In complying with sub-paragraph (l) above, it must be clearly evident to the flight crew when the standby attitude indicator, required by that sub-paragraph, is being operated by emergency power. Where the standby attitude indicator has its own dedicated power supply there shall be an associated indication, either on the instrument or on the instrument panel, when this supply is in use.

(n) A chart holder in an easily readable position which can be illuminated for night operations.

(o) If the standby attitude instrument system is certificated according to CS 25.1303(b)(4) or equivalent, the turn and slip indicators may be replaced by slip indicators.

(p) Whenever duplicate instruments are required, the requirement embraces separate displays for each pilot and separate selectors or other associated equipment where appropriate;
(q) All aeroplanes must be equipped with means for indicating when power is not adequately supplied to the required flight instruments; and

(r) All aeroplanes with compressibility limitations not otherwise indicated by the required airspeed indicators shall be equipped with a Mach number indicator at each pilot’s station.

(s) An operator shall not conduct IFR or night operations unless the aeroplane is equipped with a headset with boom microphone or equivalent for each flight crew member on flight deck duty and a transmit button on the control wheel for each required pilot.

**OPS 1.655**

Additional equipment for single pilot operation under IFR or at night

An operator shall not conduct single pilot IFR operations unless the aeroplane is equipped with an autopilot with at least altitude hold and heading mode.

**OPS 1.660**

Altitude alerting system

(a) An operator shall not operate a turbine propeller powered aeroplane with a maximum certificated take-off mass in excess of 5 700 kg or having a maximum approved passenger seating configuration of more than 9 seats or a turbojet powered aeroplane unless it is equipped with an altitude alerting system capable of:

1. Alerting the flight crew upon approaching a preselected altitude; and
2. Alerting the flight crew by at least an aural signal, when deviating above or below a preselected altitude,

except for aeroplanes with a maximum certificated take-off mass of 5 700 kg or less having a maximum approved passenger seating configuration of more than 9 and first issued with an individual certificate of airworthiness before 1 April 1972 and already registered in a Member State on 1 April 1995.

**OPS 1.665**

Ground proximity warning system and terrain awareness warning system

(a) An operator shall not operate a turbine powered aeroplane having a maximum certificated take-off mass in excess of 5 700 kg or a maximum approved passenger seating configuration of more than 9 unless it is equipped with a ground proximity warning system that includes a predictive terrain hazard warning function (Terrain Awareness and Warning System — TAWS).

(b) The ground proximity warning system must automatically provide, by means of aural signals, which may be supplemented by visual signals, timely and distinctive warning to the flight crew of sink rate, ground proximity, altitude loss after take-off or go-around, incorrect landing configuration and downward glide slope deviation.

(c) The terrain awareness and warning system must automatically provide the flight crew, by means of visual and aural signals and a Terrain Awareness Display, with sufficient alerting time to prevent controlled flight into terrain events, and provided a forward looking capability and terrain clearance floor.
OPS 1.668
Airborne Collision Avoidance System

An operator shall not operate a turbine powered aeroplane having a maximum certificated take-off mass in excess of 5 700 kg or a maximum approved passenger seating configuration of more than 19 unless it is equipped with an airborne collision avoidance system with a minimum performance level of at least ACAS II.

OPS 1.670
Airborne weather radar equipment

(a) An operator shall not operate:

(1) A pressurised aeroplane; or

(2) An unpressurised aeroplane which has a maximum certificated take-off mass of more than 5 700 kg; or

(3) An unpressurised aeroplane having a maximum approved passenger seating configuration of more than 9 seats, unless it is equipped with airborne weather radar equipment whenever such an aeroplane is being operated at night or in instrument meteorological conditions in areas where thunderstorms or other potentially hazardous weather conditions, regarded as detectable with airborne weather radar, may be expected to exist along the route.

(b) For propeller driven pressurised aeroplanes having a maximum certificated take-off mass not exceeding 5 700 kg with a maximum approved passenger seating configuration not exceeding 9 seats the airborne weather radar equipment may be replaced by other equipment capable of detecting thunderstorms and other potentially hazardous weather conditions, regarded as detectable with airborne weather radar equipment, subject to approval by the Authority.

OPS 1.675
Equipment for operations in icing conditions

(a) An operator shall not operate an aeroplane in expected or actual icing conditions unless it is certificated and equipped to operate in icing conditions.

(b) An operator shall not operate an aeroplane in expected or actual icing conditions at night unless it is equipped with a means to illuminate or detect the formation of ice. Any illumination that is used must be of a type that will not cause glare or reflection that would handicap crew members in the performance of their duties.

OPS 1.680
Cosmic radiation detection equipment

An operator shall ensure that aeroplanes intended to be operated above 15 000 m (49 000 ft) are equipped with an instrument to measure and indicate continuously the dose rate of total cosmic radiation being received (i.e. the total of ionizing and neutron radiation of galactic and solar origin) and the cumulative dose on each flight.

OPS 1.685
Flight crew interphone system

An operator shall not operate an aeroplane on which a flight crew of more than one is required unless it is equipped with a flight crew interphone system, including headsets and microphones, not of a handheld type, for use by all members of the flight crew.
OPS 1.690

Crew member interphone system

(a) An operator shall not operate an aeroplane with a maximum certificated take-off mass exceeding 15,000 kg or having a maximum approved passenger seating configuration of more than 19 unless it is equipped with a crew member interphone system except for aeroplanes first issued with an individual certificate of airworthiness before 1 April 1965 and already registered in a Member State on 1 April 1995.

(b) The crew member interphone system required by this paragraph must:

(1) Operate independently of the public address system except for handsets, headsets, microphones, selector switches and signalling devices;

(2) Provide a means of two-way communication between the flight crew compartment and:

   (i) Each passenger compartment;

   (ii) Each galley located other than on a passenger deck level; and

   (iii) Each remote crew compartment that is not on the passenger deck and is not easily accessible from a passenger compartment;

(3) Be readily accessible for use from each of the required flight crew stations in the flight crew compartment;

(4) Be readily accessible for use at required cabin crew member stations close to each separate or pair of floor level emergency exits;

(5) Have an alerting system incorporating aural or visual signals for use by flight crew members to alert the cabin crew and for use by cabin crew members to alert the flight crew;

(6) Have a means for the recipient of a call to determine whether it is a normal call or an emergency call; and

(7) Provide on the ground a means of two-way communication between ground personnel and at least two flight crew members.

OPS 1.695

Public address system

(a) An operator shall not operate an aeroplane with a maximum approved passenger seating configuration of more than 19 unless a public address system is installed.

(b) The public address system required by this paragraph must:

(1) Operate independently of the interphone systems except for handsets, headsets, microphones, selector switches and signalling devices;

(2) Be readily accessible for immediate use from each required flight crew member station;

(3) For each required floor level passenger emergency exit which has an adjacent cabin crew seat, have a microphone which is readily accessible to the seated cabin crew member, except that one microphone may serve more than one exit, provided the proximity of the exits allows unassisted verbal communication between seated cabin crew members;
(4) Be capable of operation within 10 seconds by a cabin crew member at each of those stations in the compartment from which its use is accessible; and

(5) Be audible and intelligible at all passenger seats, toilets and cabin crew seats and work stations.

OPS 1.700
Cockpit voice recorders-1

(a) An operator shall not operate an aeroplane first issued with an individual Certificate of Airworthiness, on or after 1 April 1998, which:

(1) Is multi-engine turbine powered and has a maximum approved passenger seating configuration of more than 9; or

(2) Has a maximum certificated take-off mass over 5,700 kg,

unless it is equipped with a cockpit voice recorder which, with reference to a time scale, records:

(i) Voice communications transmitted from or received on the flight deck by radio;

(ii) The aural environment of the flight deck, including without interruption, the audio signals received from each boom and mask microphone in use;

(iii) Voice communications of flight crew members on the flight deck using the aeroplane's interphone system;

(iv) Voice or audio signals identifying navigation or approach aids introduced into a headset or speaker; and

(v) Voice communications of flight crew members on the flight deck using the public address system, if installed.

(b) The cockpit voice recorder shall be capable of retaining information recorded during at least the last 2 hours of its operation except that, for those aeroplanes with a maximum certificated take-off mass of 5,700 kg or less, this period may be reduced to 30 minutes.

(c) The cockpit voice recorder must start automatically to record prior to the aeroplane moving under its own power and continue to record until the termination of the flight when the aeroplane is no longer capable of moving under its own power. In addition, depending on the availability of electrical power, the cockpit voice recorder must start to record as early as possible during the cockpit checks prior to engine start at the beginning of the flight until the cockpit checks immediately following engine shutdown at the end of the flight.

(d) The cockpit voice recorder must have a device to assist in locating that recorder in water.

OPS 1.705
Cockpit voice recorders-2

(a) An operator shall not operate any multi-engined turbine aeroplane first issued with an individual Certificate of Airworthiness, on or after 1 January 1990 up to and including 31 March 1998 which has a maximum certificated take-off mass of 5,700 kg or less and a maximum approved passenger seating configuration of more than 9, unless it is equipped with a cockpit voice recorder which records:

(1) Voice communications transmitted from or received on the flight deck by radio;
(2) The aural environment of the flight deck, including where practicable, without interruption, the audio signals received from each boom and mask microphone in use;

(3) Voice communications of flight crew members on the flight deck using the aeroplane's interphone system;

(4) Voice or audio signals identifying navigation or approach aids introduced into a headset or speaker; and

(5) Voice communications of flight crew members on the flight deck using the public address system, if installed.

(b) The cockpit voice recorder shall be capable of retaining information recorded during at least the last 30 minutes of its operation.

(c) The cockpit voice recorder must start to record prior to the aeroplane moving under its own power and continue to record until the termination of the flight when the aeroplane is no longer capable of moving under its own power. In addition, depending on the availability of electrical power, the cockpit voice recorder must start to record as early as possible during the cockpit checks, prior to the flight until the cockpit checks immediately following engine shutdown at the end of the flight.

(d) The cockpit voice recorder must have a device to assist in locating that recorder in water.

OPS 1.710
Cockpit voice recorders-3

(a) An operator shall not operate any aeroplane with a maximum certificated take-off mass over 5 700 kg first issued with an individual certificate of airworthiness, before 1 April 1998 unless it is equipped with a cockpit voice recorder which records:

(1) Voice communications transmitted from or received on the flight deck by radio;

(2) The aural environment of the flight deck;

(3) Voice communications of flight crew members on the flight deck using the aeroplane's interphone system;

(4) Voice or audio signals identifying navigation or approach aids introduced into a headset or speaker; and

(5) Voice communications of flight crew members on the flight deck using the public address system, if installed.

(b) The cockpit voice recorder shall be capable of retaining information recorded during at least the last 30 minutes of its operation.

(c) The cockpit voice recorder must start to record prior to the aeroplane moving under its own power and continue to record until the termination of the flight when the aeroplane is no longer capable of moving under its own power.

(d) The cockpit voice recorder must have a device to assist in locating that recorder in water.
OPS 1.715
Flight data recorders-1

(See Appendix 1 to OPS 1.715)

(a) An operator shall not operate any aeroplane first issued with an individual Certificate of Airworthiness on or after 1 April 1998 which:

(1) Is multi-engine turbine powered and has a maximum approved passenger seating configuration of more than 9; or

(2) Has a maximum certificated take-off mass over 5 700 kg,

unless it is equipped with a flight data recorder that uses a digital method of recording and storing data and a method of readily retrieving that data from the storage medium is available.

(b) The flight data recorder shall be capable of retaining the data recorded during at least the last 25 hours of its operation except that, for those aeroplanes with a maximum certificated take-off mass of 5 700 kg or less, this period may be reduced to 10 hours.

(c) The flight data recorder must, with reference to a timescale, record:

(1) The parameters listed in Tables A1 or A2 of Appendix 1 to OPS 1.715 as applicable;

(2) For those aeroplanes with a maximum certificated take-off mass over 27 000 kg, the additional parameters listed in Table B of Appendix 1 to OPS 1.715;

(3) For aeroplanes specified in (a) above, the flight data recorder must record any dedicated parameters relating to novel or unique design or operational characteristics of the aeroplane as determined by the Authority during type or supplemental type certification; and

(4) For aeroplanes equipped with electronic display system the parameters listed in Table C of Appendix 1 to OPS 1.715, except that, for aeroplanes first issued with an individual Certificate of Airworthiness before 20 August 2002 those parameters for which:

(i) The sensor is not available; or

(ii) The aeroplane system or equipment generating the data needs to be modified; or

(iii) The signals are incompatible with the recording system;

do not need to be recorded if acceptable to the Authority.

(d) Data must be obtained from aeroplane sources which enable accurate correlation with information displayed to the flight crew.

(e) The flight data recorder must start automatically to record the data prior to the aeroplane being capable of moving under its own power and must stop automatically after the aeroplane is incapable of moving under its own power.

(f) The flight data recorder must have a device to assist in locating that recorder in water.

(g) Aeroplanes first issued with an individual Certificate of Airworthiness on or after 1 April 1998, but not later than 1 April 2001 may not be required to comply with OPS 1.715(c) if approved by the Authority, provided that:

(1) Compliance with OPS 1.715(c) cannot be achieved without extensive modification to the aeroplane systems and equipment other than the flight data recorder system; and

(2) The aeroplane complies with OPS 1.715(c) except that parameter 15b in Table A of Appendix 1 to OPS 1.720 need not to be recorded.
(a) An operator shall not operate any aeroplane first issued with an individual certificate of airworthiness on or after 1 June 1990 up to and including 31 March 1998 which has a maximum certificated take-off mass over 5 700 kg unless it is equipped with a flight data recorder that uses a digital method of recording and storing data and a method of readily retrieving that data from the storage medium is available.

(b) The flight data recorder shall be capable of retaining the data recorded during at least the last 25 hours of its operation.

(c) The flight data recorder must, with reference to a timescale, record:

(1) The parameters listed in Table A of Appendix 1 to OPS 1.720; and

(2) For those aeroplanes with a maximum certificated take-off mass over 27 000 kg the additional parameters listed in Table B of Appendix 1 to OPS 1.720.

(d) For those aeroplanes having a maximum certificated take-off mass of 27 000 kg or below, if acceptable to the Authority, parameters 14 and 15b of Table A of Appendix 1 to OPS 1.720 need not be recorded, when any of the following conditions are met:

(1) The sensor is not readily available,

(2) Sufficient capacity is not available in the flight recorder system,

(3) A change is required in the equipment that generates the data.

(e) For those aeroplanes having a maximum certificated take-off mass over 27 000 kg, if acceptable to the Authority, the following parameters need not be recorded: 15b of Table A of Appendix 1 to OPS 1.720, and 23, 24, 25, 26, 27, 28, 29, 30 and 31 of Table B of Appendix 1, if any of the following conditions are met:

(1) The sensor is not readily available,

(2) Sufficient capacity is not available in the flight data recorder system,

(3) A change is required in the equipment that generates the data,

(4) For navigational data (NAV frequency selection, DME distance, latitude, longitude, ground speed and drift) the signals are not available in digital form.

(f) Individual parameters that can be derived by calculation from the other recorded parameters, need not to be recorded if acceptable to the Authority.

(g) Data must be obtained from aeroplane sources which enable accurate correlation with information displayed to the flight crew;

(h) The flight data recorder must start to record the data prior to the aeroplane being capable of moving under its own power and must stop after the aeroplane is incapable of moving under its own power.

(i) The flight data recorder must have a device to assist in locating that recorder in water.
OPS 1.725
Flight data recorders-3

(See Appendix 1 to OPS 1.725)

(a) An operator shall not operate any turbine-engined first issued with an individual Certificate of Airworthiness, before 1 June 1990 which has a maximum certificated take-off mass over 5 700 kg unless it is equipped with a flight data recorder that uses a digital method of recording and storing data and a method of readily retrieving that data from the storage medium is available.

(b) The flight data recorder shall be capable of retaining the data recorded during at least the last 25 hours of its operation.

(c) The flight data recorder must, with reference to a timescale, record:

(1) The parameters listed in Table A of Appendix 1 to OPS 1.725.

(2) For those aeroplanes with a maximum certificated take-off mass over 27 000 kg that are of a type first type certificated after 30 September 1969, the additional parameters from 6 to 15b of Table B of Appendix 1 to OPS 1.725 of this paragraph. The following parameters need not be recorded, if acceptable to the Authority: 13, 14 and 15b in Table B of Appendix 1 to OPS 1.725 when any of the following conditions are met:

(i) The sensor is not readily available,

(ii) Sufficient capacity is not available in the flight recorder system,

(iii) A change is required in the equipment that generates the data; and

(3) When sufficient capacity is available on a flight recorder system, the sensor is readily available and a change is not required in the equipment that generates the data:

(i) For aeroplanes first issued with an individual Certificate of Airworthiness on or after 1 January 1989, with a maximum certificated take off mass of over 5 700 kg but not more than 27 000 kg, parameters 6 to 15b of Table B of Appendix 1 to OPS 1.725; and

(ii) For aeroplanes first issued with an individual Certificate of Airworthiness on or after 1 January 1987, with a maximum certificated take off mass of over 27 000 kg the remaining parameters of Table B of Appendix 1 to OPS 1.725.

(d) Individual parameters that can be derived by calculation from the other recorded parameters, need not to be recorded if acceptable to the Authority.

(e) Data must be obtained from aircraft sources which enable accurate correlation with information displayed to the flight crew.

(f) The flight data recorder must start to record the data prior to the aeroplane being capable of moving under its own power and must stop after the aeroplane is incapable of moving under its own power.

(g) The flight data recorder must have a device to assist in locating that recorder in water.
OPS 1.727

Combination Recorder

(a) Compliance with Cockpit Voice recorder and flight data recorder requirements may be achieved by:

(1) One combination recorder if the aeroplane has to be equipped with a cockpit voice recorder or with a flight data recorder only; or

(2) One combination recorder if the aeroplane with a maximum certificated take-off mass of 5 700 kg or less has to be equipped with a cockpit voice recorder and a flight data recorder; or

(3) Two combination recorders if the aeroplane with a maximum take-off mass over 5 700 kg has to be equipped with a cockpit voice recorder and a flight data recorder.

(b) A combination recorder is a flight recorder that records:

(1) all voice communications and aural environment required by the relevant cockpit voice recorder paragraph; and

(2) all parameters required by the relevant flight data recorder paragraph, with the same specifications required by those paragraphs.

OPS 1.730

Seats, seat safety belts, harnesses and child restraint devices

(a) An operator shall not operate an aeroplane unless it is equipped with:

(1) A seat or berth for each person who is aged two years or more;

(2) A safety belt, with or without a diagonal shoulder strap, or a safety harness for use in each passenger seat for each passenger aged 2 years or more;

(3) A supplementary loop belt or other restraint device for each infant;

(4) Except as provided in sub-paragraph (b) below, a safety belt with shoulder harness for each flight crew seat and for any seat alongside a pilot's seat incorporating a device which will automatically restrain the occupant's torso in the event of rapid deceleration;

(5) Except as provided in sub-paragraph (b) below, a safety belt with shoulder harness for each cabin crew seat and observer’s seats. However, this requirement does not preclude use of passenger seats by cabin crew members carried in excess of the required cabin crew complement; and

(6) Seats for cabin crew members located near required floor level emergency exits except that, if the emergency evacuation of passengers would be enhanced by seating cabin crew members elsewhere, other locations are acceptable. Such seats shall be forward or rearward facing within 15° of the longitudinal axis of the aeroplane.

(b) All safety belts with shoulder harness must have a single point release.

(c) A safety belt with a diagonal shoulder strap for aeroplanes with a maximum certificated take-off mass not exceeding 5 700 kg or a safety belt for aeroplanes with a maximum certificated take-off mass not exceeding 2 730 kg may be permitted in place of a safety belt with shoulder harness if it is not reasonably practicable to fit the latter.
An operator shall not operate an aeroplane in which all passenger seats are not visible from the flight deck, unless it is equipped with a means of indicating to all passengers and cabin crew when seat belts shall be fastened and when smoking is not allowed.

**OPS 1.735**
**Internal doors and curtains**

An operator shall not operate an aeroplane unless the following equipment is installed:

(a) In an aeroplane with a maximum approved passenger seating configuration of more than 19 passengers, a door between the passenger compartment and the flight deck compartment with a placard “crew only” and a locking means to prevent passengers from opening it without the permission of a member of the flight crew;

(b) A means for opening each door that separates a passenger compartment from another compartment that has emergency exit provisions. The means for opening must be readily accessible;

(c) If it is necessary to pass through a doorway or curtain separating the passenger cabin from other areas to reach any required emergency exit from any passenger seat, the door or curtain must have a means to secure it in the open position;

(d) A placard on each internal door or adjacent to a curtain that is the means of access to a passenger emergency exit, to indicate that it must be secured open during take off and landing; and

(e) A means for any member of the crew to unlock any door that is normally accessible to passengers and that can be locked by passengers.

**OPS 1.745**
**First-Aid Kits**

(a) An operator shall not operate an aeroplane unless it is equipped with first-aid kits, readily accessible for use, to the following scale:

<table>
<thead>
<tr>
<th>Number of passenger seats installed</th>
<th>Number of First-Aid Kits required</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 99</td>
<td>1</td>
</tr>
<tr>
<td>100 to 199</td>
<td>2</td>
</tr>
<tr>
<td>200 to 299</td>
<td>3</td>
</tr>
<tr>
<td>300 and more</td>
<td>4</td>
</tr>
</tbody>
</table>

(b) An operator shall ensure that first-aid kits are:

(1) Inspected periodically to confirm, to the extent possible, that contents are maintained in the condition necessary for their intended use; and

(2) Replenished at regular intervals, in accordance with instructions contained on their labels, or as circumstances warrant.

**OPS 1.755**
**Emergency Medical Kit**

(a) An operator shall not operate an aeroplane with a maximum approved passenger seating configuration of more than 30 seats unless it is equipped with an emergency medical kit if any point on the planned route is more than 60 minutes flying time (at normal cruising speed) from an aerodrome at which qualified medical assistance could be expected to be available.
(b) The commander shall ensure that drugs are not administered except by qualified doctors, nurses or similarly qualified personnel.

(c) Conditions for carriage

(1) The emergency medical kit must be dust and moisture proof and shall be carried under security conditions, where practicable, on the flight deck; and

(2) An operator shall ensure that emergency medical kits are:

(i) Inspected periodically to confirm, to the extent possible, that the contents are maintained in the condition necessary for their intended use; and

(ii) Replenished at regular intervals, in accordance with instructions contained on their labels, or as circumstances warrant.

OPS 1.760
First-aid oxygen

(a) An operator shall not operate a pressurised aeroplane at altitudes above 25 000 ft, when a cabin crew member is required to be carried, unless it is equipped with a supply of undiluted oxygen for passengers who, for physiological reasons, might require oxygen following a cabin depressurisation. The amount of oxygen shall be calculated using an average flow rate of at least 3 litres Standard Temperature Pressure Dry (STPD)/minute/person and provided for the entire flight after cabin depressurisation at cabin pressure altitudes of more than 8 000 ft for at least 2% of the passengers carried, but in no case for less than one person. There shall be a sufficient number of dispensing units, but in no case less than two, with a means for cabin crew to use the supply.

(b) The amount of first-aid oxygen required for a particular operation shall be determined on the basis of cabin pressure altitudes and flight duration, consistent with the operating procedures established for each operation and route.

(c) The oxygen equipment provided shall be capable of generating a mass flow to each user of at least four litres per minute, STPD. Means may be provided to decrease the flow to not less than two litres per minute, STPD, at any altitude.

OPS 1.770
Supplemental oxygen — pressurised aeroplanes

(See Appendix 1 to OPS 1.770)

(a) General

(1) An operator shall not operate a pressurised aeroplane at pressure altitudes above 10 000 ft unless supplemental oxygen equipment, capable of storing and dispensing the oxygen supplies required by this paragraph, is provided.

(2) The amount of supplemental oxygen required shall be determined on the basis of cabin pressure altitude, flight duration and the assumption that a cabin pressurisation failure will occur at the altitude or point of flight that is most critical from the standpoint of oxygen need, and that, after the failure, the aeroplane will descend in accordance with emergency procedures specified in the Aeroplane Flight Manual to a safe altitude for the route to be flown that will allow continued safe flight and landing.

(3) Following a cabin pressurisation failure, the cabin pressure altitude shall be considered the same as the aeroplane pressure altitude, unless it is demonstrated to the Authority that no probable failure of the cabin or pressurisation system will result in a cabin pressure altitude equal to the aeroplane pressure altitude. Under these circumstances, the demonstrated maximum cabin pressure altitude may be used as a basis for determination of oxygen supply.
(b) Oxygen equipment and supply requirements

(1) Flight crew members

(i) Each member of the flight crew on flight deck duty shall be supplied with supplemental oxygen in accordance with Appendix 1. If all occupants of flight deck seats are supplied from the flight crew source of oxygen supply then they shall be considered as flight crew members on flight deck duty for the purpose of oxygen supply. Flight deck seat occupants, not supplied by the flight crew source, are to be considered as passengers for the purpose of oxygen supply.

(ii) Flight crew members, not covered by sub-paragraph (b)(1)(i) above, are to be considered as passengers for the purpose of oxygen supply.

(iii) Oxygen masks shall be located so as to be within the immediate reach of flight crew members whilst at their assigned duty station.

(iv) Oxygen masks for use by flight crew members in pressurised aeroplanes operating above 25 000 ft shall be a quick donning type of mask.

(2) Cabin crew members, additional crew members and passengers

(i) Cabin crew members and passengers shall be supplied with supplemental oxygen in accordance with Appendix 1, except when subparagraph (v) below applies. Cabin crew members carried in addition to the minimum number of cabin crew members required, and additional crew members, shall be considered as passengers for the purpose of oxygen supply.

(ii) Aeroplanes intended to be operated at pressure altitudes above 25 000 ft shall be provided with sufficient spare outlets and masks and/or sufficient portable oxygen units with masks for use by all required cabin crew members. The spare outlets and/or portable oxygen units are to be distributed evenly throughout the cabin to ensure immediate availability of oxygen to each required cabin crew member regardless of his/her location at the time of cabin pressurisation failure.

(iii) Aeroplanes intended to be operated at pressure altitudes above 25 000 ft shall be provided with an oxygen dispensing unit connected to oxygen supply terminals immediately available to each occupant, wherever seated. The total number of dispensing units and outlets shall exceed the number of seats by at least 10%. The extra units are to be evenly distributed throughout the cabin.

(iv) Aeroplanes intended to be operated at pressure altitudes above 25 000 ft or which, if operated at or below 25 000 ft, cannot descend safely within 4 minutes to 13 000 ft, and for which the individual certificate of airworthiness was first issued on or after 9 November 1998, shall be provided with automatically deployable oxygen equipment immediately available to each occupant, wherever seated. The total number of dispensing units and outlets shall exceed the number of seats by at least 10%. The extra units are to be evenly distributed throughout the cabin.

(v) The oxygen supply requirements, as specified in Appendix 1, for aeroplanes not certificated to fly at altitudes above 25 000 ft, may be reduced to the entire flight time between 10 000 ft and 13 000 ft cabin pressure altitudes for all required cabin crew members and for at least 10% of the passengers if, at all points along the route to be flown, the aeroplane is able to descend safely within 4 minutes to a cabin pressure altitude of 13 000 ft.
Supplemental oxygen — Non-pressurised aeroplanes

(See Appendix 1 to OPS 1.775)

(a) General

(1) An operator shall not operate a non-pressurised aeroplane at altitudes above 10 000 ft unless supplemental oxygen equipment, capable of storing and dispensing the oxygen supplies required, is provided.

(2) The amount of supplemental oxygen for sustenance required for a particular operation shall be determined on the basis of flight altitudes and flight duration, consistent with the operating procedures established for each operation in the Operations Manual and with the routes to be flown, and with the emergency procedures specified in the Operations Manual.

(3) An aeroplane intended to be operated at pressure altitudes above 10 000 ft shall be provided with equipment capable of storing and dispensing the oxygen supplies required.

(b) Oxygen supply requirements

(1) Flight crew members. Each member of the flight crew on flight deck duty shall be supplied with supplemental oxygen in accordance with Appendix 1. If all occupants of flight deck seats are supplied from the flight crew source of oxygen supply then they shall be considered as flight crew members on flight deck duty for the purpose of oxygen supply.

(2) Cabin crew members, additional crew members and passengers. Cabin crew members and passengers shall be supplied with oxygen in accordance with Appendix 1. Cabin crew members carried in addition to the minimum number of cabin crew members required, and additional crew members, shall be considered as passengers for the purpose of oxygen supply.

OPS 1.780

Crew Protective Breathing Equipment

(a) An operator shall not operate a pressurised aeroplane or an unpressurised aeroplane with a maximum certificated take-off mass exceeding 5 700 kg or having a maximum approved seating configuration of more than 19 seats unless:

(1) It has equipment to protect the eyes, nose and mouth of each flight crew member while on flight deck duty and to provide oxygen for a period of not less than 15 minutes. The supply for Protective Breathing Equipment (PBE) may be provided by the supplemental oxygen required by OPS 1.770 (b)(1) or OPS 1.775 (b)(1). In addition, when the flight crew is more than one and a cabin crew member is not carried, portable PBE must be carried to protect the eyes, nose and mouth of one member of the flight crew and to provide breathing gas for a period of not less than 15 minutes; and

(2) It has sufficient portable PBE to protect the eyes, nose and mouth of all required cabin crew members and to provide breathing gas for a period of not less than 15 minutes.

(b) PBE intended for flight crew use must be conveniently located on the flight deck and be easily accessible for immediate use by each required flight crew member at their assigned duty station.

(c) PBE intended for cabin crew use must be installed adjacent to each required cabin crew member duty station.
An additional, easily accessible portable PBE must be provided and located at or adjacent to the hand fire extinguishers required by OPS 1.790 (c) and (d) except that, where the fire extinguisher is located inside a cargo compartment, the PBE must be stowed outside but adjacent to the entrance to that compartment.

PBE while in use must not prevent communication where required by OPS 1.685, OPS 1.690, OPS 1.810 and OPS 1.850.

**OPS 1.790**

Hand fire extinguishers

An operator shall not operate an aeroplane unless hand fire extinguishers are provided for use in crew, passenger and, as applicable, cargo compartments and galleys in accordance with the following:

(a) The type and quantity of extinguishing agent must be suitable for the kinds of fires likely to occur in the compartment where the extinguisher is intended to be used and, for personnel compartments, must minimise the hazard of toxic gas concentration;

(b) At least one hand fire extinguisher, containing Halon 1211 (bromochlorodifluoro-methane, CBrCIF₂), or equivalent as the extinguishing agent, must be conveniently located on the flight deck for use by the flight crew;

(c) At least one hand fire extinguisher must be located in, or readily accessible for use in, each galley not located on the main passenger deck;

(d) At least one readily accessible hand fire extinguisher must be available for use in each Class A or Class B cargo or baggage compartment and in each Class E cargo compartment that is accessible to crew members in flight; and

(e) At least the following number of hand fire extinguishers must be conveniently located in the passenger compartment(s):

<table>
<thead>
<tr>
<th>Maximum approved passenger seating configuration</th>
<th>Number of Extinguishers</th>
</tr>
</thead>
<tbody>
<tr>
<td>7 to 30</td>
<td>1</td>
</tr>
<tr>
<td>31 to 60</td>
<td>2</td>
</tr>
<tr>
<td>61 to 200</td>
<td>3</td>
</tr>
<tr>
<td>201 to 300</td>
<td>4</td>
</tr>
<tr>
<td>301 to 400</td>
<td>5</td>
</tr>
<tr>
<td>401 to 500</td>
<td>6</td>
</tr>
<tr>
<td>501 to 600</td>
<td>7</td>
</tr>
<tr>
<td>601 or more</td>
<td>8</td>
</tr>
</tbody>
</table>

When two or more extinguishers are required, they must be evenly distributed in the passenger compartment.
(f) At least one of the required fire extinguishers located in the passenger compartment of an aeroplane with a maximum approved passenger seating configuration of at least 31, and not more than 60, and at least two of the fire extinguishers located in the passenger compartment of an aeroplane with a maximum approved passenger seating configuration of 61 or more must contain Halon 1211 (bromo-chlorodifluoromethane, CBrClF2), or equivalent as the extinguishing agent.

**OPS 1.795**

Crash axes and crowbars

(a) An operator shall not operate an aeroplane with a maximum certificated take-off mass exceeding 5 700 kg or having a maximum approved passenger seating configuration of more than 9 seats unless it is equipped with at least one crash axe or crowbar located on the flight deck. If the maximum approved passenger seating configuration is more than 200 an additional crash axe or crowbar must be carried and located in or near the most rearward galley area.

(b) Crash axes and crowbars located in the passenger compartment must not be visible to passengers.

**OPS 1.800**

Marking of break-in points

An operator shall ensure that, if designated areas of the fuselage suitable for break-in by rescue crews in emergency are marked on an aeroplane, such areas shall be marked as shown below. The colour of the markings shall be red or yellow, and if necessary they shall be outlined in white to contrast with the background. If the corner markings are more than 2 metres apart, intermediate lines 9 cm × 3 cm shall be inserted so that there is no more than 2 metres between adjacent marks.

**OPS 1.805**

Means for emergency evacuation

(a) An operator shall not operate an aeroplane with passenger emergency exit sill heights:

(1) Which are more than 1,83 metres (6 feet) above the ground with the aeroplane on the ground and the landing gear extended; or

(2) Which would be more than 1,83 metres (6 feet) above the ground after the collapse of, or failure to extend of, one or more legs of the landing gear and for which a Type Certificate was first applied for on or after 1 April 2000, unless it has equipment or devices available at each exit, where sub-paragraphs (1) or (2) apply, to enable passengers and crew to reach the ground safely in an emergency.

(b) Such equipment or devices need not be provided at over wing exits if the designated place on the aeroplane structure at which the escape route terminates is less than 1,83 metres (6 feet) from the ground with the aeroplane on the ground, the landing gear extended, and the flaps in the take off or landing position, whichever flap position is higher from the ground.
(c) In aeroplanes required to have a separate emergency exit for the flight crew and:

(1) For which the lowest point of the emergency exit is more than 1.83 metres (6 feet) above the ground with the landing gear extended; or,

(2) For which a Type Certificate was first applied for on or after 1 April 2000, would be more than 1.83 metres (6 ft) above the ground after the collapse of, or failure to extend of, one or more legs of the landing gear, there must be a device to assist all members of the flight crew in descending to reach the ground safely in an emergency.

OPS 1.810
Megaphones

(a) An operator shall not operate an aeroplane with a maximum approved passenger seating configuration of more than 60 and carrying one or more passengers unless it is equipped with portable battery-powered megaphones readily accessible for use by crew members during an emergency evacuation, to the following scales:

(1) For each passenger deck:

<table>
<thead>
<tr>
<th>Passenger seating configuration</th>
<th>Number of Megaphones Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>61 to 99</td>
<td>1</td>
</tr>
<tr>
<td>100 or more</td>
<td>2</td>
</tr>
</tbody>
</table>

(2) For aeroplanes with more than one passenger deck, in all cases when the total passenger seating configuration is more than 60, at least 1 megaphone is required.

OPS 1.815
Emergency lighting

(a) An operator shall not operate a passenger carrying aeroplane which has a maximum approved passenger seating configuration of more than 9 unless it is provided with an emergency lighting system having an independent power supply to facilitate the evacuation of the aeroplane. The emergency lighting system must include:

(1) For aeroplanes which have a maximum approved passenger seating configuration of more than 19:

(i) Sources of general cabin illumination;

(ii) Internal lighting in floor level emergency exit areas; and

(iii) Illuminated emergency exit marking and locating signs.

(iv) For aeroplanes for which the application for the type certificate or equivalent was filed before 1 May 1972, and when flying by night, exterior emergency lighting at all over wing exits, and at exits where descent assist means are required.

(v) For aeroplanes for which the application for the type certificate or equivalent was filed on or after 1 May 1972, and when flying by night, exterior emergency lighting at all passenger emergency exits.

(vi) For aeroplanes for which the type certificate was first issued on or after 1 January 1958, floor proximity emergency escape path marking system in the passenger compartment(s).
(2) For aeroplanes which have a maximum approved passenger seating configuration of 19 or less and are certificated to the Certification Specifications in CS-25 or CS-23:

(i) Sources of general cabin illumination;

(ii) Internal lighting in emergency exit areas; and

(iii) Illuminated emergency exit marking and locating signs.

(3) For aeroplanes which have a maximum approved passenger seating configuration of 19 or less and are not certificated to the Certification Specifications in CS-25 or CS-23, sources of general cabin illumination.

(b) An operator shall not, by night, operate a passenger carrying aeroplane which has a maximum approved passenger seating configuration of 9 or less unless it is provided with a source of general cabin illumination to facilitate the evacuation of the aeroplane. The system may use dome lights or other sources of illumination already fitted on the aeroplane and which are capable of remaining operative after the aeroplane's battery has been switched off.

**OPS 1.820**

Automatic Emergency Locator Transmitter

(a) An operator shall not operate an aeroplane first issued with an individual certificate of airworthiness on or after 1 January 2002 unless it is equipped with an automatic Emergency Locator Transmitter (ELT) capable of transmitting on 121.5 MHz and 406 MHz.

(b) An operator shall not operate an aeroplane first issued with an individual Certificate of Airworthiness before 1 January 2002 unless it is equipped with any type of ELT capable of transmitting on 121.5 MHz and 406 MHz.

(c) An operator shall ensure that all ELTs that are capable of transmitting on 406 MHz shall be coded in accordance with ICAO Annex X and registered with the national agency responsible for initiating Search and Rescue or another nominated agency.

**OPS 1.825**

Life Jackets

(a) Land aeroplanes. An operator shall not operate a land aeroplane:

(1) When flying over water and at a distance of more than 50 nautical miles from the shore; or

(2) When taking off or landing at an aerodrome where the take-off or approach path is so disposed over water that in the event of a mishap there would be a likelihood of a ditching, unless it is equipped with life jackets equipped with a survivor locator light, for each person on board. Each life jacket must be stowed in a position easily accessible from the seat or berth of the person for whose use it is provided. Life jackets for infants may be substituted by other approved flotation devices equipped with a survivor locator light.

(b) Seaplanes and amphibians. An operator shall not operate a seaplane or an amphibian on water unless it is equipped with life jackets equipped with a survivor locator light, for each person on board. Each life jacket must be stowed in a position easily accessible from the seat or berth of the person for whose use it is provided. Life jackets for infants may be substituted by other approved flotation devices equipped with a survivor locator light.
OPS 1.830

Life-rafts and survival ELTs for extended overwater flights

(a) On overwater flights, an operator shall not operate an aeroplane at a distance away from land, which is suitable for making an emergency landing, greater than that corresponding to:

(1) 120 minutes at cruising speed or 400 nautical miles, whichever is the lesser, for aeroplanes capable of continuing the flight to an aerodrome with the critical power unit(s) becoming inoperative at any point along the route or planned diversions; or

(2) 30 minutes at cruising speed or 100 nautical miles, whichever is the lesser, for all other aeroplanes, unless the equipment specified in sub-paragraphs (b) and (c) below is carried.

(b) Sufficient life-rafts to carry all persons on board. Unless excess rafts of enough capacity are provided, the buoyancy and seating capacity beyond the rated capacity of the rafts must accommodate all occupants of the aeroplane in the event of a loss of one raft of the largest rated capacity. The life-rafts shall be equipped with:

(1) A survivor locator light; and

(2) Life saving equipment including means of sustaining life as appropriate to the flight to be undertaken; and

(c) At least two survival Emergency Locator Transmitters (ELT (S)) capable of transmitting on the distress frequencies prescribed in ICAO Annex X, Volume V, Chapter 2.

OPS 1.835

Survival equipment

An operator shall not operate an aeroplane across areas in which search and rescue would be especially difficult unless it is equipped with the following:

(a) Signalling equipment to make the pyrotechnical distress signals described in ICAO Annex II;

(b) At least one ELT (S) is capable of transmitting on the distress frequencies prescribed in ICAO Annex X, Volume V, Chapter 2; and

(c) Additional survival equipment for the route to be flown taking account of the number of persons on board except that the equipment specified in sub-paragraph (c) need not be carried when the aeroplane either:

(1) Remains within a distance from an area where search and rescue is not especially difficult corresponding to:

   (i) 120 minutes at the one engine inoperative cruising speed for aeroplanes capable of continuing the flight to an aerodrome with the critical power unit(s) becoming inoperative at any point along the route or planned diversions; or

   (ii) 30 minutes at cruising speed for all other aeroplanes,

   or,

(2) For aeroplanes certificated to the Certification Specifications in CS-25 or equivalent, no greater distance than that corresponding to 90 minutes at cruising speed from an area suitable for making an emergency landing.
OPS 1.840
Seaplanes and amphibians — Miscellaneous equipment

(a) An operator shall not operate a seaplane or an amphibian on water unless it is equipped with:

(1) A sea anchor and other equipment necessary to facilitate mooring, anchoring or manoeuvring the aircraft on water, appropriate to its size, weight and handling characteristics; and

(2) Equipment for making the sound signals prescribed in the International Regulations for preventing collisions at sea, where applicable.

Appendix 1 to OPS 1.715
Flight data recorders — 1 — List of parameters to be recorded

Table A1 — Aeroplanes with a maximum certificated take-off mass of over 5 700 kg

Note: The number in the left hand column reflect the Serial Numbers depicted in EUROCAE document ED55

<table>
<thead>
<tr>
<th>NO.</th>
<th>PARAMETER</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>TIME OR RELATIVE TIME COUNT</td>
</tr>
<tr>
<td>2</td>
<td>PRESSURE ALTITUDE</td>
</tr>
<tr>
<td>3</td>
<td>INDICATED AIRSPEED</td>
</tr>
<tr>
<td>4</td>
<td>HEADING</td>
</tr>
<tr>
<td>5</td>
<td>NORMAL ACCELERATION</td>
</tr>
<tr>
<td>6</td>
<td>PITCH ATTITUDE</td>
</tr>
<tr>
<td>7</td>
<td>ROLL ATTITUDE</td>
</tr>
<tr>
<td>8</td>
<td>MANUAL RADIO TRANSMISSION KEYING</td>
</tr>
<tr>
<td>9</td>
<td>PROPULSIVE THRUST/POWER ON EACH ENGINE AND COCKPIT THRUST/POWER LEVER POSITION IF APPLICABLE</td>
</tr>
<tr>
<td>10</td>
<td>TRAILING EDGE FLAP OR COCKPIT CONTROL SELECTION</td>
</tr>
<tr>
<td>11</td>
<td>LEADING EDGE FLAP OR COCKPIT CONTROL SELECTION</td>
</tr>
<tr>
<td>12</td>
<td>THRUST REVERSE STATUS</td>
</tr>
<tr>
<td>13</td>
<td>GROUND SPOILER POSITION AND/OR SPEED BRAKE SELECTION</td>
</tr>
<tr>
<td>14</td>
<td>TOTAL OR OUTSIDE AIR TEMPERATURE</td>
</tr>
<tr>
<td>15</td>
<td>AUTOPILOT, AUTOTHROTTLE AND AFCS MODE AND ENGAGEMENT STATUS</td>
</tr>
<tr>
<td>16</td>
<td>LATERAL ACCELERATION (BODY AXIS)</td>
</tr>
<tr>
<td>17</td>
<td>LATERAL ACCELERATION</td>
</tr>
</tbody>
</table>

Table A2 — Aeroplanes with a maximum certificated take-off mass of 5 700 kg or below

Note: The number in the left hand column reflect the Serial Numbers depicted in EUROCAE document ED55

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<tr>
<td>2</td>
<td>PRESSURE ALTITUDE</td>
</tr>
<tr>
<td>3</td>
<td>INDICATED AIRSPEED</td>
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<tr>
<td>4</td>
<td>HEADING</td>
</tr>
<tr>
<td>5</td>
<td>NORMAL ACCELERATION</td>
</tr>
<tr>
<td>6</td>
<td>PITCH ATTITUDE</td>
</tr>
<tr>
<td>7</td>
<td>ROLL ATTITUDE</td>
</tr>
<tr>
<td>8</td>
<td>MANUAL RADIO TRANSMISSION KEYING</td>
</tr>
<tr>
<td>9</td>
<td>PROPULSIVE THRUST/POWER ON EACH ENGINE AND COCKPIT THRUST/POWER LEVER POSITION IF APPLICABLE</td>
</tr>
</tbody>
</table>
Table B — Additional parameters for aeroplanes with a maximum certificated take-off mass of over 27 000 kg

<table>
<thead>
<tr>
<th>NO.</th>
<th>PARAMETER</th>
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</thead>
<tbody>
<tr>
<td>10</td>
<td>TRAILING EDGE FLAP OR COCKPIT CONTROL SELECTION</td>
</tr>
<tr>
<td>11</td>
<td>LEADING EDGE FLAP OR COCKPIT CONTROL SELECTION</td>
</tr>
<tr>
<td>12</td>
<td>THRUST REVERSE STATUS</td>
</tr>
<tr>
<td>13</td>
<td>GROUND SPOILER POSITION AND/OR SPEED BRAKE SELECTION</td>
</tr>
<tr>
<td>14</td>
<td>TOTAL OR OUTSIDE AIR TEMPERATURE</td>
</tr>
<tr>
<td>15</td>
<td>AUTOPILOT/AUTOTHROTTLE ENGAGEMENT STATUS</td>
</tr>
<tr>
<td>16</td>
<td>ANGLE OF ATTACK (IF A SUITABLE SENSOR IS AVAILABLE)</td>
</tr>
<tr>
<td>17</td>
<td>LONGITUDINAL ACCELERATION (BODY AXIS)</td>
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</table>

Note: The number in the left hand column reflect the Serial Numbers depicted in EUROCAE document ED55

Table C — Aeroplanes equipped with electronic display systems

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<th>NO.</th>
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<td>7</td>
<td>SELECTED ALTITUDE</td>
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<td>35</td>
<td>8</td>
<td>SELECTED SPEED</td>
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<tr>
<td>36</td>
<td>9</td>
<td>SELECTED MACH</td>
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<tr>
<td>37</td>
<td>10</td>
<td>SELECTED VERTICAL SPEED</td>
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<tr>
<td>38</td>
<td>11</td>
<td>SELECTED HEADING</td>
</tr>
<tr>
<td>39</td>
<td>12</td>
<td>SELECTED FLIGHT PATH</td>
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<tr>
<td>40</td>
<td>13</td>
<td>SELECTED DECISION HEIGHT</td>
</tr>
<tr>
<td>41</td>
<td>14</td>
<td>EFIS DISPLAY FORMAT</td>
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<tr>
<td>42</td>
<td>15</td>
<td>MULTI FUNCTION/ENGINE/ALERTS DISPLAY FORMAT</td>
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</table>
Appendix 1 to OPS 1.720
Flight data recorders — 2 — List of parameters to be recorded

Table A — Aeroplanes with a maximum certificated take-off mass of over 5 700 kg

<table>
<thead>
<tr>
<th>NO.</th>
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<tbody>
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<td>1</td>
<td>TIME OR RELATIVE TIME COUNT</td>
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<tr>
<td>2</td>
<td>PRESSURE ALTITUDE</td>
</tr>
<tr>
<td>3</td>
<td>INDICATED AIRSPEED</td>
</tr>
<tr>
<td>4</td>
<td>HEADING</td>
</tr>
<tr>
<td>5</td>
<td>NORMAL ACCELERATION</td>
</tr>
<tr>
<td>6</td>
<td>PITCH ATTITUDE</td>
</tr>
<tr>
<td>7</td>
<td>ROLL ATTITUDE</td>
</tr>
<tr>
<td>8</td>
<td>MANUAL RADIO TRANSMISSION KEYING UNLESS AN ALTERNATE MEANS TO SYNCHRONISE FDR AND CVR RECORDINGS IS PROVIDED</td>
</tr>
<tr>
<td>9</td>
<td>POWER ON EACH ENGINE</td>
</tr>
<tr>
<td>10</td>
<td>TRAILING EDGE FLAP OR COCKPIT CONTROL SELECTION</td>
</tr>
<tr>
<td>11</td>
<td>LEADING EDGE FLAP OR COCKPIT CONTROL SELECTION</td>
</tr>
<tr>
<td>12</td>
<td>THRUST REVERSE POSITION (FOR TURBOJET AEROPLANES ONLY)</td>
</tr>
<tr>
<td>13</td>
<td>GROUND SPOILER POSITION AND/OR SPEED BRAKE SELECTION</td>
</tr>
<tr>
<td>14</td>
<td>OUTSIDE AIR TEMPERATURE OR TOTAL AIR TEMPERATURE</td>
</tr>
<tr>
<td>15a</td>
<td>AUTOPILOT ENGAGEMENT STATUS</td>
</tr>
<tr>
<td>15b</td>
<td>AUTOPILOT OPERATING MODES, AUTO ThROTTLE AND AFCS SYSTEMS ENGAGEMENT STATUS AND OPERATING MODES</td>
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</table>

Table B — Additional parameters for aeroplanes with a maximum certificated take-off mass over 27 000 kg

<table>
<thead>
<tr>
<th>NO.</th>
<th>PARAMETER</th>
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<tbody>
<tr>
<td>16</td>
<td>LONGITUDINAL ACCELERATION</td>
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<td>17</td>
<td>LATERAL ACCELERATION</td>
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<tr>
<td>18</td>
<td>PRIMARY FLIGHT CONTROLS — CONTROL SURFACE POSITION AND/OR PILOT INPUT (PITCH, ROLL AND YAW)</td>
</tr>
<tr>
<td>19</td>
<td>PITCH TRIM POSITION</td>
</tr>
<tr>
<td>20</td>
<td>RADIO ALTITUDE</td>
</tr>
<tr>
<td>21</td>
<td>GLIDE PATH DEVIATION</td>
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<tr>
<td>22</td>
<td>LOCALISER DEVIATION</td>
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<tr>
<td>23</td>
<td>MARKER BEACON PASSAGE</td>
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<tr>
<td>24</td>
<td>MASTER WARNING</td>
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<tr>
<td>25</td>
<td>NAV 1 AND NAV 2 FREQUENCY SELECTION</td>
</tr>
<tr>
<td>26</td>
<td>DME 1 AND DME 2 DISTANCE</td>
</tr>
<tr>
<td>27</td>
<td>LANDING GEAR SQUAT SWITCH STATUS</td>
</tr>
<tr>
<td>28</td>
<td>GROUND PROXIMITY WARNING SYSTEM</td>
</tr>
<tr>
<td>29</td>
<td>ANGLE OF ATTACK</td>
</tr>
<tr>
<td>30</td>
<td>HYDRAULICS, EACH SYSTEM (LOW PRESSURE)</td>
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<td>31</td>
<td>NAVIGATION DATA</td>
</tr>
<tr>
<td>32</td>
<td>LANDING GEAR OR GEAR SELECTOR POSITION</td>
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</table>
Appendix 1 to OPS 1.725

Flight data recorders — 3 — List of parameters to be recorded

Table A — Aeroplanes with a maximum certificated take-off mass of over 5 700 kg

<table>
<thead>
<tr>
<th>NO.</th>
<th>PARAMETER</th>
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</thead>
<tbody>
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<td>2</td>
<td>PRESSURE ALTITUDE</td>
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<tr>
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<td>INDICATED AIRSPEED</td>
</tr>
<tr>
<td>4</td>
<td>HEADING</td>
</tr>
<tr>
<td>5</td>
<td>NORMAL ACCELERATION</td>
</tr>
</tbody>
</table>

Table B — Additional parameters for aeroplanes with a maximum certificated take-off mass of over 27 000 kg

<table>
<thead>
<tr>
<th>NO.</th>
<th>PARAMETER</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>PITCH ATTITUDE</td>
</tr>
<tr>
<td>7</td>
<td>ROLL ATTITUDE</td>
</tr>
<tr>
<td>8</td>
<td>MANUAL RADIO TRANSMISSION KEYING UNLESS AN ALTERNATE MEANS TO SYNCHRONISE THE FDR AND CVR RECORDINGS IS PROVIDED</td>
</tr>
<tr>
<td>9</td>
<td>POWER ON EACH ENGINE</td>
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<td>TRAILING EDGE FLAP OR COCKPIT CONTROL SELECTION</td>
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<tr>
<td>11</td>
<td>LEADING EDGE FLAP OR COCKPIT CONTROL SELECTION</td>
</tr>
<tr>
<td>12</td>
<td>THRUST REVERSE POSITION (FOR TURBOJET AEROPLANES ONLY)</td>
</tr>
<tr>
<td>13</td>
<td>GROUND SPOILER POSITION AND/OR SPEED BRAKE SELECTION</td>
</tr>
<tr>
<td>14</td>
<td>OUTSIDE AIR TEMPERATURE OR TOTAL AIR TEMPERATURE</td>
</tr>
<tr>
<td>15a</td>
<td>AUTOPILOT ENGAGEMENT STATUS</td>
</tr>
<tr>
<td>15b</td>
<td>AUTOPILOT OPERATING MODES, AUTOTHROTTLE AND AFCS, SYSTEMS ENGAGEMENT STATUS AND OPERATING MODES</td>
</tr>
<tr>
<td>16</td>
<td>LATERAL ACCELERATION</td>
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<tr>
<td>17</td>
<td>PRIMARY FLIGHT CONTROLS — CONTROL SURFACE POSITION AND/OR PILOT INPUT (PITCH, ROLL AND YAW)</td>
</tr>
<tr>
<td>18</td>
<td>PITCH TRIM POSITION</td>
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</tr>
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<td>GLIDE PATH DEVIATION</td>
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<td>LOCALISER DEVIATION</td>
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<td>MARKER BEACON PASSAGE</td>
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<td>ANGLE OF ATTACK</td>
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<td>24</td>
<td>NAV 1 AND NAV 2 FREQUENCY SELECTION</td>
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<tr>
<td>25</td>
<td>DME 1 AND DME 2 DISTANCE</td>
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<tr>
<td>26</td>
<td>LANDING GEAR SQUAT SWITCH STATUS</td>
</tr>
<tr>
<td>27</td>
<td>GROUND PROXIMITY WARNING SYSTEM</td>
</tr>
<tr>
<td>28</td>
<td>NAVIGATION DATA (LATITUDE, LONGITUDE, GROUND SPEED AND DRIFT ANGLE)</td>
</tr>
<tr>
<td>29</td>
<td>LANDING GEAR OR GEAR SELECTOR POSITION</td>
</tr>
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</table>
Appendix 1 to OPS 1.770

Oxygen — Minimum Requirements for Supplemental Oxygen for Pressurised Aeroplanes during and following Emergency Descent

Table 1

<table>
<thead>
<tr>
<th>(a)</th>
<th>(b)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUPPLY FOR: DURATION AND CABIN PRESSURE ALTITUDE</td>
<td>DURATION AND CABIN PRESSURE ALTITUDE</td>
</tr>
<tr>
<td>1. All occupants of flight deck seats on flight deck duty</td>
<td>Entire flight time when the cabin pressure altitude exceeds 13 000 ft and entire flight time when the cabin pressure altitude exceeds 10 000 ft but does not exceed 13 000 ft after the first 30 minutes at those altitudes, but in no case less than:</td>
</tr>
<tr>
<td></td>
<td>(i) 30 minutes for aeroplanes certificated to fly at altitudes not exceeding 25 000 ft (Note 2)</td>
</tr>
<tr>
<td></td>
<td>(ii) 2 hours for aeroplanes certificated to fly at altitudes more than 25 000 ft (Note 3).</td>
</tr>
<tr>
<td>2. All required cabin crew members</td>
<td>Entire flight time when cabin pressure altitude exceeds 13 000 ft but not less than 30 minutes (Note 2), and entire flight time when cabin pressure altitude is greater than 10 000 ft but does not exceed 13 000 ft after the first 30 minutes at these altitudes</td>
</tr>
<tr>
<td>3. 100 % of passengers (Note 5)</td>
<td>Entire flight time when the cabin pressure altitude exceeds 15 000 ft but in no case less than 10 minutes (Note 4).</td>
</tr>
<tr>
<td>4. 30 % of passengers (Note 5)</td>
<td>Entire flight time when the cabin pressure altitude exceeds 14 000 ft but does not exceed 15 000 ft</td>
</tr>
<tr>
<td>5. 10 % of passengers (Note 5).</td>
<td>Entire flight time when the cabin pressure altitude exceeds 10 000 ft but does not exceed 14 000 ft after the first 30 minutes at these altitudes</td>
</tr>
</tbody>
</table>

Note 1: The supply provided must take account of the cabin pressure altitude and descent profile for the routes concerned.

Note 2: The required minimum supply is that quantity of oxygen necessary for a constant rate of descent from the aeroplane's maximum certificated operating altitude to 10 000 ft in 10 minutes and followed by 20 minutes at 10 000 ft.

Note 3: The required minimum supply is that quantity of oxygen necessary for a constant rate of descent from the aeroplane's maximum certificated operating altitude to 10 000 ft in 10 minutes and followed by 110 minutes at 10 000 ft. The oxygen required in OPS 1.780 (a)(1) may be included in determining the supply required.

Note 4: The required minimum supply is that quantity of oxygen necessary for a constant rate of descent from the aeroplane's maximum certificated operating altitude to 15 000 ft in 10 minutes.

Note 5: For the purpose of this table “passengers” means passengers actually carried and includes infants.

Appendix 1 to OPS 1.775

Supplemental Oxygen for non-pressurised Aeroplanes

Table 1

<table>
<thead>
<tr>
<th>(a)</th>
<th>(b)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUPPLY FOR: DURATION AND PRESSURE ALTITUDE</td>
<td>DURATION AND PRESSURE ALTITUDE</td>
</tr>
<tr>
<td>1. All occupants of flight deck seats on flight deck duty</td>
<td>Entire flight time at pressure altitudes above 10 000 ft</td>
</tr>
<tr>
<td>2. All required cabin crew members</td>
<td>Entire flight time at pressure altitudes above 13 000 ft and for any period exceeding 30 minutes at pressure altitudes above 10 000 ft but not exceeding 13 000 ft.</td>
</tr>
</tbody>
</table>
SUBPART L

COMMUNICATION AND NAVIGATION EQUIPMENT

OPS 1.845

General introduction

(a) An operator shall ensure that a flight does not commence unless the communication and navigation equipment required under this Subpart is:

1. Approved and installed in accordance with the requirements applicable to them, including the minimum performance standard and the operational and airworthiness requirements;

2. Installed such that the failure of any single unit required for either communication or navigation purposes, or both, will not result in the failure of another unit required for communications or navigation purposes;

3. In operable condition for the kind of operation being conducted except as provided in the MEL (OPS 1.030 refers); and

4. So arranged that if equipment is to be used by one flight crew member at his/her station during flight it must be readily operable from his/her station. When a single item of equipment is required to be operated by more than one flight crew member it must be installed so that the equipment is readily operable from any station at which the equipment is required to be operated.

(b) Communication and navigation equipment minimum performance standards are those prescribed in the applicable European Technical Standard Orders (ETSO) as listed in applicable specifications on European Technical Standard Orders (CS-TSO), unless different performance standards are prescribed in the operational or airworthiness codes. Communication and navigation equipment complying with design and performance specifications other than ETSO on the date of OPS implementation may remain in service, or be installed, unless additional requirements are prescribed in this Subpart. Communication and navigation equipment which has already been approved does not need to comply with a revised ETSO or a revised specification, other than ETSO, unless a retroactive requirement is prescribed.

OPS 1.850

Radio Equipment

(a) An operator shall not operate an aeroplane unless it is equipped with radio required for the kind of operation being conducted.

(b) Where two independent (separate and complete) radio systems are required under this Subpart, each system must have an independent antenna installation except that, where rigidly supported non-wire antennae or other antenna installations of equivalent reliability are used, only one antenna is required.

(c) The radio communication equipment required to comply with paragraph (a) above must also provide for communications on the aeronautical emergency frequency 121.5 MHz.
An operator shall not operate an aeroplane under IFR unless it is equipped with an audio selector panel accessible to each required flight crew member.

Radio equipment for operations under VFR over routes navigated by reference to visual landmarks

An operator shall not operate an aeroplane under VFR over routes that can be navigated by reference to visual landmarks, unless it is equipped with the radio communication equipment necessary under normal operating conditions to fulfil the following:

(a) Communicate with appropriate ground stations;
(b) Communicate with appropriate air traffic control facilities from any point in controlled airspace within which flights are intended; and
(c) Receive meteorological information.

Communication and Navigation equipment for operations under IFR, or under VFR over routes not navigated by reference to visual landmarks

(a) An operator shall not operate an aeroplane under IFR, or under VFR over routes that cannot be navigated by reference to visual landmarks, unless the aeroplane is equipped with radio communication and SSR transponder and navigation equipment in accordance with the requirements of air traffic services in the area(s) of operation.

(b) Radio Equipment. An operator shall ensure that radio equipment comprises not less than:

(1) Two independent radio communication systems necessary under normal operating conditions to communicate with an appropriate ground station from any point on the route including diversions; and
(2) SSR transponder equipment as required for the route being flown.

(c) Navigation equipment. An operator shall ensure that navigation equipment

(1) Comprises not less than:

(i) One VOR receiving system, one ADF system, one DME except that an ADF system need not be installed provided that the use of the ADF is not required in any phase of the planned flight;
(ii) One ILS or MLS where ILS or MLS is required for approach navigation purposes;
(iii) One Marker Beacon receiving system where a Marker Beacon is required for approach navigation purposes;
(iv) An Area Navigation System when area navigation is required for the route being flown;
(v) An additional DME system on any route, or part thereof, where navigation is based only on DME signals;
(vi) An additional VOR receiving system on any route, or part thereof, where navigation is based only on VOR signals;
(vii) ADF system on any route, or part thereof, where navigation is based only on NDB signals; or
(2) Complies with the Required Navigation Performance (RNP) Type for operation in the airspace concerned.

(d) An operator may operate an aeroplane that is not equipped with an ADF or with the navigation equipment specified in sub-paragraph(s) (c)(i)(vi) and/or (c)(i)(vii) above, provided that it is equipped with alternative equipment authorised, for the route being flown, by the Authority. The reliability and the accuracy of alternative equipment must allow safe navigation for the intended route.

(e) An operator shall ensure that VHF communication equipment, ILS Localiser and VOR receivers installed on aeroplanes to be operated in IFR are of a type that has been approved as complying with the FM immunity performance standards.

**OPS 1.866**

Transponder equipment

(a) An operator shall not operate an aeroplane unless it is equipped with:

(1) A pressure altitude reporting SSR transponder; and

(2) any other SSR transponder capability required for the route being flown.

**OPS 1.870**

Additional navigation equipment for operations in MNPS airspace

(a) An operator shall not operate an aeroplane in MNPS airspace unless it is equipped with navigation equipment that complies with minimum navigation performance specifications prescribed in ICAO Doc 7030 in the form of Regional Supplementary Procedures.

(b) The navigation equipment required by this paragraph must be visible and usable by either pilot seated at his/her duty station.

(c) For unrestricted operation in MNPS airspace an aeroplane must be equipped with two independent Long Range Navigation Systems (LRNS).

(d) For operation in MNPS airspace along notified special routes an aeroplane must be equipped with one Long Range Navigation System (LRNS), unless otherwise specified.

**OPS 1.872**

Equipment for operation in defined airspace with Reduced Vertical Separation Minima (RVSM)

(a) An operator shall ensure that aeroplanes operated in RVSM airspace are equipped with:

(1) Two independent altitude measurement systems

(2) An altitude alerting system

(3) An automatic altitude control system; and

(4) A secondary surveillance radar (SSR) transponder with altitude reporting system that can be connected to the altitude measurement system in use for altitude keeping.
SUBPART M

AEROPLANE MAINTENANCE

OPS 1.875
General

(a) An operator shall not operate an aeroplane unless it is maintained and released to service by an organisation appropriately approved/accepted in accordance with Part 145 except that pre-flight inspections need not necessarily be carried out by the Part 145 organisation.

(b) Aeroplane maintenance requirements needed to comply with the operator certification requirements in OPS 1.180 are those set up in Part M.

SUBPART N

FLIGHT CREW

OPS 1.940
Composition of Flight Crew

(See Appendices 1 & 2 to OPS 1.940)

(a) An operator shall ensure that:

1. The composition of the flight crew and the number of flight crew members at designated crew stations are both in compliance with, and no less than the minimum specified in, the Aeroplane Flight Manual (AFM);

2. The flight crew includes additional flight crew members when required by the type of operation, and is not reduced below the number specified in the Operations Manual;

3. All flight crew members hold an applicable and valid licence acceptable to the Authority and are suitably qualified and competent to conduct the duties assigned to them;

4. Procedures are established, acceptable to the Authority, to prevent the crewing together of inexperienced flight crew members;

5. One pilot amongst the flight crew, qualified as a pilot-in-command in accordance with the requirements governing Flight Crew Licenses, is designated as the commander who may delegate the conduct of the flight to another suitably qualified pilot; and

6. When a dedicated System Panel Operator is required by the AFM, the flight crew includes one crew member who holds a Flight Engineer’s licence or is a suitably qualified flight crew member and acceptable to the Authority.

7. When engaging the services of flight crew members who are self employed and/or working on a freelance or part time basis, the requirements of Subpart N are complied with. In this respect, particular attention must be paid to the total number of aircraft types or variants that a flight crew member may fly for the purposes of commercial air transportation, which must not exceed the requirements prescribed in OPS 1.980 and OPS 1.981, including when his/her services are engaged by another operator. For crew members serving the operator as a commander, initial operator’s Crew Resource Management (CRM) training shall be completed before commencing unsupervised line flying unless the crew member has previously completed an initial operator’s CRM course.
(b) Minimum flight crew for operations under IFR or at night. For operations under IFR or at night, an operator shall ensure that:

(1) For all turbo-propeller aeroplanes with a maximum approved passenger seating configuration of more than 9 and for all turbo-jet aeroplanes, the minimum flight crew is 2 pilots; or

(2) Aeroplanes other than those covered by sub-paragraph (b)(1) above are operated by a single pilot provided that the requirements of Appendix 2 to OPS 1.940 are satisfied. If the requirements of Appendix 2 are not satisfied, the minimum flight crew is 2 pilots.

JAR-OPS 1.943
Initial Operator's Crew Resource Management (CRM) training

(a) When a flight crew member has not previously completed initial Operator's Crew Resource Management (CRM) training (either new employees or existing staff), then the operator shall ensure that the flight crew member completes an initial CRM training course. New employees shall complete initial Operator's CRM Training within their first year of joining an operator.

(b) If the flight crew member has not previously been trained in Human Factors then a theoretical course, based on the human performance and limitations programme for the ATPL (see the requirements applicable to the issue of Flight Crew Licences) shall be completed before the initial Operator's CRM training or combined with the initial Operator's CRM training.

(c) Initial CRM training shall be conducted by at least one CRM trainer acceptable to the Authority who may be assisted by experts in order to address specific areas.

(d) Initial CRM training is conducted in accordance with a detailed course syllabus included in the Operations Manual.

OPS 1.945
Conversion Training and checking

(See Appendix 1 to OPS 1.945)

(a) An operator shall ensure that:

(1) A flight crew member completes a Type Rating course which satisfies the requirements applicable to the issue of Flight Crew Licences when changing from one type of aeroplane to another type or class for which a new type or class rating is required;

(2) A flight crew member completes an operator's conversion course before commencing unsupervised line flying:

   (i) When changing to an aeroplane for which a new type or class rating is required; or

   (ii) When changing operator;

(3) Conversion training is conducted by suitably qualified personnel in accordance with a detailed course syllabus included in the Operations Manual. The operator shall ensure that the personnel integrating elements of CRM into conversion training are suitably qualified;

(4) The amount of training required by the operator's conversion course is determined after due note has been taken of the flight crew member's previous training as recorded in his/her training records prescribed in OPS 1.985;
(5) The minimum standards of qualification and experience required of flight crew members before undertaking conversion training are specified in the Operations Manual;

(6) Each flight crew member undergoes the checks required by OPS 1.965(b) and the training and checks required by OPS 1.965(d) before commencing line flying under supervision;

(7) Upon completion of line flying under supervision, the check required by OPS 1.965(c) is undertaken;

(8) Once an operator's conversion course has been commenced, a flight crew member does not undertake flying duties on another type or class until the course is completed or terminated; and

(9) Elements of CRM training are integrated into the conversion course.

(b) In the case of changing aeroplane type or class, the check required by OPS 1.965(b) may be combined with the type or class rating skill test under the requirements applicable to the issue of Flight Crew Licences.

c) The operator's conversion course and the Type or Class Rating course required for the issue of Flight Crew Licences may be combined.

OPS 1.950

Differences Training and Familiarisation Training

(a) An operator shall ensure that a flight crew member completes:

(1) Differences training which requires additional knowledge and training on an appropriate training device for the aeroplane:

   (i) When operating another variant of an aeroplane of the same type or another type of the same class currently operated; or

   (ii) When changing equipment and/or procedures on types or variants currently operated;

(2) Familiarisation training which requires the acquisition of additional knowledge:

   (i) When operating another aeroplane of the same type or variant; or

   (ii) When changing equipment and/or procedures on types or variants currently operated.

(b) The operator shall specify in the Operations Manual when such differences training or familiarisation training is required.

OPS 1.955

Nomination as commander

(a) An operator shall ensure that for upgrade to commander from co-pilot and for those joining as commanders:

(1) A minimum level of experience, acceptable to the Authority, is specified in the Operations Manual; and

(2) For multi-crew operations, the pilot completes an appropriate command course.

(b) The command course required by sub-paragraph (a)(2) above must be specified in the Operations Manual and include at least the following:

(1) Training in an STD (including Line Orientated Flying Training) and/or flying training;

(2) An operator proficiency check operating as commander;
(3) Commander's responsibilities;

(4) Line training in command under supervision. A minimum of 10 sectors is required for pilots already qualified on the aeroplane type;

(5) Completion of a commander's line check as prescribed in OPS 1.965(c) and route and aerodrome competence qualifications as prescribed in OPS 1.975; and

(6) Elements of Crew Resource Management.

OPS 1.960

Commanders holding a Commercial Pilot Licence

(a) An operator shall ensure that:

(1) A Commercial Pilot Licence (CPL) holder does not operate as a commander of an aeroplane certificated in the Aeroplane Flight Manual for single pilot operations unless:

   (i) When conducting passenger carrying operations under Visual Flight Rules (VFR) outside a radius of 50 nm from an aerodrome of departure, the pilot has a minimum of 500 hours total flight time on aeroplanes or holds a valid Instrument Rating; or

   (ii) When operating on a multi-engine type under Instrument Flight Rules (IFR), the pilot has a minimum of 700 hours total flight time on aeroplanes which includes 400 hours as pilot-in-command (in accordance with the requirements governing Flight Crew Licenses) of which 100 hours have been under IFR including 40 hours multi-engine operation. The 400 hours as pilot-in-command may be substituted by hours operating as co-pilot on the basis of two hours co-pilot is equivalent to one hour as pilot-in-command provided those hours were gained within an established multi-pilot crew system prescribed in the Operations Manual;

(2) In addition to sub-paragraph (a)(1)(ii) above, when operating under IFR as a single pilot, the requirements prescribed in Appendix 2 to OPS 1.940 are satisfied; and

(3) In multi-pilot crew operations, in addition to sub-paragraph (a)(1) above, and prior to the pilot operating as commander, the command course prescribed in OPS 1.955(a)(2) is completed.

OPS 1.965

Recurrent Training and Checking

(See Appendices 1 & 2 to OPS 1.965)

(a) General.

An operator shall ensure that:

(1) Each flight crew member undergoes recurrent training and checking and that all such training and checking is relevant to the type or variant of aeroplane on which the flight crew member operates;

(2) A recurrent training and checking programme is established in the Operations Manual and approved by the Authority;

(3) Recurrent training is conducted by the following personnel:

   (i) Ground and refresher training — by suitably qualified personnel;

   (ii) Aeroplane/STD training — by a Type Rating Instructor (TRI), Class Rating Instructor (CRI) or in the case of the STD content, a Synthetic Flight Instructor (SFI), providing that the TRI, CRI or SFI satisfies the operator's experience and knowledge requirements sufficient to instruct on the items specified in paragraphs (a)(1)(i)(A) and (B) of Appendix 1 to OPS 1.965.
(iii) Emergency and safety equipment training — by suitably qualified personnel; and

(iv) Crew Resource Management (CRM);

(A) Integration of CRM elements into all the phases of the recurrent training — by all the personnel conducting recurrent training. The operator shall ensure that all personnel conducting recurrent training are suitably qualified to integrate elements of CRM into this training:

(B) Modular CRM training — by at least one CRM trainer acceptable to the Authority who may be assisted by experts in order to address specific areas.

(4) Recurrent checking is conducted by the following personnel:

(i) Operator proficiency checks — by a Type Rating Examiner (TRE), Class Rating Examiner (CRE) or, if the check is conducted in a STD, a TRE, CRE or a Synthetic Flight Examiner (SFE), trained in CRM concepts and the assessment of CFM skills;

(ii) Line checks — by suitably qualified commanders nominated by the operator and acceptable to the Authority;

(iii) Emergency and safety equipment checking — by suitably qualified personnel.

(b) Operator Proficiency Check

(1) An operator shall ensure that:

(i) Each flight crew member undergoes operator proficiency checks to demonstrate his/her competence in carrying out normal, abnormal and emergency procedures; and

(ii) The check is conducted without external visual reference when the flight crew member will be required to operate under IFR;

(iii) Each flight crew member undergoes operator proficiency checks as part of a normal flight crew complement.

(2) The period of validity of an operator proficiency check shall be 6 calendar months in addition to the remainder of the month of issue. If issued within the final 3 calendar months of validity of a previous operator proficiency check, the period of validity shall extend from the date of issue until 6 calendar months from the expiry date of that previous operator proficiency check.

(c) Line Check.

An operator shall ensure that each flight crew member undergoes a line check on the aeroplane to demonstrate his/her competence in carrying out normal line operations described in the Operations Manual. The period of validity of a line check shall be 12 calendar months, in addition to the remainder of the month of issue. If issued within the final 3 calendar months of validity of a previous line check the period of validity shall extend from the date of issue until 12 calendar months from the expiry date of that previous line check.

(d) Emergency and Safety Equipment training and checking.

An operator shall ensure that each flight crew member undergoes training and checking on the location and use of all emergency and safety equipment carried. The period of validity of an emergency and safety equipment check shall be 12 calendar months in addition to the remainder of the month of issue. If issued within the final 3 calendar months of validity of a previous emergency and safety check, the period of validity shall extend from the date of issue until 12 calendar months from the expiry date of that previous emergency and safety equipment check.
(e) CRM.

An operator shall ensure that:

(1) Elements of CRM are integrated into all appropriate phases of the recurrent training, and;

(2) Each flight crew member undergoes specific modular CRM training. All major topics of CRM training shall be covered over a period not exceeding 3 years;

(f) Ground and Refresher training.

An operator shall ensure that each flight crew member undergoes ground and refresher training at least every 12 calendar months. If the training is conducted within 3 calendar months prior to the expiry of the 12 calendar months period, the next ground and refresher training must be completed within 12 calendar months of the original expiry date of the previous ground and refresher training.

(g) Aeroplane/STD training.

An operator shall ensure that each flight crew member undergoes aeroplane/STD training at least every 12 calendar months. If the training is conducted within 3 calendar months prior to the expiry of the 12 calendar months period, the next aeroplane/STD training must be completed within 12 calendar months of the original expiry date of the previous aeroplane/STD training.

OPS 1.968
Pilot qualification to operate in either pilot's seat

(See Appendix 1 to OPS 1.968)

(a) An operator shall ensure that:

(1) A pilot who may be assigned to operate in either pilot's seat completes appropriate training and checking; and

(2) The training and checking programme is specified in the Operations Manual and is acceptable to the Authority.

OPS 1.970
Recent experience

(a) An operator shall ensure that:

(1) A pilot is not assigned to operate an aeroplane as part of the minimum certificated crew, either as pilot flying or pilot non-flying unless he/she has carried out three take-offs and three landings in the previous 90 days as pilot flying in an aeroplane, or in a flight simulator of the same type/class.

(2) A pilot who does not hold a valid instrument rating is not assigned to operate an aeroplane at night as commander unless he/she has carried out at least one landing at night in the preceding 90 days as pilot flying in an aeroplane, or in a flight simulator, of the same type/class.

(b) The 90-day period prescribed in sub-paragraphs (a)(1) and (2) above may be extended up to a maximum of 120 days by line flying under the supervision of a Type Rating Instructor or Examiner. For periods beyond 120 days, the recency requirement is satisfied by a training flight or use of a Flight Simulator or the aeroplane type to be used.
(a) An operator shall ensure that, prior to being assigned as commander or as pilot to whom the conduct of the flight may be delegated by the commander, the pilot has obtained adequate knowledge of the route to be flown and of the aerodromes (including alternates), facilities and procedures to be used.

(b) The period of validity of the route and aerodrome competence qualification shall be 12 calendar months in addition to the remainder of:

(1) The month of qualification; or

(2) The month of the latest operation on the route or to the aerodrome.

(c) Route and aerodrome competence qualification shall be revalidated by operating on the route or to the aerodrome within the period of validity prescribed in sub-paragraph (b) above.

(d) If revalidated within the final 3 calendar months of the validity of the previous route and aerodrome competence qualification, the period of validity shall extend from the date of revalidation until 12 calendar months from the expiry date of that previous route and aerodrome competence qualification.

OPS 1.978

Advanced Qualification Programme

(a) The periods of validity of OPS 1.965 and 1.970 may be extended, where the Authority has approved an Advanced Qualification Programme established by the operator.

(b) The Advanced Qualification Programme must contain training and checking which establishes and maintains a proficiency that is not less than the provisions prescribed in OPS 1.945, 1.965 and 1.970.

OPS 1.980

Operation on more than one type or variant

(See Appendix 1 to OPS 1.980)

(a) An operator shall ensure that a flight crew member does not operate on more than one type or variant unless the flight crew member is competent to do so.

(b) When considering operations of more than one type or variant, an operator shall ensure that the differences and/or similarities of the aeroplanes concerned justify such operations, taking account of the following:

(1) The level of technology;

(2) Operational procedures;

(3) Handling characteristics.

(c) An Operator shall ensure that a flight crew member operating more than one type or variant complies with all of the requirements prescribed in Subpart N for each type or variant unless the Authority has approved the use of credit(s) related to the training, checking and recent experience requirements.
(d) An operator shall specify appropriate procedures and/or operational restrictions, approved by the Authority, in the Operations Manual, for any operation on more than one type or variant covering:

1. The flight crew members’ minimum experience level;
2. The minimum experience level on one type or variant before beginning training for and operation of another type or variant;
3. The process whereby flight crew qualified on one type or variant will be trained and qualified on another type or variant;
4. All applicable recent experience requirements for each type or variant.

**OPS 1.981**
Operation of helicopter and aeroplane

(a) When a flight crew member operates both helicopters and aeroplanes:

1. An operator shall ensure that operations of helicopter and aeroplane are limited to one type of each.
2. The operator shall specify appropriate procedures and/or operational restrictions, approved by the Authority, in the Operations Manual.

**OPS 1.985**
Training Records

(a) An operator shall:

1. Maintain records of all training, checking and qualification prescribed in OPS 1.945, 1.955, 1.965, 1.968 and 1.975 undertaken by a flight crew member; and
2. Make the records of all conversion courses and recurrent training and checking available, on request, to the flight crew member concerned.

**Appendix 1 to OPS 1.940**
In-flight relief of flight crew members

(a) A flight crew member may be relieved in flight of his/her duties at the controls by another suitably qualified flight crew member.

(b) Relief of the Commander

1. The commander may delegate conduct of the flight to:
   (i) Another qualified commander; or
   (ii) For operations only above FL 200, a pilot qualified as detailed in sub-paragraph (c) below.

(c) Minimum requirements for a pilot relieving the commander:

1. Valid Airline Transport Pilot Licence;
2. Conversion training and checking (including Type Rating training) as prescribed in OPS 1.945;
3. All recurrent training and checking as prescribed in OPS 1.965 and OPS 1.968; and
4. Route competence qualification as prescribed in OPS 1.975.
(d) Relief of the co-pilot

(1) The co-pilot may be relieved by:

(i) Another suitably qualified pilot; or

(ii) A cruise relief co-pilot qualified as detailed in sub-paragraph (e) below.

(e) Minimum requirements for Cruise Relief Co-Pilot

(1) Valid Commercial Pilot Licence with Instrument Rating;

(2) Conversion training and checking, including Type Rating training, as prescribed in OPS 1.945 except the requirement for take-off and landing training;

(3) All recurrent training and checking as prescribed in OPS 1.965 except the requirement for take-off and landing training; and

(4) To operate in the role of co-pilot in the cruise only and not below FL 200.

(5) Recent experience as prescribed in OPS 1.970 is not required. The pilot shall, however, carry out flight simulator recency and refresher flying skill training at intervals not exceeding 90 days. This refresher training may be combined with the training prescribed in OPS 1.965.

(f) Relief of the system panel operator. A system panel operator may be relieved in flight by a crew member who holds a Flight Engineer's licence or by a flight crew member with a qualification acceptable to the Authority.

Appendix 2 to OPS 1.940

Single pilot operations under IFR or at night

(a) Aeroplanes referred to in OPS 1.940(b)(2) may be operated by a single pilot under IFR or at night when the following requirements are satisfied:

(1) The operator shall include in the Operations Manual a pilot's conversion and recurrent training programme which includes the additional requirements for a single pilot operation;

(2) In particular, the cockpit procedures must include:

(i) Engine management and emergency handling;

(ii) Use of normal, abnormal and emergency checklist;

(iii) ATC communication;

(iv) Departure and approach procedures;

(v) Autopilot management; and

(vi) Use of simplified in-flight documentation;

(3) The recurrent checks required by OPS 1.965 shall be performed in the single-pilot role on the type or class of aeroplane in an environment representative of the operation;

(4) The pilot shall have a minimum of 50 hours flight time on the specific type or class of aeroplane under IFR of which 10 hours is as commander; and

(5) The minimum required recent experience for a pilot engaged in a single-pilot operation under IFR or at night shall be 5 IFR flights, including 3 instrument approaches, carried out during the preceding 90 days on the type or class of aeroplane in the single-pilot role. This requirement may be replaced by an IFR instrument approach check on the type or class of aeroplane.
Appendix 1 to OPS 1.945
Operator’s Conversion Course

(a) An operator’s conversion course shall include:
   (1) Ground training and checking including aeroplane systems, normal, abnormal and emergency procedures;
   (2) Emergency and safety equipment training and checking which must be completed before aeroplane training commences;
   (3) Aeroplane/flight simulator training and checking; and
   (4) Line flying under supervision and line check.

(b) The conversion course shall be conducted in the order set out in sub-paragraph (a) above.

(c) Following completion of a Zero Flight Time Conversion Course a pilot shall:
   (1) Commence line flying under supervision within 15 days; and
   (2) Conduct his/her initial four take-offs and landings in the aeroplane under supervision of a TRI (A) occupying a pilot’s seat.

(d) Elements of Crew Resource Management shall be integrated into the conversion course, and conducted by suitably qualified personnel.

(e) When a flight crew member has not previously completed an operator’s conversion course, the operator shall ensure that in addition to sub-paragraph (a) above, the flight crew member undergoes general first aid training and, if applicable, ditching procedures training using the equipment in water.

Appendix 1 to OPS 1.965
Recurrent training and checking — Pilots

(a) Recurrent Training. Recurrent training shall comprise:
   (1) Ground and refresher training:
      (i) The ground and refresher training programme shall include:
         (A) Aeroplane systems;
         (B) Operational procedures and requirements including ground de-/anti-icing and pilot incapacitation; and
         (C) Accident/Incident and occurrence review.
      (ii) Knowledge of the ground and refresher training shall be verified by a questionnaire or other suitable methods.
   (2) Aeroplane/STD training:
      (i) The aeroplane/STD training programme shall be established such that all major failures of aeroplane systems and associated procedures will have been covered in the preceding 3-year period.
      (ii) When engine-out manoeuvres are carried out in an aeroplane, the engine failure shall be simulated.
      (iii) Aeroplane/STD training may be combined with the operator proficiency check.
   (3) Emergency and Safety Equipment Training:
      (i) The emergency and safety equipment training programme may be combined with emergency and safety equipment checking and shall be conducted in an aeroplane or a suitable alternative training device.
(ii) Every year the emergency and safety equipment training programme must include the following:

(A) Actual donning of a lifejacket where fitted;

(B) Actual donning of protective breathing equipment where fitted;

(C) Actual handling of fire extinguishers;

(D) Instruction on the location and use of all emergency and safety equipment carried on the aeroplane;

(E) Instruction on the location and use of all types of exits; and

(F) Security procedures.

(iii) Every 3 years the programme of training must include the following:

(A) Actual operation of all types of exits;

(B) Demonstration of the method used to operate a slide where fitted;

(C) Actual fire-fighting using equipment representative of that carried in the aeroplane on an actual or simulated fire except that, with Halon extinguishers, an alternative method acceptable to the Authority may be used;

(D) The effects of smoke in an enclosed area and actual use of all relevant equipment in a simulated smoke-filled environment;

(E) Actual handling of pyrotechnics, real or simulated, where fitted; and

(F) Demonstration in the use of the life-raft(s) where fitted.

(4) Crew Resource Management training

(i) Elements of CRM shall be integrated into all appropriate phases of recurrent training; and

(ii) A specific modular CRM training programme shall be established such that all major topics of CRM training are covered over a period not exceeding 3 years, as follows:

(A) Human error and reliability, error chain, error prevention and detection;

(B) Company safety culture, SOPs, organisational factors;

(C) Stress, stress management, fatigue and vigilance;

(D) Information acquisition and processing, situation awareness, workload management;

(E) Decision making;

(F) Communication and coordination inside and outside the cockpit;

(G) Leadership and team behaviour, synergy;

(H) Automation and philosophy of the use of Automation (if relevant to the type);

(I) Specific type-related differences;

(J) Case based studies;

(K) Additional areas which warrant extra attention, as identified by the accident prevention and flight safety programme (see OPS 1.037).
(b) Recurrent checking. Recurrent checking shall comprise:

(1) Operator proficiency checks:

   (i) Where applicable, operator proficiency checks shall include the following manoeuvres:

   (A) Rejected take-off when a flight simulator is available, otherwise touch drills only;

   (B) Take-off with engine failure between V₁ and V₂ or as soon as safety considerations permit;

   (C) Precision instrument approach to minima with, in the case of multi-engined aeroplanes, one engine inoperative;

   (D) Non-precision approach to minima;

   (E) Missed approach on instruments from minima with, in the case of multi-engined aeroplanes, one engine inoperative; and

   (F) Landing with one engine inoperative. For single-engined aeroplanes a practice forced landing is required.

   (ii) When engine out manoeuvres are carried out in an aeroplane, the engine failure must be simulated.

   (iii) In addition to the checks prescribed in sub-paragraphs (i)(A) to (F) above, the requirements governing the issue of flight crew licences must be completed every 12 months and may be combined with the operator proficiency check.

   (iv) For a pilot operating VFR only, the checks prescribed in sub-paragraphs (i)(C) to (E) above may be omitted except for an approach and go-around in a multi-engine aeroplane with one engine inoperative.

   (v) Operator proficiency checks must be conducted by a Type Rating Examiner.

(2) Emergency and safety equipment checks. The items to be checked shall be those for which training has been carried out in accordance with sub-paragraph (a)(3) above.

(3) Line checks:

   (i) Line checks must establish the ability to perform satisfactorily a complete line operation including pre-flight and post-flight procedures and use of the equipment provided, as specified in the Operations Manual.

   (ii) The flight crew must be assessed on their Crew Resource Management CRM skills in accordance with a methodology acceptable to the Authority and published in the Operations Manual. The purpose of such assessment is to:

       (A) Provide feedback to the crew collectively and individually and serve to identify retraining; and

       (B) Be used to improve the CRM training system.

   (iii) When pilots are assigned duties as pilot flying and pilot non-flying they must be checked in both functions.
(iv) Line checks must be conducted by commanders nominated by the operator and acceptable to the Authority. The person conducting the line check, who is described in OPS 1.965(a)(4)(ii), shall be trained in CRM concepts and the assessment of CRM skills and shall occupy an observer's seat where installed. In the case of long haul operations where additional operating flight crew are carried, the person may fulfil the function of a cruise relief pilot and shall not occupy either pilot's seat during take-off, departure, initial cruise, descent, approach and landing. His/her CRM assessments shall solely be based on observations made during the initial briefing, cabin briefing, cockpit briefing and those phases where he/she occupies the observer's seat.

Appendix 2 to OPS 1.965

Recurrent training and checking — System Panel Operators

(a) The recurrent training and checking for System Panel Operators shall meet the requirements for pilots and any additional specific duties, omitting those items that do not apply to System Panel Operators.

(b) Recurrent training and checking for System Panel Operators shall, whenever possible, take place concurrently with a pilot undergoing recurrent training and checking.

(c) A line check shall be conducted by a commander nominated by the operator and acceptable to the Authority or by a System Panel Operator Type Rating Instructor or Examiner.

Appendix 1 to OPS 1.968

Pilot qualification to operate in either pilot's seat

(a) Commanders whose duties also require them to operate in the right-hand seat and carry out the duties of co-pilot, or commanders required to conduct training or examining duties from the right-hand seat, shall complete additional training and checking as specified in the Operations Manual, concurrent with the operator proficiency checks prescribed in OPS 1.965(b). This additional training must include at least the following:

(1) An engine failure during take-off;

(2) A one engine inoperative approach and go-around; and

(3) A one engine inoperative landing.

(b) When engine-out manoeuvres are carried out in an aeroplane, the engine failure must be simulated.

(c) When operating in the right-hand seat, the checks required by OPS for operating in the left-hand seat must, in addition, be valid and current.

(d) A pilot relieving the commander shall have demonstrated, concurrent with the operator proficiency checks prescribed in OPS 1.965(b), practice of drills and procedures, which would not, normally, be the relieving pilot's responsibility. Where the differences between left and right seats are not significant (for example because of use of autopilot) then practice may be conducted in either seat.

(e) A pilot other than the commander occupying the left-hand seat shall demonstrate practice of drills and procedures, concurrent with the operator proficiency checks prescribed in OPS 1.965(b), which would otherwise have been the commander's responsibility acting as pilot non-flying. Where the differences between left and right seats are not significant (for example because of use of autopilot) then practice may be conducted in either seat.
Appendix 1 to OPS 1.980

Operation on more than one type or variant

(a) When a flight crew member operates more than one aeroplane class, type or variant listed according to applicable flight crew licensing requirements but not within a single licence endorsement, an operator must comply with the following:

(1) A flight crew member shall not operate more than:

   (i) Three piston-engined aeroplane types or variants; or

   (ii) Three turbo propeller aeroplane types or variants; or

   (iii) One turbo-propeller aeroplane type or variant and one piston engined aeroplane type or variant; or.

   (vi) One turbo-propeller aeroplane type or variant and any aeroplane within a particular class.

(2) OPS 1.965 for each type or variant operated unless the operator has demonstrated specific procedures and/or operational restrictions, which are acceptable to the Authority.

(b) When a flight crew member operates more than one aeroplane type or variant within one or more licence endorsement as defined by Flight Crew Licensing (type — multi-pilot), an operator shall ensure that:

(1) The minimum flight crew complement specified in the Operations Manual is the same for each type or variant to be operated;

(2) A flight crew member does not operate more than two aeroplane types or variants for which a separate licence endorsement is required; and

(3) Only aeroplanes within one licence endorsement are flown in any one flight duty period unless the operator has established procedures to ensure adequate time for preparation.

Note: In cases where more than one licence endorsement is involved, see sub-paragraphs (c) and (d) below.

(c) When a flight crew member operates more than one aeroplane type or variant listed in Flight Crew Licensing (type single pilot and type multi pilot), but not within a single licence endorsement, an operator must comply with the following:

(1) Subparagraphs (b)(1), (b)(2) and (b)(3) above;

(2) Subparagraph (d) below.

(d) When a flight crew member operates more than one aeroplane type or variant listed in Flight Crew Licensing (type — multi pilot), but not within a single licence endorsement, an operator must comply with the following:

(1) Subparagraphs (b)(1), (b)(2) and (b)(3) above;

(2) Before exercising the privileges of 2 licence endorsements:

   (i) Flight crew members must have completed two consecutive operator proficiency checks and must have 500 hours in the relevant crew position in commercial air transport operations with the same operator.
(ii) In the case of a pilot having experience with an operator and exercising the privileges of 2 licence endorsements, and then being promoted to command with the same operator on one of those types, the required minimum experience as commander is 6 months and 300 hours, and the pilot must have completed 2 consecutive operator proficiency checks before again being eligible to exercise 2 licence endorsements.

(3) Before commencing training for and operation of another type or variant, flight crew members must have completed 3 months and 150 hours flying on the base aeroplane, and this must include at least one proficiency check.

(4) After completion of the initial line check on the new type, 50 hours flying or 20 sectors must be achieved solely on aeroplanes of the new type rating.

(5) OPS 1.970 for each type operated unless credits have been allowed by the Authority in accordance with sub-paragraph (7) below.

(6) The period within which line flying experience is required on each type must be specified in the Operations Manual.

(7) Where credits are sought to reduce the training and checking and recent experience requirements between aeroplane types, the operator must demonstrate to the Authority which items need not be repeated on each type or variant because of similarities

(i) OPS 1.965(b) requires two operator proficiency checks every year. When credit is given in accordance with sub paragraph (7) above for operator proficiency checks to alternate between the two types, each operator proficiency check revalidates the operator proficiency check for the other type. Provided that the period between Licence proficiency checks does not exceed that prescribed in the applicable regulation in the field of Flight Crew Licensing for each type, the relevant requirements on Flight Crew Licensing will be satisfied. In addition relevant and approved recurrent training must be specified in the Operations Manual.

(ii) OPS 1.965(c) requires one line check every year. When credit is given in accordance with sub-paragraph (7) above for line checks to alternate between types or variants, each line check revalidates the line check for the other type or variant.

(iii) Annual emergency and safety equipment training and checking must cover all requirements for each type.

(8) OPS 1.965 for each type or variant operated unless credits have been allowed by the Authority in accordance with sub-paragraph (7) above.

(e) When a flight crew member operates combinations of aeroplane types or variants as defined in Flight Crew Licensing (class — single pilot and type — multi pilot) an operator must demonstrate that specific procedures and/or operational restrictions are approved in accordance with OPS 1.980(d).

SUBPART O

CABIN CREW

OPS 1.988

Applicability

An operator shall ensure that all cabin crew members comply with the requirements of this Subpart and any other safety requirements applicable to cabin crew.

For the purpose of this Regulation, “cabin crew member” means any crew member, other than a flight crew member, who performs, in the interests of safety of passengers, duties assigned to him/her by the operator or the commander in the cabin of an aeroplane.
Identification

(a) An operator shall ensure that all cabin crew members wear the operator’s cabin crew uniform and are clearly identifiable to the passengers as a cabin crew member.

(b) Other personnel, such as medical staff, security staff, child minders, escorts, technical staff, entertainers, interpreters, who undertake tasks in the cabin, shall not wear a uniform which might identify them to passengers as a cabin crew member, unless they comply with the requirements of this Subpart and any other applicable requirements of this Regulation.

Number and composition of Cabin Crew

(a) An operator shall not operate an aeroplane with a maximum approved passenger seating configuration of more than 19, when carrying one or more passengers, unless at least one cabin crew member is included in the crew for the purpose of performing duties, specified in the Operations Manual, in the interests of the safety of passengers.

(b) When complying with sub-paragraph (a) above, an operator shall ensure that the minimum number of cabin crew is the greater of:

(1) One cabin crew member for every 50, or fraction of 50, passenger seats installed on the same deck of the aeroplane; or

(2) The number of cabin crew who actively participated in the aeroplane cabin during the relevant emergency evacuation demonstration, or who were assumed to have taken part in the relevant analysis, except that, if the maximum approved passenger seating configuration is less than the number evacuated during the demonstration by at least 50 seats, the number of cabin crew may be reduced by 1 for every whole multiple of 50 seats by which the maximum approved passenger seating configuration falls below the certificated maximum capacity.

(c) The Authority may under exceptional circumstances require an operator to include in the crew additional cabin crew members.

(d) In unforeseen circumstances the required minimum number of cabin crew may be reduced provided that:

(1) The number of passengers has been reduced in accordance with procedures specified in the Operations Manual; and

(2) A report is submitted to the Authority after completion of the flight.

(e) An operator shall ensure that when engaging the services of cabin crew members who are self-employed and/or working on a freelance or part-time basis, the requirements of subpart O are complied with. In this respect, particular attention must be paid to the total number of aircraft types or variants that a cabin crew member may fly for the purposes of commercial air transportation, which must not exceed the requirements prescribed in OPS 1.1030, including when his/her services are engaged by another operator.

Minimum requirements

An operator shall ensure that each cabin crew member:

(a) is at least 18 years of age.

(b) has passed a medical examination or assessment at regular intervals as required by the Authority so as to check the medical fitness to discharge his/her duties.
(c) has successfully completed initial training in accordance with OPS 1.1005 and holds an attestation of safety training.

(d) has completed the appropriate conversion and/or differences training covering at least the subjects listed in OPS 1.1010.

(e) shall undergo recurrent training in line with the provisions of OPS 1.1015.

(f) is competent to perform his/her duties in accordance with procedures specified in the Operations Manual.

OPS 1.1000
Senior cabin crew members

(a) An operator shall nominate a senior cabin crew member whenever more than one cabin crew member is assigned. For operations when more than one cabin crew member is assigned, but only one cabin crew member is required, the operator shall nominate one cabin crew member to be responsible to the commander.

(b) The senior cabin crew member shall have responsibility to the commander for the conduct and coordination of normal and emergency procedure(s) specified in the Operations Manual. During turbulence, in the absence of any instructions from the flight crew, the senior cabin crew member shall be entitled to discontinue non-safety related duties and advise the flight crew of the level of turbulence being experienced and the need for the fasten seat belt signs to be switched on. This should be followed by the cabin crew securing the passenger cabin and other applicable areas.

(c) Where required by OPS 1.990 to carry more than one cabin crew member, an operator shall not appoint a person to the post of senior cabin crew member unless that person has at least one year’s experience as an operating cabin crew member and has completed an appropriate course covering the following as a minimum:

(1) Pre-flight briefing:
   (i) operating as a crew,
   (ii) allocation of cabin crew stations and responsibilities,
   (iii) consideration of the particular flight, including aeroplane type, equipment, area and type of operation, and categories of passengers with particular attention to disabled, infants and stretcher cases, and

(2) Cooperation within the crew:
   (i) discipline, responsibilities and chain of command,
   (ii) importance of coordination and communication,
   (iii) pilot incapacitation, and

(3) Review of operator's requirements and legal requirements:
   (i) passenger safety briefing, safety cards,
   (ii) securing of galleys,
   (iii) stowage of cabin baggage,
   (iv) electronic equipment,
   (v) procedures when fuelling with passengers on board,
   (vi) turbulence,
   (vii) documentation, and
(4) Human factors and Crew Resource Management, and
(5) Accident and incident reporting, and
(6) Flight and duty time limitations and rest requirements.

(d) An operator shall establish procedures to select the next most suitably qualified cabin crew member to operate as senior cabin crew member in the event of the nominated senior cabin crew member becoming unable to operate. Such procedures must be acceptable to the Authority and take account of a cabin crew member's operational experience.

(e) CRM Training: The operator shall ensure that all relevant elements in Appendix 2 to OPS 1.1005/1.1010/1.1015 Table 1, Column (a) are integrated into the training and covered to the level required by Column (f), Senior Cabin Crew Course.

OPS 1.1002
Single cabin crew member operations

(a) An operator shall ensure that each cabin crew member who does not have previous comparable experience completes the following, before operating as a single cabin crew member:

(1) Training in addition to that required by OPS 1.1005 and OPS 1.1010 shall include particular emphasis on the following to reflect single cabin crew member operations:

(i) Responsibility to the commander for the conduct of cabin safety and emergency procedure(s) specified in the Operations Manual;

(ii) Importance of coordination and communication with the flight crew, management of unruly or disruptive passengers;

(iii) Review of operator's requirements and legal requirements;

(iv) Documentation;

(v) Accident and incident reporting;

(vi) Flight and duty time limitations.

(2) Familiarisation flying of at least 20 hours and 15 sectors. Familiarisation flights shall be conducted under the supervision of a suitably experienced cabin crew member on the aeroplane type to be operated.

(b) An operator shall ensure, before a cabin crew member is assigned to operate as a single cabin crew member, that this cabin crew member is competent to perform his/her duties in accordance with the procedures specified in the Operations Manual. Suitability for single cabin crew operations shall be addressed in the criteria for cabin crew selection, recruitment, training and assessment of competence.

OPS 1.1005
Initial Safety Training

(See Appendix 1 to OPS 1.1005)

(a) An operator shall ensure that each cabin crew member has, before undertaking conversion training, successfully completed initial safety training covering at least the subjects listed in Appendix 1 to OPS 1.1005.
(b) Training courses shall, at the discretion of the Authority, and subject to its approval, be provided:

either

(1) by the operator
   — directly, or
   — indirectly through a training organisation acting on behalf of the operator; or

(2) by an approved training organisation.

(c) The programme and structure of the initial training courses shall be in accordance with the applicable requirements and shall be subject to prior approval of the Authority.

(d) At the discretion of the Authority, the Authority, the operator or the approved training organisation providing the training course, shall deliver an attestation of safety training to a cabin crew member after he/she has completed the initial safety training and successfully passed the check referred to in OPS 1.1025.

(e) Where the Authority authorises an operator or an approved training organisation to deliver the attestation of safety training to a cabin crew member, such attestation shall clearly state a reference to the approval of the Authority.

OPS 1.1010
Conversion and Differences training

(See Appendix 1 to OPS 1.1010)

(a) An operator shall ensure that each cabin crew member has completed appropriate conversion and differences training, in accordance with the applicable rules and at least the subjects listed in Appendix 1 to OPS 1.1010. The training course shall be specified in the Operations Manual. The programme and structure of the training course shall be subject to prior approval by the Authority.

(1) Conversion training: A conversion course must be completed before being:
   (i) First assigned by the operator to operate as a cabin crew member; or
   (ii) Assigned to operate another aeroplane type; and

(2) Differences training: Differences training must be completed before operating:
   (i) On a variant of an aeroplane type currently operated; or
   (ii) With different safety equipment, safety equipment location, or normal and emergency safety procedures on currently operated aeroplane types or variants.

(b) An operator shall determine the content of the conversion and differences training taking account of the cabin crew member’s previous training as recorded in the cabin crew member’s training records required by OPS 1.1035.

(c) Without prejudice to OPS 1.995 (c), related elements of both initial training (OPS 1.1005) and conversion and differences training (OPS 1.1010) may be combined.

(d) An operator shall ensure that:

(1) Conversion training is conducted in a structured and realistic manner, in accordance with Appendix 1 to OPS 1.1010;
(2) Differences training is conducted in a structured manner; and

(3) Conversion training, and if necessary differences training, includes the use of all safety equipment and all normal and emergency procedures applicable to the type or variant of aeroplane and involves training and practice on either a representative training device or on the actual aeroplane.

(e) An operator shall ensure that each cabin crew member before being first assigned to duties completes the Operator's CRM Training and Aeroplane Type Specific CRM, in accordance with Appendix 1 to OPS 1.1010 (j). Cabin crew who are already operating as cabin crew members with an operator, and who have not previously completed the Operator's CRM Training, shall complete this training by the time of the next required recurrent training and checking in accordance with Appendix 1 to OPS 1.1010 (j), including Aeroplane Type Specific CRM, as relevant.

OPS 1.1012

Familiarisation

An operator shall ensure that, following completion of conversion training, each cabin crew member completes familiarisation prior to operating as one of the minimum number of cabin crew required by OPS 1.990.

OPS 1.1015

Recurrent training

(See Appendix 1 to OPS 1.1015)

(a) An operator shall ensure that each cabin crew member undergoes recurrent training, covering the actions assigned to each crew member in normal and emergency procedures and drills relevant to the type(s) and/or variant(s) of aeroplane on which they operate in accordance with Appendix 1 to OPS 1.1015.

(b) An operator shall ensure that the recurrent training programme approved by the Authority includes theoretical and practical instruction, together with individual practice, as prescribed in Appendix 1 to OPS 1.1015.

(c) The period of validity of recurrent training and the associated checking required by OPS 1.1025 shall be 12 calendar months in addition to the remainder of the month of issue. If issued within the final 3 calendar months of validity of a previous check, the period of validity shall extend from the date of issue until 12 calendar months from the expiry date of that previous check.

OPS 1.1020

Refresher Training

(See Appendix 1 to OPS 1.1020)

(a) An operator shall ensure that each cabin crew member who has been absent from all flying duties for more than 6 months and still remains within the period of the previous check required by OPS 1.1025 (b)(3) completes refresher training specified in the Operations Manual as prescribed in Appendix 1 to OPS 1.1020.

(b) An operator shall ensure that when a cabin crew member has not been absent from all flying duties, but has not, during the preceding 6 months, undertaken duties on a type of aeroplane as a cabin crew member required by OPS 1.990 (b), before undertaking such duties on that type, the cabin crew member either:

(1) Completes refresher training on the type; or
(2) Operates two re-familiarisation sectors during commercial operations on the type.
(a) At the discretion of the Authority, the operator or the approved training organisation providing the training course shall ensure that during or following completion of the training required by OPS 1.1005, 1.1010, 1.1015 and 1.1020, each cabin crew member undergoes a check covering the training received in order to verify his/her proficiency in carrying out normal and emergency safety duties.

At the discretion of the Authority, the operator or the approved training organisation providing the training course shall ensure that the personnel performing these checks shall be suitably qualified.

(b) An operator shall ensure that each cabin crew member undergoes checks as follows:

1. Initial safety training. The items listed in Appendix 1 to OPS 1.1005;
2. Conversion and Differences training. The items listed in Appendix 1 to OPS 1.1010;
3. Recurrent training. The items listed in Appendix 1 to OPS 1.1015 as appropriate; and
4. Refresher training. The items listed in Appendix 1 to OPS 1.1020.

OPS 1.1030
Operation on more than one type or variant

(a) An operator shall ensure that each cabin crew member does not operate on more than three aeroplane types except that, with the approval of the Authority, the cabin crew member may operate on four aeroplane types, provided that for at least two of the types:

1. Non-type specific normal and emergency procedures are identical; and
2. Safety equipment and type specific normal and emergency procedures are similar.

(b) For the purposes of sub-paragraph (a) above, variants of an aeroplane type are considered to be different types if they are not similar in all the following aspects:

1. Emergency exit operation;
2. Location and type of portable safety equipment; and
3. Type specific emergency procedures.

OPS 1.1035
Training records

An operator shall:

1. Maintain records of all training and checking required by OPS 1.1005, 1.1010, 1.1015, 1.1020 and 1.1025; and
2. Keep a copy of the attestation of safety training; and
3. Keep the training records and records of medical examinations or assessments up to date, showing in the case of the training records the dates and contents of the conversion, differences and recurrent training received; and
4. Make the records of all initial, conversion and recurrent training and checking available, on request, to the cabin crew member concerned.
Initial Safety Training

The subjects that must be covered as a minimum by a course of initial safety training referred to in OPS 1.1005 are:

(a) Fire and smoke training:

1. emphasis on the responsibility of cabin crew to deal promptly with emergencies involving fire and smoke and, in particular, emphasis on the importance of identifying the actual source of the fire;
2. the importance of informing the flight crew immediately, as well as the specific actions necessary for coordination and assistance, when fire or smoke is discovered;
3. the necessity for frequent checking of potential fire-risk areas including toilets, and the associated smoke detectors;
4. the classification of fires and the appropriate type of extinguishing agents and procedures for particular fire situations, the techniques of application of extinguishing agents, the consequences of misapplication, and of use in a confined space; and
5. the general procedures of ground-based emergency services at aerodromes.

(b) Water survival training.

The actual donning and use of personal flotation equipment in water. Before first operating on an airplane fitted with life-rafts or other similar equipment, training must be given on the use of this equipment, as well as actual practice in water.

(c) Survival training.

Survival training shall be appropriate to the areas of operation (e.g. polar, desert, jungle or sea).

(d) Medical aspects and first aid:

1. instruction on first aid and the use of first-aid kits;
2. first-aid associated with survival training and appropriate hygiene; and
3. the physiological effects of flying and with particular emphasis on hypoxia.

(e) Passenger handling:

1. advice on the recognition and management of passengers who are, or become, intoxicated with alcohol or are under the influence of drugs or are aggressive;
2. methods used to motivate passengers and the crowd control necessary to expedite an aeroplane evacuation;
3. regulations covering the safe stowage of cabin baggage (including cabin service items) and the risk of it becoming a hazard to occupants of the cabin or otherwise obstruction or damaging emergency equipment or aeroplane exits;
4. the importance of correct seat allocation with reference to aeroplane mass and balance. Particular emphasis shall also be given on the seating of disabled passengers, and the necessity of seating able-bodied passengers adjacent to unsupervised exits;
5. duties to be undertaken in the event of encountering turbulence, including securing the cabin;
6. precautions to be taken when live animals are carried in the cabin;
7. dangerous goods training, including provisions under Subpart R;
8. security procedures, including provisions under Subpart S.

(f) Communication.

During training, emphasis shall be placed on the importance of effective communication between cabin crew and flight crew including technique, common language and terminology.

(g) Discipline and responsibilities:
1. the importance of cabin crew performing their duties in accordance with the Operations Manual;
2. continuing competence and fitness to operate as a cabin crew member with special regard to flight and duty time limitations and rest requirements;
3. an awareness of the aviation regulations relating to cabin crew and the role of the Civil Aviation Authority;
4. general knowledge of relevant aviation terminology, theory of flight, passenger distribution, meteorology and areas of operation;
5. pre-flight briefing of the cabin crew and the provision of necessary safety information with regards to their specific duties;
6. the importance of ensuring that relevant documents and manuals are kept up-to-date with amendments provided by the operator;
7. the importance of identifying when cabin crew members have the authority and responsibility to initiate an evacuation and other emergency procedures; and
8. the importance of safety duties and responsibilities and the need to respond promptly and effectively to emergency situations.

(h) Crew resource management.

1. Introductory CRM Course:

   (i) a cabin crew member shall complete an Introductory CRM Course before being first assigned to operate as a cabin crew member. Cabin crew who are already operating as cabin crew members in commercial air transportation and who have not previously completed an introductory course, shall complete an Introductory CRM Course by the time of the next required recurrent training and/or checking.

   (ii) The training elements in Appendix 2 to OPS 1.1005/1.1010/1.1015 Table 1, Column (a) shall be covered to the level required in Column (b), Introductory CRM Course.

   (iii) The Introductory CRM Course shall be conducted by at least one cabin crew CRM instructor.

App. 1 to OPS 1.1010
Conversion and Differences training

(a) General:

An operator shall ensure that:

1. conversion and differences training is conducted by suitably qualified personnel; and
2. during conversion and differences training, training is given on the location, removal and use of all safety and survival equipment carried on the aeroplane, as well as all normal and emergency procedures related to the aeroplane type, variant and configuration to be operated.
(b) Fire and smoke training:

An operator shall ensure that:

1. Each cabin crew member is given realistic and practical training in the use of all fire-fighting equipment including protective clothing representative of that carried in the aeroplane. This training must include:

   (i) extinguishing a fire characteristic of an aeroplane interior fire except that, in the case of Halon extinguishers, an alternative extinguishing agent may be used; and

   (ii) the donning and use of protective breathing equipment in an enclosed, simulated smoke-filled environment.

(c) Operations of doors and exits:

An operator shall ensure that:

1. Each cabin crew member operates and actually opens all normal and emergency exits for passenger evacuation in an aeroplane or representative training device; and

2. the operation of all other exits, such as flight deck windows is demonstrated.

(d) Evacuation slide training:

An operator shall ensure that:

1. Each cabin crew member descends an evacuation slide from a height representative of the aeroplane's main deck sill height;

2. the slide is fitted to an aeroplane or a representative training device; and

3. a further descent is made when the cabin crew member qualifies on an aeroplane type in which the main deck exit sill height differs significantly from any aeroplane type previously operated.

(e) Evacuation procedures and other emergency situations:

An operator shall ensure that:

1. emergency evacuation training includes the recognition of planned or unplanned evacuations on land or water. This training must include recognition of when exits are unusable or when evacuation equipment is unserviceable; and

2. each cabin crew member is trained to deal with the following:

   (i) an in-flight fire, with particular emphasis on identifying the actual source of the fire;

   (ii) severe air turbulence;

   (iii) sudden decompression, including the donning of portable oxygen equipment by each cabin crew member; and

   (iv) other in-flight emergencies.

(f) Crowd control.

An operator shall ensure that training is provided on the practical aspects of crowd control in various emergency situations, as applicable to the aeroplane type.
Wednesday, 5 July 2006

(g) Pilot incapacitation.

An operator shall ensure that, unless the minimum flight crew is more than two, each cabin crew member is trained in the procedure for flight crew member incapacitation and shall operate the seat and harness mechanisms. Training in the use of flight crew members' oxygen system and use of the flight crew members' check lists, where required by the operator's SOP's, shall be conducted by a practical demonstration.

(h) Safety equipment.

An operator shall ensure that each cabin crew member is given realistic training on, and demonstration of, the location and use of safety equipment including the following:

1. slides, and where non-self-supporting slides are carried, the use of any associated ropes;
2. life-rafts and slide-raft, including the equipment attached to, and/or carried in, the raft;
3. lifejackets, infant lifejackets and flotation cots;
4. dropout oxygen system;
5. first-aid oxygen;
6. fire extinguishers;
7. fire axe or crow-bar;
8. emergency lights including torches;
9. communication equipment, including megaphones;
10. survival packs, including their contents;
11. pyrotechnics (actual or representative devices);
12. first-aid kits, their contents and emergency medical equipment; and
13. other cabin safety equipment or systems where applicable.

(i) Passenger briefing/safety demonstrations.

An operator shall ensure that training is given in the preparation of passengers for normal and emergency situations in accordance with OPS 1.285.

(j) Crew Resource Management.

An operator shall ensure that:

1. Each cabin crew member completes the Operator's CRM Training covering the training elements in Appendix 2 to OPS 1.1005/1.1010/1.1015 Table 1, Column (a) to the level required in Column (c) before undertaking subsequent Aeroplane Type Specific CRM and/or recurrent CRM Training.

2. When a cabin crew member undertakes a conversion course on another aeroplane type, the training elements in Appendix 2 to OPS 1.1005/1.1010/1.1015 Table 1, Column (a) shall be covered to the level required in Column (d), Aeroplane Type Specific CRM.

3. The Operator's CRM Training and Aeroplane Type Specific CRM shall be conducted by a least one cabin crew CRM instructor.
Appendix 1 to OPS 1.1015

Recurrent training

(a) An operator shall ensure that recurrent training is conducted by suitably qualified persons.

(b) An operator shall ensure that every 12 calendar months the programme of practical training includes the following:

1. Emergency procedures including pilot incapacitation;
2. Evacuation procedures including crowd control techniques;
3. Touch-drills by each cabin crew member for opening normal and emergency exits for passenger evacuation;
4. The location and handling of emergency equipment, including oxygen systems, and the donning by each cabin crew member of lifejackets, portable oxygen and protective breathing equipment (PBE);
5. First aid and the contents of the first-aid kits;
6. Stowage of articles in the cabin;
7. Security procedures;
8. Incident and accident review; and
9. Crew resource management. An operator shall ensure that CRM training satisfies the following:
   (i) The training elements in Appendix 2 to OPS 1.1005/1.1010/1.1015 Table 1, Column (a) shall be covered within a three year cycle to the level required by Column (e), Annual Recurrent CRM Training.
   (ii) The definition and implementation of this syllabus shall be managed by a cabin crew CRM instructor.
   (iii) When CRM training is provided by stand-alone modules, it shall be conducted by at least one cabin crew CRM instructor.

(c) An operator shall ensure that, at intervals not exceeding 3 years, recurrent training also includes:

1. the operation and actual opening of all normal and emergency exits for passenger evacuation in an aircraft or representative training device;
2. demonstration of the operation of all other exits;
3. realistic and practical training in the use of all fire-fighting equipment, including protective clothing, representative of that carried in the aircraft.

This training must include:

(i) extinguishing a fire characteristic of an aeroplane interior fire except that, in the case of Halon extinguishers, an alternative extinguishing agent may be used; and
(ii) the donning and use of protective breathing equipment by each cabin crew member in an enclosed, simulated smoke-filled environment.
4. use of pyrotechnics (actual or representative devices); and

5. demonstration of the use of the life-raft, or slide-raft, where fitted.

6. An operator shall ensure that, unless the minimum flight crew is more than two, each cabin crew member is trained in the procedure for flight crew member incapacitation and shall operate the seat and harness mechanisms. Training in the use of flight crew members’ oxygen system and use of the flight crew members’ check lists, where required by the operator’s SOP’s, shall be conducted by a practical demonstration.

(d) An operator shall ensure that all appropriate requirements of Annex III, OPS 1 are included in the training of cabin crew members.

Appendix 1 to OPS 1.1020

Refresher training

An operator shall ensure that refresher training is conducted by suitable qualified persons and, for each cabin crew member, includes at least the following:

1. Emergency procedures including pilot incapacitation;
2. Evacuation procedures including crowd control techniques;
3. The operation and actual opening of all normal and emergency exits for passenger evacuation in an aeroplane or representative training device;
4. Demonstration of the operation of all other exits including flight deck windows; and
5. The location and handling of emergency equipment, including oxygen systems, and the donning of life-jackets, portable oxygen and protective breathing equipment.

Appendix 2 to OPS 1.1005/1.1010/1.1015

Training

1. The CRM training syllabi, together with CRM methodology and terminology, shall be included in the Operations Manual.

2. Table 1 indicates which elements of CRM shall be included in each type of training.

<table>
<thead>
<tr>
<th>Training Elements</th>
<th>Introductory CRM Course</th>
<th>Operator's CRM Training</th>
<th>Aircraft Type Specific CRM</th>
<th>Annual Recurrent CRM Training</th>
<th>Senior Cabin Crew Course</th>
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<tr>
<td>(a)</td>
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<tr>
<td>General Principles</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Human factors in aviation</td>
<td>In depth</td>
<td>Not required</td>
<td>Not required</td>
<td>Overview</td>
<td></td>
</tr>
<tr>
<td>General instructions on CRM principles and objectives</td>
<td></td>
<td></td>
<td>Not required</td>
<td></td>
<td></td>
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<tr>
<td>Human performance and limitations</td>
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</table>
## Training Elements

<table>
<thead>
<tr>
<th></th>
<th>Introductory CRM Course</th>
<th>Operator's CRM Training</th>
<th>Aeroplane Type Specific CRM</th>
<th>Annual Recurrent CRM Training</th>
<th>Senior Cabin Crew Course</th>
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<tbody>
<tr>
<td>(a)</td>
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### From the perspective of the individual cabin crew member

<table>
<thead>
<tr>
<th>Subject</th>
<th>(a)</th>
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<th>(d)</th>
<th>(e)</th>
<th>(f)</th>
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</thead>
<tbody>
<tr>
<td>Personality awareness, human error and reliability, attitudes and behaviours, self-assessment</td>
<td></td>
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<tr>
<td>Stress and stress management</td>
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<tr>
<td>Fatigue and vigilance</td>
<td>In depth</td>
<td>Not required</td>
<td>Not required</td>
<td>Overview</td>
<td>(3-year cycle)</td>
<td>Not required</td>
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<tr>
<td>Assertiveness</td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>Situation awareness, information acquisition and processing</td>
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### From the perspective of the whole aeroplane crew

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<th>Subject</th>
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<tbody>
<tr>
<td>Error prevention and detection</td>
<td></td>
<td></td>
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<tr>
<td>Shared situation awareness, information acquisition &amp; processing</td>
<td></td>
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<td></td>
<td></td>
<td>Overview</td>
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<tr>
<td>Workload management</td>
<td></td>
<td></td>
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<td></td>
<td>(3-year cycle)</td>
</tr>
<tr>
<td>Effective communication and coordination between all crew members including the flight crew as well as inexperienced cabin crew members, cultural differences</td>
<td></td>
<td>Not required</td>
<td>In-depth</td>
<td>Relevant to the type(s)</td>
<td>Reinforcement (relevant to the Senior cabin crew duties)</td>
<td></td>
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<tr>
<td>Leadership, cooperation, synergy, decision-making, delegation</td>
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<td></td>
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<tr>
<td>Individual and team responsibilities, decision making, and actions</td>
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<tr>
<td>Identification and management of the passenger human factors: crowd control, passenger stress, conflict management, medical factors</td>
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<tr>
<td>Specifics related to aeroplane types (narrow/wide bodies, single/multi deck), flight crew and cabin crew composition and number of passengers</td>
<td>Not required</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>In depth</td>
</tr>
<tr>
<td>Training Elements</td>
<td>Introductory CRM Course</td>
<td>Operator’s CRM Training</td>
<td>Aeroplane Type Specific CRM</td>
<td>Annual Recurrent CRM Training</td>
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</tbody>
</table>

From the perspective of the operator and the organisation

- Company safety culture, SOPs, organisational factors, factors linked to the type of operations
- Effective communication and coordination with other operational personnel and ground services: Not required, In depth, Relevant to the type(s), Overview (3-year cycle)
- Participation in cabin safety incident and accident reporting
- Case based studies (see note): Required, Required

Note: In Column (d), if relevant aeroplane type specific case based studies are not available, then case based studies relevant to the scale and scope of the operation shall be considered.

**SUBPART P**

**MANUALS, LOGS AND RECORDS**

**OPS 1.1040**

General Rules for Operations Manuals

(a) An operator shall ensure that the Operations Manual contains all instructions and information necessary for operations personnel to perform their duties.

(b) An operator shall ensure that the contents of the Operations Manual, including all amendments or revisions, do not contravene the conditions contained in the Air Operator Certificate (AOC) or any applicable regulations and are acceptable to, or, where applicable, approved by, the Authority.

(c) Unless otherwise approved by the Authority, or prescribed by national law, an operator must prepare the Operations Manual in the English language. In addition, an operator may translate and use that manual, or parts thereof, into another language.

(d) Should it become necessary for an operator to produce new Operations Manuals or major parts/volumes thereof, he must comply with sub-paragraph (c) above.

(e) An operator may issue an Operations Manual in separate volumes.

(f) An operator shall ensure that all operations personnel have easy access to a copy of each part of the Operations Manual which is relevant to their duties. In addition, the operator shall supply crew members with a personal copy of, or sections from, Parts A and B of the Operations Manual as are relevant for personal study.
(g) An operator shall ensure that the Operations Manual is amended or revised so that the instructions and information contained therein are kept up to date. The operator shall ensure that all operations personnel are made aware of such changes that are relevant to their duties.

(h) Each holder of an Operations Manual, or appropriate parts of it, shall keep it up to date with the amendments or revisions supplied by the operator.

(i) An operator shall supply the Authority with intended amendments and revisions in advance of the effective date. When the amendment concerns any part of the Operations Manual which must be approved in accordance with OPS, this approval shall be obtained before the amendment becomes effective. When immediate amendments or revisions are required in the interest of safety, they may be published and applied immediately, provided that any approval required has been applied for.

(j) An operator shall incorporate all amendments and revisions required by the Authority.

(k) An operator must ensure that information taken from approved documents, and any amendment of such approved documentation, is correctly reflected in the Operations Manual and that the Operations Manual contains no information contrary to any approved documentation. However, this requirement does not prevent an operator from using more conservative data and procedures.

(l) An operator must ensure that the contents of the Operations Manual are presented in a form in which they can be used without difficulty. The design of the Operations Manual shall observe Human Factors principles.

(m) An operator may be permitted by the Authority to present the Operations Manual or parts thereof in a form other than on printed paper. In such cases, an acceptable level of accessibility, usability and reliability must be assured.

(n) The use of an abridged form of the Operations Manual does not exempt the operator from the requirements of OPS 1.130.

OPS 1.1045

Operations Manual — structure and contents

(See Appendix 1 to OPS 1.1045)

(a) An operator shall ensure that the main structure of the Operations Manual is as follows:

— Part A: General/Basic

This part shall comprise all non type-related operational policies, instructions and procedures needed for a safe operation.

— Part B: Aeroplane Operating Matters

This part shall comprise all type-related instructions and procedures needed for a safe operation. It shall take account of any differences between types, variants or individual aeroplanes used by the operator.
Part C: Route and Aerodrome Instructions and Information

This part shall comprise all instructions and information needed for the area of operation.

Part D: Training

This part shall comprise all training instructions for personnel required for a safe operation.

(b) An operator shall ensure that the contents of the Operations Manual are in accordance with Appendix 1 to OPS 1.1045 and relevant to the area and type of operation.

(c) An operator shall ensure that, the detailed structure of the Operations Manual is acceptable to the Authority.

OPS 1.1050

Aeroplane Flight Manual

An operator shall keep a current approved Aeroplane Flight Manual or equivalent document for each aeroplane that it operates.

OPS 1.1055

Journey log

(a) An operator shall retain the following information for each flight in the form of a Journey Log:

(1) Aeroplane registration;
(2) Date;
(3) Name(s) of crew member(s);
(4) Duty assignment of crew member(s);
(5) Place of departure;
(6) Place of arrival;
(7) Time of departure (off-block time);
(8) Time of arrival (on-block time);
(9) Hours of flight;
(10) Nature of flight;
(11) Incidents, observations (if any); and
(12) Commander’s signature (or equivalent).

(b) An operator may be permitted not to keep an aeroplane journey log, or parts thereof, by the Authority if the relevant information is available in other documentation.

(c) An operator shall ensure that all entries are made concurrently and that they are permanent in nature.

OPS 1.1060

Operational flight plan

(a) An operator must ensure that the operational flight plan used and the entries made during flight contain the following items:

(1) Aeroplane registration;
(2) Aeroplane type and variant;
(3) Date of flight;
(4) Flight identification;
(5) Names of flight crew members;
(6) Duty assignment of flight crew members;
(7) Place of departure;
(8) Time of departure (actual off-block time, take-off time);
(9) Place of arrival (planned and actual);
(10) Time of arrival (actual landing and on-block time);
(11) Type of operation (ETOPS, VFR, Ferry flight, etc.)
(12) Route and route segments with checkpoints/waypoints, distances, time and tracks;
(13) Planned cruising speed and flying times between checkpoints/waypoints. Estimated and actual times overhead;
(14) Safe altitudes and minimum levels;
(15) Planned altitudes and flight levels;
(16) Fuel calculations (records of in-flight fuel checks);
(17) Fuel on board when starting engines;
(18) Alternate(s) for destination and, where applicable, take-off and en-route, including information required in sub-paragraphs (12), (13), (14), and (15) above;
(19) Initial ATS Flight Plan clearance and subsequent re-clearance;
(20) In-flight re-planning calculations; and
(21) Relevant meteorological information.

(b) Items which are readily available in other documentation or from another acceptable source or are irrelevant to the type of operation may be omitted from the operational flight plan.

(c) An operator must ensure that the operational flight plan and its use are described in the Operations Manual.

(d) An operator shall ensure that all entries on the operational flight plan are made concurrently and that they are permanent in nature.

OPS 1.1065
Document storage periods

An operator shall ensure that all records and all relevant operational and technical information for each individual flight, are stored for the periods prescribed in Appendix 1 to OPS 1.1065.

OPS 1.1070
Operator's continuing airworthiness management exposition

An operator shall keep a current approved continuing airworthiness management exposition as prescribed in Part M, paragraph M.A.704.
An operator shall keep an aeroplane technical log as prescribed in OPS 1.915.

Appendix 1 to OPS 1.1045
Operations Manual Contents

An operator shall ensure that the Operations Manual contains the following:

A. GENERAL/BASIC

0. ADMINISTRATION AND CONTROL OF OPERATIONS MANUAL

0.1. Introduction

(a) A statement that the manual complies with all applicable regulations and with the terms and conditions of the applicable Air Operator Certificate.

(b) A statement that the manual contains operational instructions that are to be complied with by the relevant personnel.

(c) A list and brief description of the various parts, their contents, applicability and use.

(d) Explanations and definitions of terms and words needed for the use of the manual.

0.2. System of amendment and revision

(a) Details of the person(s) responsible for the issuance and insertion of amendments and revisions.

(b) A record of amendments and revisions with insertion dates and effective dates.

(c) A statement that handwritten amendments and revisions are not permitted except in situations requiring immediate amendment or revision in the interest of safety.

(d) A description of the system for the annotation of pages and their effective dates.

(e) A list of effective pages.

(f) Annotation of changes (on text pages and, as far as practicable, on charts and diagrams).

(g) Temporary revisions.

A description of the distribution system for the manuals, amendments and revisions.

1. ORGANISATION AND RESPONSIBILITIES

1.1. Organisational structure. A description of the organisational structure including the general company organigram and operations department organigram. The organigram must depict the relationship between the Operations Department and the other Departments of the company. In particular, the subordination and reporting lines of all Divisions, Departments, etc., which pertain to the safety of flight operations, must be shown.
1.2. Nominated postholders. The name of each nominated postholder responsible for flight operations, the maintenance system, crew training and ground operations, as prescribed in OPS 1.175(i). A description of their function and responsibilities must be included.

1.3. Responsibilities and duties of operations management personnel. A description of the duties, responsibilities and authority of operations management personnel pertaining to the safety of flight operations and the compliance with the applicable regulations.

1.4. Authority, duties and responsibilities of the commander. A statement defining the authority, duties and responsibilities of the commander.

1.5. Duties and responsibilities of crew members other than the commander.

2. OPERATIONAL CONTROL AND SUPERVISION

2.1. Supervision of the operation by the operator. A description of the system for supervision of the operation by the operator (see OPS 1.175(g)). This must show how the safety of flight operations and the qualifications of personnel are supervised. In particular, the procedures related to the following items must be described:

(a) Licence and qualification validity;

(b) Competence of operations personnel; and

(c) Control, analysis and storage of records, flight documents, additional information and data.

2.2. System of promulgation of additional operational instructions and information. A description of any system for promulgating information which may be of an operational nature but is supplementary to that in the Operations Manual. The applicability of this information and the responsibilities for its promulgation must be included.

2.3. Accident prevention and flight safety programme. A description of the main aspects of the flight safety programme.

2.4. Operational control. A description of the procedures and responsibilities necessary to exercise operational control with respect to flight safety.

2.5. Powers of the Authority. A description of the powers of the Authority, and guidance to staff on how to facilitate inspections by Authority personnel.

3. QUALITY SYSTEM

A description of the quality system adopted including at least:

(a) Quality policy;

(b) A description of the organisation of the Quality System; and

(c) Allocation of duties and responsibilities.

4. CREW COMPOSITION

4.1. Crew Composition. An explanation of the method for determining crew compositions taking account of the following:

(a) The type of aeroplane being used;

(b) The area and type of operation being undertaken;

(c) The phase of the flight;
(d) The minimum crew requirement and flight duty period planned;

(e) Experience (total and on type), recency and qualification of the crew members; and

(f) The designation of the commander and, if necessitated by the duration of the flight, the procedures for the relief of the commander or other members of the flight crew (See Appendix 1 to OPS 1.940).

(g) The designation of the senior cabin crew member and, if necessitated by the duration of the flight, the procedures for the relief of the senior cabin crew member and any other member of the cabin crew.

4.2. Designation of the commander. The rules applicable to the designation of the commander.

4.3. Flight crew incapacitation. Instructions on the succession of command in the event of flight crew incapacitation.

4.4. Operation of more than one type. A statement indicating which aeroplanes are considered as one type for the purpose of:

(a) Flight crew scheduling; and

(b) Cabin crew scheduling.

5. QUALIFICATION REQUIREMENTS

5.1. A description of the required licence, rating(s), qualification/competency (e.g. for routes and aerodromes), experience, training, checking and recency for operations personnel to conduct their duties. Consideration must be given to the aeroplane type, kind of operation and composition of the crew.

5.2. Flight crew

(a) Commander.

(b) Pilot relieving the commander.

(c) Co-pilot.

(d) Pilot under supervision.

(e) System panel operator.

(f) Operation on more than one type or variant.

5.3. Cabin crew.

(a) Senior cabin crew member.

(b) Cabin crew member.

(i) Required cabin crew member.

(ii) Additional cabin crew member and cabin crew member during familiarisation flights.

(c) Operation on more than one type or variant.

5.4. Training, checking and supervision personnel.

(a) For flight crew.

(b) For cabin crew.

5.5. Other operations personnel
6. CREW HEALTH PRECAUTIONS

6.1. Crew health precautions. The relevant regulations and guidance to crew members concerning health including:

(a) Alcohol and other intoxicating liquor;
(b) Narcotics;
(c) Drugs;
(d) Sleeping tablets;
(e) Pharmaceutical preparations;
(f) Immunisation;
(g) Deep diving;
(h) Blood donation;
(i) Meal precautions prior to and during flight;
(j) Sleep and rest; and
(k) Surgical operations.

7. FLIGHT TIME LIMITATIONS

7.1. Flight and Duty Time Limitations and Rest Requirements. The scheme developed by the operator in accordance with applicable requirements.

7.2. Exceedances of flight and duty time limitations and/or reductions of rest periods. Conditions under which flight and duty time may be exceeded or rest periods may be reduced and the procedures used to report these modifications.

8. OPERATING PROCEDURES

8.1. Flight Preparation Instructions. As applicable to the operation:

8.1.1. Minimum Flight Altitudes. A description of the method of determination and application of minimum altitudes including:

(a) A procedure to establish the minimum altitudes/flight levels for VFR flights; and

(b) A procedure to establish the minimum altitudes/flight levels for IFR flights.

8.1.2. Criteria and responsibilities for the authorisation of the use of aerodromes taking into account the applicable requirements of Subparts D, E, F, G, H, I and J.

8.1.3. Methods for establishing of aerodrome operating minima. The method for establishing aerodrome operating minima for IFR flights in accordance with OPS 1 Subpart E. Reference must be made to procedures for the determination of the visibility and/or runway visual range and for the applicability of the actual visibility observed by the pilots, the reported visibility and the reported runway visual range.

8.1.4. En-route Operating Minima for VFR Flights or VFR portions of a flight and, where single engined aeroplanes are used, instructions for route selection with respect to the availability of surfaces which permit a safe forced landing.
8.1.5. Presentation and Application of Aerodrome and En-route Operating Minima

8.1.6. Interpretation of meteorological information. Explanatory material on the decoding of MET forecasts and MET reports relevant to the area of operations, including the interpretation of conditional expressions.

8.1.7. Determination of the quantities of fuel, oil and water methanol carried. The methods by which the quantities of fuel, oil and water methanol to be carried are determined and monitored in flight. This section must also include instructions on the measurement and distribution of the fluid carried on board. Such instructions must take account of all circumstances likely to be encountered on the flight, including the possibility of in-flight replanning and of failure of one or more of the aeroplane’s power plants. The system for maintaining fuel and oil records must also be described.

8.1.8. Mass and Centre of Gravity. The general principles of mass and centre of gravity including:

(a) Definitions;
(b) Methods, procedures and responsibilities for preparation and acceptance of mass and centre of gravity calculations;
(c) The policy for using either standard and/or actual masses;
(d) The method for determining the applicable passenger, baggage and cargo mass;
(e) The applicable passenger and baggage masses for various types of operations and aeroplane type;
(f) General instruction and information necessary for verification of the various types of mass and balance documentation in use;
(g) Last Minute Changes procedures;
(h) Specific gravity of fuel, oil and water methanol; and
(i) Seating policy/procedures.

8.1.9. ATS Flight Plan. Procedures and responsibilities for the preparation and submission of the air traffic services flight plan. Factors to be considered include the means of submission for both individual and repetitive flight plans.

8.1.10. Operational Flight Plan. Procedures and responsibilities for the preparation and acceptance of the operational flight plan. The use of the operational flight plan must be described including samples of the operational flight plan formats in use.

8.1.11. Operator’s Aeroplane Technical Log. The responsibilities and the use of the operator’s Aeroplane Technical Log must be described, including samples of the format used.

8.1.12. List of documents, forms and additional information to be carried.

8.2. Ground Handling Instructions

8.2.1. Fuelling procedures. A description of fuelling procedures, including:

(a) Safety precautions during refuelling and defuelling including when an APU is in operation or when a turbine engine is running and the prop-brakes are on;
(b) Refuelling and defuelling when passengers are embarking, on board or disembarking; and
(c) Precautions to be taken to avoid mixing fuels.
8.2.2. Aeroplane, passengers and cargo handling procedures related to safety. A description of the handling procedures to be used when allocating seats and embarking and disembarking passengers and when loading and unloading the aeroplane. Further procedures, aimed at achieving safety whilst the aeroplane is on the ramp, must also be given. Handling procedures must include:

(a) Children/infants, sick passengers and Persons with Reduced Mobility;

(b) Transportation of inadmissible passengers, deportees or persons in custody;

(c) Permissible size and weight of hand baggage;

(d) Loading and securing of items in the aeroplane;

(e) Special loads and classification of load compartments;

(f) Positioning of ground equipment;

(g) Operation of aeroplane doors;

(h) Safety on the ramp, including fire prevention, blast and suction areas;

(i) Start-up, ramp departure and arrival procedures including push-back and towing operations;

(j) Servicing of aeroplanes; and

(k) Documents and forms for aeroplane handling;

(l) Multiple occupancy of aeroplane seats.

8.2.3. Procedures for the refusal of embarkation. Procedures to ensure that persons who appear to be intoxicated or who demonstrate by manner or physical indications that they are under the influence of drugs, except medical patients under proper care, are refused embarkation. This does not apply to medical patients under proper care.

8.2.4. De-icing and Anti-icing on the ground. A description of the de-icing and anti-icing policy and procedures for aeroplanes on the ground. These shall include descriptions of the types and effects of icing and other contaminants on aeroplanes whilst stationary, during ground movements and during take-off. In addition, a description of the fluid types used must be given including:

(a) Proprietary or commercial names;

(b) Characteristics;

(c) Effects on aeroplane performance;

(d) Hold-over times; and

(e) Precautions during usage.

8.3. Flight Procedures

8.3.1. VFR/IFR Policy. A description of the policy for allowing flights to be made under VFR, or of requiring flights to be made under IFR, or of changing from one to the other.
8.3.2. Navigation Procedures. A description of all navigation procedures relevant to the type(s) and area(s) of operation. Consideration must be given to:

(a) Standard navigational procedures including policy for carrying out independent cross-checks of keyboard entries where these affect the flight path to be followed by the aeroplane;

(b) MNPS and POLAR navigation and navigation in other designated areas;

(c) RNAV;

(d) In-flight replanning; and

(e) Procedures in the event of system degradation; and

(f) RVSM

8.3.3. Altimeter setting procedures including use, where appropriate, of

— metric altimetry and conversion tables, and

— QFE operating procedures.

8.3.4. Altitude alerting system procedures

8.3.5. Ground Proximity Warning System/Terrain Avoidance Warning System. Procedures and instructions required for the avoidance of controlled flight into terrain, including limitations on high rate of descent near the surface (the related training requirements are covered in D.2.1).

8.3.6. Policy and procedures for the use of TCAS/ACAS

8.3.7. Policy and procedures for in-flight fuel management

8.3.8. Adverse and potentially hazardous atmospheric conditions. Procedures for operating in, and/or avoiding adverse and potentially hazardous atmospheric conditions including:

(a) Thunderstorms;

(b) Icing conditions;

(c) Turbulence;

(d) Wind shear;

(e) Jet stream;

(f) Volcanic ash clouds;

(g) Heavy precipitation;

(h) Sand storms;

(i) Mountain waves; and

(j) Significant Temperature inversions.

8.3.9. Wake Turbulence. Wake turbulence separation criteria, taking into account aeroplane types, wind conditions and runway location.

8.3.10. Crew members at their stations. The requirements for crew members to occupy their assigned stations or seats during the different phases of flight or whenever deemed necessary in the interest of safety and also include procedures for controlled rest on the flight deck.

8.3.11. Use of safety belts for crew and passengers. The requirements for crew members and passengers to use safety belts and/or harnesses during the different phases of flight or whenever deemed necessary in the interest of safety.
8.3.12. Admission to Flight Deck. The conditions for the admission to the flight deck of persons other than
the flight crew. The policy regarding the admission of Inspectors from the Authority must also be
included.

8.3.13. Use of vacant crew seats. The conditions and procedures for the use of vacant crew seats.

8.3.14. Incapacitation of crew members. Procedures to be followed in the event of incapacitation of crew
members in flight. Examples of the types of incapacitation and the means for recognising them
must be included.

8.3.15. Cabin Safety Requirements. Procedures covering:

(a) Cabin preparation for flight, in-flight requirements and preparation for landing including proce-
dures for securing cabin and galleys;

(b) Procedures to ensure that passengers are seated where, in the event that an emergency evacua-
tion is required, they may best assist and not hinder evacuation from the aeroplane;

(c) Procedures to be followed during passenger embarkation and disembarkation; and

(d) Procedures when refuelling/defuelling with passengers embarking, on board or disembarking.

(e) Smoking on board.

8.3.16. Passenger briefing procedures. The contents, means and timing of passenger briefing in accordance
with OPS 1.285.

8.3.17. Procedures for aeroplanes operated whenever required cosmic or solar radiation detection equip-
ment is carried. Procedures for the use of cosmic or solar radiation detection equipment and for
recording its readings including actions to be taken in the event that limit values specified in the
Operations Manual are exceeded. In addition, the procedures, including ATS procedures, to be
followed in the event that a decision to descend or re-route is taken.

8.3.18 Policy on the use of Autopilot and Auto throttle.

8.4. All Weather Operations. A description of the operational procedures associated with All Weather
operations (See also OPS Subpart D and E).

8.5. ETOPS. A description of the ETOPS operational procedures.

8.6. Use of the Minimum Equipment and Configuration Deviation List(s)

8.7. Non revenue flights. Procedures and limitations for:

(a) Training flights;

(b) Test flights;

(c) Delivery flights;

(d) Ferry flights;

(e) Demonstration flights; and

(f) Positioning flights, including the kind of persons who may be carried on such flights.
8.8. Oxygen Requirements

8.8.1. An explanation of the conditions under which oxygen must be provided and used.

8.8.2. The oxygen requirements specified for:
   (a) Flight crew;
   (b) Cabin crew; and
   (c) Passengers.

9. DANGEROUS GOODS AND WEAPONS

9.1. Information, instructions and general guidance on the transport of dangerous goods including:
   (a) Operator's policy on the transport of dangerous goods;
   (b) Guidance on the requirements for acceptance, labelling, handling, stowage and segregation of dangerous goods;
   (c) Procedures for responding to emergency situations involving dangerous goods;
   (d) Duties of all personnel involved as per OPS 1.1215; and
   (e) Instructions on the carriage of the operator's employees.

9.2. The conditions under which weapons, munitions of war and sporting weapons may be carried.

10. SECURITY

10.1. Security instructions and guidance of a non-confidential nature which must include the authority and responsibilities of operations personnel. Policies and procedures for handling and reporting crime on board such as unlawful interference, sabotage, bomb threats, and hijacking must also be included.

10.2. A description of preventative security measures and training.

   Note: Parts of the security instructions and guidance may be kept confidential.

11. HANDLING, NOTIFYING AND REPORTING OCCURRENCES

   Procedures for the handling, notifying and reporting occurrences. This section must include:

   (a) Definitions occurrences and of the relevant responsibilities of all persons involved;
   (b) Illustrations of forms used for reporting all types of occurrences (or copies of the forms themselves), instructions on how they are to be completed, the addresses to which they should be sent and the time allowed for this to be done;
   (c) In the event of an accident, descriptions of which company departments, Authorities and other organisations that have to be notified, how this will be done and in what sequence;
   (d) Procedures for verbal notification to air traffic service units of incidents involving ACAS RAs, bird hazards, dangerous goods and hazardous conditions;
(e) Procedures for submitting written reports on air traffic incidents, ACAS RAs, bird strikes, dangerous goods incidents or accidents, and unlawful interference;

(f) Reporting procedures to ensure compliance with OPS 1.085(b) and 1.420. These procedures must include internal safety related reporting procedures to be followed by crew members, designed to ensure that the commander is informed immediately of any incident that has endangered, or may have endangered, safety during flight and that he/she is provided with all relevant information.

12. RULES OF THE AIR

Rules of the Air including:

(a) Visual and instrument flight rules;
(b) Territorial application of the Rules of the Air;
(c) Communication procedures including COM-failure procedures;
(d) Information and instructions relating to the interception of civil aeroplanes;
(e) The circumstances in which a radio listening watch is to be maintained;
(f) Signals;
(g) Time system used in operation;
(h) ATC clearances, adherence to flight plan and position reports;
(i) Visual signals used to warn an unauthorised aeroplane flying in or about to enter a restricted, prohibited or danger area;
(j) Procedures for pilots observing an accident or receiving a distress transmission;
(k) The ground/air visual codes for use by survivors, description and use of signal aids; and
(l) Distress and urgency signals.

13. LEASING

A description of the operational arrangements for leasing, associated procedures and management responsibilities.

B. AEROPLANE OPERATING MATTERS — TYPE RELATED

Taking account of the differences between types, and variants of types, under the following headings:

0. GENERAL INFORMATION AND UNITS OF MEASUREMENT

0.1. General Information (e.g. aeroplane dimensions), including a description of the units of measurement used for the operation of the aeroplane type concerned and conversion tables.

1. LIMITATIONS

1.1. A description of the certified limitations and the applicable operational limitations including:

(a) Certification status (e.g. CS-23, CS-25, ICAO Annex XVI (CS-36 and CS-34), etc.);
(b) Passenger seating configuration for each aeroplane type including a pictorial presentation;
(c) Types of operation that are approved (e.g. VFR/IFR, CAT II/III, RNP Type, flight in known icing conditions etc);
(d) Crew composition;
(e) Mass and centre of gravity;
2. NORMAL PROCEDURES

2.1. The normal procedures and duties assigned to the crew, the appropriate check-lists, the system for use of the check-lists and a statement covering the necessary coordination procedures between flight and cabin crew. The following normal procedures and duties must be included:

(a) Pre-flight;
(b) Pre-departure;
(c) Altimeter setting and checking;
(d) Taxi, Take-Off and Climb;
(e) Noise abatement;
(f) Cruise and descent;
(g) Approach, Landing preparation and briefing;
(h) VFR Approach;
(i) Instrument approach;
(j) Visual Approach and circling;
(k) Missed Approach;
(l) Normal Landing;
(m) Post Landing; and
(n) Operation on wet and contaminated runways.

3. ABNORMAL AND EMERGENCY PROCEDURES

3.1. The abnormal and emergency procedures and duties assigned to the crew, the appropriate check-lists, the system for use of the check-lists and a statement covering the necessary coordination procedures between flight and cabin crew. The following abnormal and emergency procedures and duties must be included:

(a) Crew Incapacitation;
(b) Fire and Smoke Drills;
(c) Unpressurised and partially pressurised flight;
(d) Exceeding structural limits such as overweight landing;
(e) Exceeding cosmic radiation limits;
(f) Lightning Strikes;
(g) Distress Communications and alerting ATC to Emergencies;
(h) Engine failure;
(i) System failures;
(j) Guidance for Diversion in case of Serious Technical Failure;
(k) Ground Proximity Warning;
(l) TCAS Warning;
(m) Wind shear; and
(n) Emergency Landing/Ditching; and
(o) Departure contingency procedures.

4. PERFORMANCE

4.0. Performance data must be provided in a form in which it can be used without difficulty.

4.1. Performance data. Performance material which provides the necessary data for compliance with the performance requirements prescribed in OPS 1 Subparts F, G, H and I must be included to allow the determination of:

(a) Take-off climb limits — Mass, Altitude, Temperature;
(b) Take-off field length (dry, wet, contaminated);
(c) Net flight path data for obstacle clearance calculation or, where applicable, take-off flight path;
(d) The gradient losses for banked climb outs;
(e) En-route climb limits;
(f) Approach climb limits;
(g) Landing climb limits;
(h) Landing field length (dry, wet, contaminated) including the effects of an in-flight failure of a system or device, if it affects the landing distance;
(i) Brake energy limits; and
(j) Speeds applicable for the various flight stages (also considering wet or contaminated runways).

4.1.1. Supplementary data covering flights in icing conditions. Any certificated performance related to an allowable configuration, or configuration deviation, such as anti-skid inoperative, must be included.

4.1.2. If performance data, as required for the appropriate performance class, is not available in the approved AFM, then other data acceptable to the Authority must be included. Alternatively, the Operations Manual may contain cross-reference to the approved Data contained in the AFM where such Data is not likely to be used often or in an emergency.

4.2. Additional Performance Data. Additional performance data where applicable including:

(a) All engine climb gradients;
(b) Drift-down data;
(c) Effect of de-icing/anti-icing fluids;
(d) Flight with landing gear down;
(e) For aeroplanes with 3 or more engines, one engine inoperative ferry flights; and
(f) Flights conducted under the provisions of the CDL.

5. FLIGHT PLANNING

5.1. Data and instructions necessary for pre-flight and in-flight planning including factors such as speed schedules and power settings. Where applicable, procedures for engine(s)-out operations, ETOPS (particularly the one-engine-inoperative cruise speed and maximum distance to an adequate aerodrome determined in accordance with OPS 1.245) and flights to isolated aerodromes must be included.

5.2. The method for calculating fuel needed for the various stages of flight, in accordance with OPS 1.255.

6. MASS AND BALANCE

Instructions and data for the calculation of the mass and balance including:
(a) Calculation system (e.g. Index system);
(b) Information and instructions for completion of mass and balance documentation, including manual and computer generated types;
(c) Limiting masses and centre of gravity for the types, variants or individual aeroplanes used by the operator; and
(d) Dry Operating mass and corresponding centre of gravity or index.

7. LOADING

Procedures and provisions for loading and securing the load in the aeroplane.

8. CONFIGURATION DEVIATION LIST

The Configuration Deviation List(s) (CDL), if provided by the manufacturer, taking account of the aeroplane types and variants operated including procedures to be followed when an aeroplane is being despatched under the terms of its CDL.

9. MINIMUM EQUIPMENT LIST

The Minimum Equipment List (MEL) taking account of the aeroplane types and variants operated and the type(s)/area(s) of operation. The MEL must include the navigational equipment and take into account the required performance for the route and area of operation.

10. SURVIVAL AND EMERGENCY EQUIPMENT INCLUDING OXYGEN

10.1. A list of the survival equipment to be carried for the routes to be flown and the procedures for checking the serviceability of this equipment prior to take-off. Instructions regarding the location, accessibility and use of survival and emergency equipment and its associated check list(s) must also be included.

10.2. The procedure for determining the amount of oxygen required and the quantity that is available. The flight profile, number of occupants and possible cabin decompression must be considered. The information provided must be in a form in which it can be used without difficulty.
11. EMERGENCY EVACUATION PROCEDURES

11.1. Instructions for preparation for emergency evacuation including crew co-ordination and emergency station assignment.

11.2. Emergency evacuation procedures. A description of the duties of all members of the crew for the rapid evacuation of an aeroplane and the handling of the passengers in the event of a forced landing, ditching or other emergency.

12. AEROPLANE SYSTEMS

A description of the aeroplane systems, related controls and indications and operating instructions.

C. ROUTE AND AERODROME INSTRUCTIONS AND INFORMATION

1. Instructions and information relating to communications, navigation and aerodromes including minimum flight levels and altitudes for each route to be flown and operating minima for each aerodrome planned to be used, including:
   (a) Minimum flight level/altitude;
   (b) Operating minima for departure, destination and alternate aerodromes;
   (c) Communication facilities and navigation aids;
   (d) Runway data and aerodrome facilities;
   (e) Approach, missed approach and departure procedures including noise abatement procedures;
   (f) COM-failure procedures;
   (g) Search and rescue facilities in the area over which the aeroplane is to be flown;
   (h) A description of the aeronautical charts that must be carried on board in relation to the type of flight and the route to be flown, including the method to check their validity;
   (i) Availability of aeronautical information and MET services;
   (j) En-route COM/NAV procedures;
   (k) Aerodrome categorisation for flight crew competence qualification
   (l) Special aerodrome limitations (performance limitations and operating procedures).

D. TRAINING

1. Training syllabi and checking programmes for all operations personnel assigned to operational duties in connection with the preparation and/or conduct of a flight.

2. Training syllabi and checking programmes must include:

2.1. For flight crew. All relevant items prescribed in Subpart E and N;

2.2. For cabin crew. All relevant items prescribed in Subpart O;

2.3. For operations personnel concerned, including crew members:
   (a) All relevant items prescribed in Subpart R (Transport of Dangerous Goods by Air); and
   (b) All relevant items prescribed in Subpart S (Security).
2.4. For operations personnel other than crew members (e.g. dispatcher, handling personnel etc.). All other relevant items prescribed in OPS pertaining to their duties.

3. Procedures

3.1. Procedures for training and checking.

3.2. Procedures to be applied in the event that personnel do not achieve or maintain the required standards.

3.3. Procedures to ensure that abnormal or emergency situations requiring the application of part or all of abnormal or emergency procedures and simulation of IMC by artificial means are not simulated during commercial air transportation flights.

4. Description of documentation to be stored and storage periods (See Appendix 1 to OPS 1.1065).

Appendix 1 to OPS 1.1065
Document storage periods

An operator shall ensure that the following information/documentation is stored in an acceptable form, accessible to the Authority, for the periods shown in the Tables below.

Note: Additional information relating to maintenance records is prescribed in Part-M.

Table 1
Information used for the preparation and execution of a flight

<table>
<thead>
<tr>
<th>Information used for the preparation and execution of the flight as described in OPS 1.135</th>
<th>3 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operational flight plan</td>
<td>3 months</td>
</tr>
<tr>
<td>Aeroplane Technical log</td>
<td>36 months after the date of the last entry, in accordance with Part M.M.A.506(c)</td>
</tr>
<tr>
<td>Route specific NOTAM/AIS briefing documentation if edited by the operator</td>
<td>3 months</td>
</tr>
<tr>
<td>Mass and balance documentation</td>
<td>3 months</td>
</tr>
<tr>
<td>Notification of special loads including dangerous goods</td>
<td>3 months</td>
</tr>
</tbody>
</table>

Table 2
Reports

<table>
<thead>
<tr>
<th>Reports</th>
<th>3 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Journey log</td>
<td>3 months</td>
</tr>
<tr>
<td>Flight report(s) for recording details of any occurrence, as prescribed in OPS 1.420, or any event which the commander deems necessary to report/record</td>
<td>3 months</td>
</tr>
<tr>
<td>Reports on exceedances of duty and/or reducing rest periods</td>
<td>3 months</td>
</tr>
</tbody>
</table>
### Table 3
Flight crew records

<table>
<thead>
<tr>
<th>Flight Crew Records</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Flight, Duty and Rest time</td>
<td>15 months</td>
</tr>
<tr>
<td>Licence</td>
<td>As long as the flight crew member is exercising the privileges of the licence for the operator</td>
</tr>
<tr>
<td>Conversion training and checking</td>
<td>3 years</td>
</tr>
<tr>
<td>Command course (including checking)</td>
<td>3 years</td>
</tr>
<tr>
<td>Recurrent training and checking</td>
<td>3 years</td>
</tr>
<tr>
<td>Training and checking to operate in either pilot's seat</td>
<td>3 years</td>
</tr>
<tr>
<td>Recent experience (OPS 1.970 refers)</td>
<td>15 months</td>
</tr>
<tr>
<td>Route and aerodrome competence (OPS 1.975 refers)</td>
<td>3 years</td>
</tr>
<tr>
<td>Training and qualification for specific operations when required by OPS (e.g. ETOPS CATII/III operations)</td>
<td>3 years</td>
</tr>
<tr>
<td>Dangerous Goods training as appropriate</td>
<td>3 years</td>
</tr>
</tbody>
</table>

### Table 4
Cabin crew records

<table>
<thead>
<tr>
<th>Cabin Crew Records</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Flight, Duty and Rest time</td>
<td>15 months</td>
</tr>
<tr>
<td>Initial training, conversion and differences training (including checking)</td>
<td>As long as the cabin crew member is employed by the operator</td>
</tr>
<tr>
<td>Recurrent training and refresher (including checking)</td>
<td>Until 12 months after the cabin crew member has left the employ of the operator</td>
</tr>
<tr>
<td>Dangerous Goods training as appropriate</td>
<td>3 years</td>
</tr>
</tbody>
</table>

### Table 5
Records for other operations personnel

<table>
<thead>
<tr>
<th>Records for other operations personnel</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Training/qualification records of other personnel for whom an approved training programme is required by OPS</td>
<td>Last 2 training records</td>
</tr>
</tbody>
</table>

### Table 6
Other records

<table>
<thead>
<tr>
<th>Other Records</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Records on cosmic and solar radiation dosage</td>
<td>Until 12 months after the crew member has left the employ of the operator</td>
</tr>
<tr>
<td>Quality System records</td>
<td>5 years</td>
</tr>
<tr>
<td>Dangerous Goods Transport Document</td>
<td>3 months after completion of the flight</td>
</tr>
<tr>
<td>Dangerous Goods Acceptance Checklist</td>
<td>3 months after completion of the flight</td>
</tr>
</tbody>
</table>
SUBPART Q

FLIGHT AND DUTY TIME LIMITATIONS AND REST REQUIREMENTS

OPS 1.1090

Objective and scope

1. An operator shall establish a flight and duty time limitations and rest scheme (FTL) for crew members.

2. An operator shall ensure that for all its flights:
   2.1. The flight and duty time limitations and rest scheme is in accordance with both:
       (a) the provisions of this Subpart; and
       (b) any additional provisions that are applied by the Authority in accordance with the provisions of this Subpart for the purpose of maintaining safety.
   2.2. Flights are planned to be completed within the allowable flight duty period taking into account the time necessary for pre-flight duties, the flight and turn-around times.
   2.3. Duty rosters will be prepared and published sufficiently in advance to provide the opportunity for crew members to plan adequate rest.

3. Operators’ responsibilities
   3.1. An operator shall nominate a home base for each crew member.
   3.2. Operators shall be expected to appreciate the relationship between the frequencies and pattern of flight duty periods and rest periods and give due consideration to the cumulative effects of undertaking long duty hours interspersed with minimum rest.
   3.3. Operators shall allocate duty patterns which avoid such undesirable practices as alternating day/night duties or the positioning of crew members so that a serious disruption of established sleep/work pattern occurs.
   3.4. Operators shall plan local days free of duty and notify crew members in advance.
   3.5. Operators shall ensure that rest periods provide sufficient time to enable crew to overcome the effects of the previous duties and to be well rested by the start of the following flight duty period.
   3.6. Operators shall ensure flight duty periods are planned to enable crew members to remain sufficiently free from fatigue so they can operate to a satisfactory level of safety under all circumstances.

4. Crew Members’ responsibilities
   4.1. A crew member shall not operate an aeroplane if he/she knows that he/she is suffering from or is likely to suffer from fatigue or feels unfit, to the extent that the flight may be endangered.
   4.2. Crew members should make optimum use of the opportunities and facilities for rest provided and plan and use their rest periods properly.
5. Responsibilities of Civil Aviation Authorities

5.1. Variations

5.1.1. Subject to the provisions of Article 8, the Authority may grant variations to the requirements in this Subpart in accordance with applicable laws and procedures within the Member States concerned and in consultation with interested parties.

5.1.2. Each operator will have to demonstrate to the Authority, using operational experience and taking into account other relevant factors such as current scientific knowledge, that its request for a variation produces an equivalent level of safety.

Such variations will be accompanied with suitable mitigation measures where appropriate.

OPS 1.1095
Definitions

For the purposes of this Regulation, the following definitions shall apply:

1.1. Augmented flight crew:

A flight crew which comprises more than the minimum number required for the operation of the aeroplane and in which each flight crew member can leave his/her post and be replaced by another appropriately qualified flight crew member.

1.2. Block Time:

The time between an aeroplane first moving from its parking place for the purpose of taking off until it comes to rest on the designated parking position and all engines or propellers are stopped.

1.3. Break:

A period free of all duties, which counts as duty, being less than a rest period.

1.4. Duty:

Any task that a crew member is required to carry out associated with the business of an AOC holder. Unless where specific rules are provided for by this Regulation, the Authority shall define whether and to what extent standby is to be accounted for as duty.

1.5. Duty period:

A period which starts when a crew member is required by an operator to commence a duty and ends when the crew member is free from all duties.

1.6. Flight Duty Period:

A Flight Duty Period (FDP) is any time during which a person operates in an aircraft as a member of its crew. The FDP starts when the crew member is required by an operator to report for a flight or a series of flights; it finishes at the end of the last flight on which he/she is an operating crew member.

1.7. Home base:

The location nominated by the operator to the crew member from where the crew member normally starts and ends a duty period or a series of duty periods and where, under normal conditions, the operator is not responsible for the accommodation of the crew member concerned.
1.8. Local Day:
A 24 hour period commencing at 00:00 local time.

1.9. Local Night:
A period of 8 hours falling between 22:00 hours and 08:00 hours local time.

1.10. A Single Day Free of Duty:
A single day free of duty shall include two local nights. A rest period may be included as part of the
day off.

1.11. Operating crew member:
A crew member who carries out his/her duties in an aircraft during a flight or during any part of a
flight.

1.12 Positioning:
The transferring of a non-operating crew member from place to place, at the behest of the operator,
excluding travelling time. Travelling time is defined as:
— time from home to a designated reporting place and vice versa;
— time for local transfer from a place of rest to the commencement of duty and vice versa.

1.13. Rest Period:
An uninterrupted and defined period of time during which a crew member is free from all duties and
airport standby.

1.14. Standby:
A defined period of time during which a crew member is required by the operator to be available to
receive an assignment for a flight, positioning or other duty without an intervening rest period.

1.15. Window of Circadian Low (WOCL):
The Window of Circadian Low (WOCL) is the period between 02:00 hours and 05:59 hours. Within
a band of three time zones the WOCL refers to home base time. Beyond these three time zones the
WOCL refers to home base time for the first 48 hours after departure from home base time zone,
and to local time thereafter.

OPS 1.1100
Flight and duty limitations

1.1. Cumulative Duty Hours
An operator shall ensure that the total duty periods to which a crew member is assigned do not
exceed:
(a) 190 duty hours in any 28 consecutive days, spread as evenly as practicable throughout this period;
and
(b) 60 duty hours in any 7 consecutive days.

1.2. Limit on total block times
An operator shall ensure that the total block times of the flights on which an individual crew member
is assigned as an operating crew member does not exceed
(a) 900 block hours in a calendar year;
(b) 100 block hours in any 28 consecutive days.
1.1. This OPS does not apply to single pilot operations and to emergency medical service operations.

1.2. An operator shall specify reporting times that realistically reflect the time for safety related ground duties as approved by the Authority.

1.3. The maximum basic daily FDP is 13 hours.

1.4. These 13 hours will be reduced by 30 minutes for each sector from the third sector onwards with a maximum total reduction of two hours.

1.5. When the FDP starts in the WOCL, the maximum stated in point 1.3 and point 1.4 will be reduced by 100% of its encroachment up to a maximum of two hours. When the FDP ends in or fully encompasses the WOCL, the maximum FDP stated in point 1.3 and point 1.4 will be reduced by 50% of its encroachment.

2. Extensions:

2.1. The maximum daily FDP can be extended by up to one hour.

2.2. Extensions are not allowed for a basic FDP of 6 sectors or more.

2.3. Where an FDP encroaches on the WOCL by up to two hours extensions are limited to up to four sectors.

2.4. Where an FDP encroaches on the WOCL by more than two hours extensions are limited to up to two sectors.

2.5. The maximum number of extensions is two in any 7 consecutive days.

2.6. Where an FDP is planned to use an extension pre and post flight minimum rest is increased by two hours or post flight rest only is increased by four hours. Where the extensions are used for consecutive FDPs the pre and post rest between the two operations shall run consecutively.

2.7. When an FDP with extension starts in the period 22:00 to 04:59 hours the operator will limit the FDP to 11.45 hours.

3. Cabin Crew

3.1. For cabin crew being assigned to a flight or series of flights, the FDP of the cabin crew may be extended by the difference in reporting time between cabin crew and flight crew, as long as the difference does not exceed one hour.

4. Operational Robustness

4.1. Planned schedules must allow for flights to be completed within the maximum permitted flight duty period. To assist in achieving this operators will take action to change a schedule or crewing arrangements at the latest where the actual operation exceeds the maximum FDP on more than 33% of the flights in that schedule during a scheduled seasonal period.
5. Positioning

5.1. All the time spent on positioning is counted as duty.

5.2. Positioning after reporting but prior to operating shall be included as part of the FDP but shall not count as a sector.

5.3. A positioning sector immediately following operating sector will be taken into account for the calculation of minimum rest as defined in OPS 1.1110 points 1.1 and 1.2 below.

6. Extended FDP (Split Duty)

6.1. The Authority may grant approval to an operation based on an extended FDP including a break, subject to the provisions of Article 8.

6.2. Each operator will have to demonstrate to the Authority, using operational experience and taking into account other relevant factors, such as current scientific knowledge, that its request for an extended FDP produces an equivalent level of safety.

OPS 1.1110

Rest

1. Minimum rest

1.1. The minimum rest which must be provided before undertaking a flight duty period starting at home base shall be at least as long as the preceding duty period or 12 hours whichever is the greater;

1.2. The minimum rest which must be provided before undertaking a flight duty period starting away from home base shall be at least as long as the preceding duty period or 10 hours whichever is the greater; when on minimum rest away from home base, the operator must allow for an 8 hour sleep opportunity taking due account of travelling and other physiological needs;

1.3. An operator will ensure that effects on crew members of time zone differences will be compensated by additional rest, as regulated by the Authority subject to the provisions of Article 8.

1.4.1. Notwithstanding 1.1 and 1.2 and subject to the provisions of Article 8, the Authority may grant reduced rest arrangements.

1.4.2. Each operator will have to demonstrate to the Authority, using operational experience and taking into account other relevant factors, such as current scientific knowledge, that its request for reduced rest arrangements produces an equivalent level of safety.

2. Rest periods

2.1. An operator shall ensure that the minimum rest provided as outlined above is increased periodically to a weekly rest period, being a 36-hour period including two local nights, such that there shall never be more than 168 hours between the end of one weekly rest period and the start of the next. As an exception to OPS 1.1095 point 1.9, the Authority may decide that the second of those local nights may start from 20:00 hours if the weekly rest period has a duration of at least 40 hours.
OPS 1.1115

Extension of flight duty period due to in-flight rest

1. Subject to the provisions of Article 8 and providing each operator demonstrates to the Authority, using operational experience and taking into account other relevant factors such as current scientific knowledge, that its request produces an equivalent level of safety:

1.1. Flight Crew Augmentation

the Authority shall set the requirements in connection with the augmentation of a basic flight crew for the purpose of extending the flight duty period beyond the limits in OPS 1.1105 above;

1.2. Cabin crew

the Authority shall set the requirements in connection with the minimum in-flight rest by cabin crew member(s) when the FDP goes beyond the limitations in OPS 1.1105 above;

OPS 1.1120

Unforeseen circumstances in actual flight operations — commander’s discretion

1. Taking into account the need for careful control of these instances implied underneath, during the actual flight operation, which starts at the reporting time, the limits on flight duty, duty and rest periods prescribed in this Subpart may be modified in the event of unforeseen circumstances. Any such modifications must be acceptable to the commander after consultation with all other crew members and must, in all circumstances, comply with the following:

1.1. The maximum FDP referred to in OPS 1.1105 point 1.3 above may not be increased by more than two hours unless the flight crew has been augmented, in which case the maximum flight duty period may be increased by not more than 3 hours;

1.1.2. If on the final sector within a FDP unforeseen circumstances occur after take off that will result in the permitted increase being exceeded, the flight may continue to the planned destination or alternate;

1.1.3. In the event of such circumstances, the rest period following the FDP may be reduced but never below the minimum rest defined in OPS 1.1110 point 1.2 of this Subpart;

1.2. The Commander shall, in case of special circumstances, which could lead to severe fatigue, and after consultation with the crew members affected, reduce the actual flight duty time and/or increase the rest time in order to eliminate any detrimental effect on flight safety;

1.3. An operator shall ensure that:

1.3.1. The Commander submits a report to the operator whenever a FDP is increased by his/her discretion or when a rest period is reduced in actual operation and

1.3.2. Where the increase of a FDP or reduction of a rest period exceeds one hour, a copy of the report, to which the operator must add his comments, is sent to the Authority no later than 28 days after the event.
OPS 1.1125

Standby

1. Airport Standby

1.1. A crew member is on airport standby from reporting at the normal report point until the end of the notified standby period.

1.2. Airport standby will count in full for the purposes of cumulative duty hours.

1.3. Where airport standby is immediately followed by a flight duty, the relationship between such airport standby and the assigned flight duty shall be defined by the Authority. In such a case, airport standby shall be added to the duty period referred to in OPS 1.1110 under points 1.1 and 1.2 for the purposes of calculating minimum rest.

1.4. Where the airport standby does not lead to assignment on a flight duty, it shall be followed at least by a rest period as regulated by the Authority.

1.5. While on airport standby the operator will provide to the crew member a quiet and comfortable place not open to the public.

2. Other forms of standby (including standby at hotel)

2.1. Subject to the provisions of Article 8, all other forms of standby shall be regulated by the Authority, taking into account the following:

2.1.1. All activity shall be rostered and/or notified in advance.

2.1.2. The start and end time of the standby shall be defined and notified in advance.

2.1.3. The maximum length of any standby at a place other than a specified reporting point shall be determined.

2.1.4. Taking into account facilities available for the crew member to rest and other relevant factors, the relationship between the standby and any assigned flight duty resulting from the standby shall be defined.

2.1.5. The counting of standby times for the purposes of cumulative duty hours shall be defined.

OPS 1.1130

Nutrition

A meal and drink opportunity must occur in order to avoid any detriment to a crew member’s performance, especially when the FDP exceeds 6 hours.

OPS 1.1135

Flight duty, duty and rest period records

1. An operator shall ensure that crew member’s records include:

(a) block times;
(b) start, duration and end of each duty or flight duty periods;
(c) rest periods and days free of all duties;

and are maintained to ensure compliance with the requirements of this Subpart; copies of these records will be made available to the crew member upon request.
2. If the records held by the operator under paragraph 1 do not cover all of his/her flight duty, duty and rest periods, the crew member concerned shall maintain an individual record of his/her:

(a) block times;
(b) start, duration and end of each duty or flight duty periods; and
(c) rest periods and days free of all duties.

3. A crew member shall present his/her records on request to any operator who employs his/her services before he/she commences a flight duty period.

4. Records shall be preserved for at least 15 calendar months from the date of the last relevant entry or longer if required in accordance with national laws.

5. Additionally, operators shall separately retain all aircraft commander’s discretion reports of extended flight duty periods, extended flight hours and reduced rest periods for at least six months after the event.

SUBPART R

TRANSPORT OF DANGEROUS GOODS BY AIR

OPS 1.1150
Terminology

(a) Terms used in this Subpart have the following meanings:

(1) Acceptance Check List. A document used to assist in carrying out a check on the external appearance of packages of dangerous goods and their associated documents to determine that all appropriate requirements have been met.

(2) Cargo Aircraft. Any aircraft which is carrying goods or property but not passengers. In this context the following are not considered to be passengers:

(i) A crew member;
(ii) An operator’s employee permitted by, and carried in accordance with, the instructions contained in the Operations Manual;
(iii) An authorised representative of an Authority; or
(iv) A person with duties in respect of a particular shipment on board.

(3) Dangerous Goods Accident. An occurrence associated with and related to the transport of dangerous goods which results in fatal or serious injury to a person or major property damage.

(4) Dangerous Goods Incident. An occurrence, other than a dangerous goods accident, associated with and related to the transport of dangerous goods, not necessarily occurring on board an aircraft, which results in injury to a person, property damage, fire, breakage, spillage, leakage of fluid or radiation or other evidence that the integrity of the packaging has not been maintained. Any occurrence relating to the transport of dangerous goods which seriously jeopardises the aircraft or its occupants is also deemed to constitute a dangerous goods incident.
Dangerous Goods Transport Document. A document which is specified by the Technical Instructions. It is completed by the person who offers dangerous goods for air transport and contains information about those dangerous goods. The document bears a signed declaration indicating that the dangerous goods are fully and accurately described by their proper shipping names and UN/ID numbers and that they are correctly classified, packed, marked, labelled and in a proper condition for transport.

Freight Container. A freight container is an article of transport equipment for radioactive materials, designed to facilitate the transport of such materials, either packaged or unpackaged, by one or more modes of transport. (Note: see Unit Load Device where the dangerous goods are not radioactive materials.)

Handling Agent. An agency which performs on behalf of the operator some or all of the latter’s functions including receiving, loading, unloading, transferring or other processing of passengers or cargo.

ID number. A temporary identification number for an item of dangerous goods which has not been assigned a UN number.

Overpack. An enclosure used by a single shipper to contain one or more packages and to form one handling unit for convenience of handling and stowage. (Note: a unit load device is not included in this definition.)

Package. The complete product of the packing operation consisting of the packaging and its contents prepared for transport.

Packaging. Receptacles and any other components or materials necessary for the receptacle to perform its containment function and to ensure compliance with the packing requirements.

Proper Shipping Name. The name to be used to describe a particular article or substance in all shipping documents and notifications and, where appropriate, on packagings.

Serious Injury. An injury which is sustained by a person in an accident and which:

(i) Requires hospitalisation for more than 48 hours, commencing within seven days from the date the injury was received; or

(ii) Results in a fracture of any bone (except simple fractures of fingers, toes or nose); or

(iii) Involves lacerations which cause severe haemorrhage, nerve, muscle or tendon damage; or

(iv) Involves injury to any internal organ; or

(v) Involves second or third degree burns, or any burns affecting more than 5% of the body surface; or

(vi) Involves verified exposure to infectious substances or injurious radiation.

State of Origin. The Authority in whose territory the dangerous goods were first loaded on an aircraft.

(16) UN Number. The four-digit number assigned by the United Nations Committee of Experts on the Transport of Dangerous Goods to identify a substance or a particular group of substances.

(17) Unit Load Device. Any type of aircraft container, aircraft pallet with a net, or aircraft pallet with a net over an igloo. (Note: an overpack is not included in this definition; for a container containing radioactive materials see the definition for freight container.)

OPS 1.1155
Approval to Transport — Dangerous Goods

An operator shall not transport dangerous goods unless approved to do so by the Authority.

OPS 1.1160
Scope

(a) An operator shall comply with the provisions contained in the Technical Instructions on all occasions when dangerous goods are carried, irrespective of whether the flight is wholly or partly within or wholly outside the territory of a State.

(b) Articles and substances which would otherwise be classed as dangerous goods are excluded from the provisions of this Subpart, to the extent specified in the Technical Instructions, provided:

(1) They are required to be aboard the aeroplane in accordance with the relevant applicable rules or for operating reasons;

(2) They are carried as catering or cabin service supplies;

(3) They are carried for use in flight as veterinary aid or as a humane killer for an animal;

(4) They are carried for use in flight for medical aid for a patient, provided that:

   (i) Gas cylinders have been manufactured specifically for the purpose of containing and transporting that particular gas;

   (ii) Drugs, medicines and other medical matter are under the control of trained personnel during the time when they are in use in the aeroplane;

   (iii) Equipment containing wet cell batteries is kept and, when necessary secured, in an upright position to prevent spillage of the electrolyte; and

   (iv) Proper provision is made to stow and secure all the equipment during take-off and landing and at all other times when deemed necessary by the commander in the interests of safety; or

(5) They are carried by passengers or crew members.

(c) Articles and substances intended as replacements for those in (b)(1) and (b)(2) above shall be transported on an aeroplane as specified in the Technical Instructions.
OPS 1.1165
Limitations on the Transport of Dangerous Goods

(a) An operator shall take all reasonable measures to ensure that articles and substances that are specifically identified by name or generic description in the Technical Instructions as being forbidden for transport under any circumstances are not carried on any aeroplane.

(b) An operator shall take all reasonable measures to ensure that articles and substances or other goods that are identified in the Technical Instructions as being forbidden for transport in normal circumstances are only transported when:

(1) They are exempted by the States concerned under the provisions of the Technical Instructions; or

(2) The Technical Instructions indicate they may be transported under an approval issued by the State of Origin.

OPS 1.1170
Classification

An operator shall take all reasonable measures to ensure that articles and substances are classified as dangerous goods as specified in the Technical Instructions.

OPS 1.1175
Packing

An operator shall take all reasonable measures to ensure that dangerous goods are packed as specified in the Technical Instructions.

OPS 1.1180
Labelling and Marking

(a) An operator shall take all reasonable measures to ensure that packages, overpacks and freight containers are labelled and marked as specified in the Technical Instructions.

(b) Where dangerous goods are carried on a flight which takes place wholly or partly outside the territory of a State, labelling and marking must be in the English language in addition to any other language requirements.

OPS 1.1185
Dangerous Goods Transport Document

(a) An operator shall ensure that, except when otherwise specified in the Technical Instructions, dangerous goods are accompanied by a dangerous goods transport document.

(b) Where dangerous goods are carried on a flight which takes place wholly or partly outside the territory of a State, the English language must be used for the dangerous goods transport document in addition to any other language requirements.

OPS 1.1195
Acceptance of Dangerous Goods

(a) An operator shall not accept dangerous goods for transport until the package, overpack or freight container has been inspected in accordance with the acceptance procedures in the Technical Instructions.

(b) An operator or his handling agent shall use an acceptance check list. The acceptance check list shall allow for all relevant details to be checked and shall be in such form as will allow for the recording of the results of the acceptance check by manual, mechanical or computerised means.
OPS 1.1200
Inspection for Damage, Leakage or Contamination

(a) An operator shall ensure that:

(1) Packages, overpacks and freight containers are inspected for evidence of leakage or damage immediately prior to loading on an aeroplane or into a unit load device, as specified in the Technical Instructions;

(2) A unit load device is not loaded on an aeroplane unless it has been inspected as required by the Technical Instructions and found free from any evidence of leakage from, or damage to, the dangerous goods contained therein;

(3) Leaking or damaged packages, overpacks or freight containers are not loaded on an aeroplane;

(4) Any package of dangerous goods found on an aeroplane and which appears to be damaged or leaking is removed or arrangements made for its removal by an appropriate authority or organisation. In this case the remainder of the consignment shall be inspected to ensure it is in a proper condition for transport and that no damage or contamination has occurred to the aeroplane or its load; and

(5) Packages, overpacks and freight containers are inspected for signs of damage or leakage upon unloading from an aeroplane or from a unit load device and, if there is evidence of damage or leakage, the area where the dangerous goods were stowed is inspected for damage or contamination.

OPS 1.1205
Removal of Contamination

(a) An operator shall ensure that:

(1) Any contamination found as a result of the leakage or damage of dangerous goods is removed without delay; and

(2) An aeroplane which has been contaminated by radioactive materials is immediately taken out of service and not returned until the radiation level at any accessible surface and the non-fixed contamination are not more than the values specified in the Technical Instructions.

OPS 1.1210
Loading Restrictions

(a) Passenger Cabin and Flight Deck. An operator shall ensure that dangerous goods are not carried in an aeroplane cabin occupied by passengers or on the flight deck, unless otherwise specified in the Technical Instructions.

(b) Cargo Compartments. An operator shall ensure that dangerous goods are loaded, segregated, stowed and secured on an aeroplane as specified in the Technical Instructions.

(c) Dangerous Goods Designated for Carriage Only on Cargo Aircraft. An operator shall ensure that packages of dangerous goods bearing the “Cargo Aircraft Only” label are carried on a cargo aircraft and loaded as specified in the Technical Instructions.

OPS 1.1215
Provision of Information

(a) Information to Ground Staff.

An operator shall ensure that:

(1) Information is provided to enable ground staff to carry out their duties with regard to the transport of dangerous goods, including the actions to be taken in the event of incidents and accidents involving dangerous goods; and

(2) Where applicable, the information referred to in sub-paragraph (a)(1) above is also provided to his handling agent.
(b) Information to Passengers and Other Persons

(1) An operator shall ensure that information is promulgated as required by the Technical Instructions so that passengers are warned as to the types of goods which they are forbidden from transporting aboard an aeroplane; and

(2) An operator and, where applicable, his handling agent shall ensure that notices are provided at acceptance points for cargo giving information about the transport of dangerous goods.

c) Information to Crew Members.

An operator shall ensure that information is provided in the Operations Manual to enable crew members to carry out their responsibilities in regard to the transport of dangerous goods, including the actions to be taken in the event of emergencies arising involving dangerous goods.

d) Information to the Commander. An operator shall ensure that the commander is provided with written information, as specified in the Technical Instructions. (See Table 1 of Appendix 1 to OPS 1.1065 for the document storage period).

e) Information in the Event of an Aeroplane Incident or Accident

(1) The operator of an aeroplane which is involved in an aeroplane incident shall, on request, provide any information required to minimise the hazards created by any dangerous goods carried.

(2) The operator of an aeroplane which is involved in an aeroplane accident shall, as soon as possible, inform the appropriate authority of the State in which the aeroplane accident occurred of any dangerous goods carried.

OPS 1.1220

Training programmes

(a) An operator shall establish and maintain staff training programmes, as required by the Technical Instructions, which shall be approved by the Authority.

(b) Operators not holding a permanent approval to carry dangerous goods.

An operator shall ensure that:

(1) Staff who are engaged in general cargo and baggage handling have received training to carry out their duties in respect of dangerous goods. As a minimum this training must cover the areas identified in Column 1 of Table 1 and be to a depth sufficient to ensure that an awareness is gained of the hazards associated with dangerous goods, how to identify them and what requirements apply to the carriage of such goods by passengers; and

(2) The following personnel:

(i) Crew members;

(ii) Passenger handling staff; and

(iii) Security staff employed by the operator who deal with the screening of passengers and their baggage,

have received training which, as a minimum, must cover the areas identified in Column 2 of Table 1 and be to a depth sufficient to ensure that an awareness is gained of the hazards associated with dangerous goods, how to identify them and what requirements apply to the carriage of such goods by passengers.
Table 1

<table>
<thead>
<tr>
<th>AREAS OF TRAINING</th>
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<th>2</th>
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</thead>
<tbody>
<tr>
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<tr>
<td>Limitations on Dangerous Goods in air transport</td>
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<td>Package marking and labelling</td>
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<tr>
<td>Emergency procedures</td>
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</tbody>
</table>

Note: “X” indicates an area to be covered.

(c) Operators holding a permanent approval to carry dangerous goods.

An operator shall ensure that:

(1) Staff who are engaged in the acceptance of dangerous goods have received training and are qualified to carry out their duties. As a minimum this training must cover the areas identified in Column 1 of Table 2 and be to a depth sufficient to ensure the staff can take decisions on the acceptance or refusal of dangerous goods offered for carriage by air.

(2) Staff who are engaged in ground handling, storage and loading of dangerous goods have received training to enable them to carry out their duties in respect of dangerous goods. As a minimum this training must cover the areas identified in Column 2 of Table 2 and be to a depth sufficient to ensure that an awareness is gained of the hazards associated with dangerous goods, how to identify such goods and how to handle and load them.

(3) Staff who are engaged in general cargo and baggage handling have received training to enable them to carry out their duties in respect of dangerous goods. As a minimum this training must cover the areas identified in Column 3 of Table 2 and be to a depth sufficient to ensure that an awareness is gained of the hazards associated with dangerous goods, how to identify such goods, how to handle and load them and what requirements apply to the carriage of such goods by passengers.

(4) Flight crew members have received training which, as a minimum, must cover the areas identified in Column 4 of Table 2. Training must be to a depth sufficient to ensure that an awareness is gained of the hazards associated with dangerous goods and how they should be carried on an aeroplane; and

(5) The following personnel:

(i) Passenger handling staff;

(ii) Security staff employed by the operator who deal with the screening of passengers and their baggage; and

(iii) Crew members other than flight crew members, have received training which, as a minimum, must cover the areas identified in Column 5 of Table 2. Training must be to a depth sufficient to ensure that an awareness is gained of the hazards associated with dangerous goods and what requirements apply to the carriage of such goods by passengers or, more generally, their carriage on an aeroplane.
(d) An operator shall ensure that all staff who receive training undertake a test to verify understanding of their responsibilities.

(e) An operator shall ensure that all staff who require dangerous goods training receive recurrent training at intervals of not longer than 2 years.

(f) An operator shall ensure that records of dangerous goods training are maintained for all staff trained in accordance with sub-paragraph (d) above and as required by the Technical Instructions.

(g) An operator shall ensure that his handling agent's staff are trained in accordance with the applicable column of Table 1 or Table 2.

Table 2

<table>
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<tr>
<th>AREAS OF TRAINING</th>
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</tbody>
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Note: “X” indicates an area to be covered.

OPS 1.1225
Dangerous Goods Incident and Accident Reports

(a) An operator shall report dangerous goods incidents and accidents to the Authority. An initial report shall be despatched within 72 hours of the event unless exceptional circumstances prevent this.

(b) An operator shall also report to the Authority undeclared or misdeclared dangerous goods discovered in cargo or passengers' baggage. An initial report shall be despatched within 72 hours of the discovery unless exceptional circumstances prevent this.

SUBPART S
SECURITY

OPS 1.1235
Security requirements

An operator shall ensure that all appropriate personnel are familiar, and comply, with the relevant requirements of the national security programmes of the State of the operator.
OPS 1.1240
Training programmes

An operator shall establish, maintain and conduct approved training programs which enable the operator’s crew members to take appropriate action to prevent acts of unlawful interference such as sabotage or unlawful seizure of aeroplanes and to minimize the consequences of such events should they occur. The training programme shall be compatible with the National Aviation Security programme. Individual crew member shall have knowledge and competence of all relevant elements of the training programme.

OPS 1.1245
Reporting acts of unlawful interference

Following an act of unlawful interference on board an aeroplane the commander or, in his/her absence the operator, shall submit, without delay, a report of such an act to the designated local authority and the Authority in the State of the operator.

OPS 1.1250
Aeroplane search procedure checklist

An operator shall ensure that there is on board a checklist of the procedures to be followed in search of a bomb or Improvised Explosive Device (IED) in case of suspected sabotage and for inspecting aeroplanes for concealed weapons, explosives or other dangerous devices where a well founded suspicion exists that the aeroplane may be the object of an act of unlawful interference. The checklist shall be supported by guidance on the appropriate course of action to be taken should a bomb or suspicious object be found and information on the least-risk bomb location specific to the aeroplane where provided by the Type Certificate holder.

OPS 1.1255
Flight crew compartment security

(a) In all aeroplanes which are equipped with a flight crew compartment door, this door shall be capable of being locked, and means or procedures acceptable to the Authority shall be provided or established by which the cabin crew can notify the flight crew in the event of suspicious activity or security breaches in the cabin.

(b) All passenger-carrying aeroplanes of a maximum certificated take-off mass in excess of 45 500 kg or with a Maximum Approved Passenger Seating Configuration greater than 60 shall be equipped with an approved flight crew compartment door that is capable of being locked and unlocked from each pilot’s station and designed to meet the applicable retroactive airworthiness operational requirements. The design of this door shall not hinder emergency operations, as required in applicable retroactive airworthiness operational requirements.

(c) In all aeroplanes which are equipped with a flight crew compartment door in accordance with sub-paragraph (b):

1. This door shall be closed prior to engine start for take-off and will be locked when required by security procedure or the Commander, until engine shut down after landing, except when deemed necessary for authorised persons to access or egress in compliance with National Aviation Security Programme;

2. Means shall be provided for monitoring from either pilot’s station the area outside the flight crew compartment to the extent necessary to identify persons requesting entry to the flight crew compartment and to detect suspicious behaviour or potential threat.'
Shipments of radioactive waste and nuclear spent fuel *


(Consultation procedure)

The European Parliament,

— having regard to the Commission proposal to the Council (COM(2005)0673) (1),
— having regard to Articles 31(2) and 32 of the Euratom Treaty, pursuant to which the Council consulted Parliament (C6-0031/2006),
— having regard to Rule 51 of its Rules of Procedure,
— having regard to the report of the Committee on Industry, Research and Energy (A6-0174/2006);

1. Approves the Commission proposal as amended;
2. Calls on the Commission to alter its proposal accordingly, pursuant to Article 119, second paragraph, of the Euratom Treaty;
3. Calls on the Council to notify Parliament if it intends to depart from the text approved by Parliament;
4. Asks the Council to consult Parliament again if it intends to amend the Commission proposal substantially;
5. Instructs its President to forward its position to the Council and Commission.

Amendment 1
Recital 1 a (new)


Amendment 2
Recital 6

(6) Lack of a Community common fuel cycle policy, each Member State remains responsible for the choice of its own policy on the management of the nuclear waste and spent fuel that are under its jurisdiction; the provisions of this Directive should therefore be without prejudice to the right of Member States to export their spent fuel for reprocessing and to their right to refuse the entry into their territory of radioactive waste for final treatment or disposal, except in the case of reshipment.

(6) Each Member State remains responsible for the choice of its own policy on the management of the nuclear waste and spent fuel that are under its jurisdiction, some considering spent fuel as a usable resource that can be reprocessed, others electing to dispose of it: the provisions of this Directive should therefore be without prejudice to the right of Member States of origin to export their spent fuel for reprocessing and to the right of Member States of destination to refuse the entry into their territory of (i) radioactive waste for final treatment, except in the case of reshipment, and (ii) spent fuel for final disposal.

(1) Not yet published in OJ.
Article 3, paragraph 3 a (new)

3a. This Directive is without prejudice to rights and obligations under international law, including, but not limited to, the right of innocent passage and right of transit passage enshrined in the United Nations Convention on the Law of the Sea (UNCLOS).

Article 3, point 1

(1) ‘radioactive waste’ means radioactive material in gaseous, liquid or solid form for which no further use is foreseen by the countries of origin and destination, or by a natural or legal person whose decision is accepted by these countries, and/or which is controlled as radioactive waste by a regulatory body under the legislative and regulatory framework of the countries of origin, transit and destination;
Amendment 7  
Article 3, point 2

(2) ‘spent fuel’ means nuclear fuel that has been irradiated in and permanently removed from a reactor core;

(2) ‘spent fuel’ means nuclear fuel that has been irradiated in and permanently removed from a reactor core: spent fuel may either be considered as a usable resource that can be reprocessed or be destined for final disposal with no further use foreseen and treated as radioactive waste.

Amendment 8
Article 5, paragraph 1 a (new)

The competent authorities of the Member States involved shall take the necessary measures to ensure that all information regarding shipments covered by this Directive is handled with due care and protected against any misuse.

Amendment 9
Article 5 a (new)

Article 5a  
Acknowledgment of receipt of the application by the competent authorities

Not later than 15 calendar days from the date of the receipt of the application by the competent authorities of the Member State of destination and of any Member State of transit, those authorities shall:

(a) send an acknowledgement of receipt of the application to the competent authorities of the Member State of origin, provided that the application is duly completed in compliance with the provisions of Article 14; or

(b) where the application is not duly completed as set out in point (a), request the missing information from the competent authorities of the Member State of origin and inform the competent authorities of the Member State of destination and other Member States of transit, if any, of such request. A copy of that request shall be transmitted to the holder. The sending of such a request shall have the effect of suspending the time-limit for issuing an acknowledgement of receipt. The missing information shall be sent by the competent authorities of the Member State of origin to the competent authorities of the Member States concerned without undue delay. Not later than seven calendar days after the date of receipt of the missing information, the competent authorities of the Member State of destination or transit by which it had been requested shall send an acknowledgement of receipt of the duly completed application to the competent authorities of the Member State of origin.
Amendment 10

Article 6, paragraph 1

1. Not later than one month from the date of receipt of the duly completed application by the competent authorities of the Member State of destination and of any Member State of transit, they shall issue an acknowledgement of receipt.

Not later than three months from the date of receipt of the duly completed application the competent authorities of the Member State of destination and of any Member State of transit shall notify the competent authorities of the country of origin of their consent or of the conditions which they consider necessary or of their refusal to grant consent.

However, the competent authorities of the Member State of destination or of any Member State of transit may request a further period of not more than one month in addition to the period referred to in the second subparagraph to make their position known.

Amendment 11

Article 6, paragraph 2

2. If upon expiry of the periods referred to in the second and third subparagraphs of paragraph 1 no reply has been received from the competent authorities of the Member State of destination and/or the intended Member States of transit, those countries shall be deemed to have given their consent for the shipment requested provided that the acknowledgement of receipt referred to in paragraph 1 has been received from those countries.

Amendment 12

Article 6, paragraph 3, point (b)

b) for the Member State of destination, on relevant legislation applicable to the management of radioactive waste or spent fuel and on relevant national, Community or international legislation applicable to transport of radioactive material.

Amendment 13

Article 6, paragraph 3, subparagraph 2 a (new)

The same consent and refusal procedure shall be applied for both shipments of radioactive waste and shipments of spent fuel for disposal.
2. Where a shipment cannot be completed or if the conditions for shipment are not complied with in accordance with the provisions of this Directive, the competent authorities of the Member State of origin shall ensure that the radioactive waste or the spent fuel in question is taken back by the holder, unless an alternative safe arrangement can be made. They shall ensure that the person responsible for the shipment takes corrective safety measures where necessary.

Amendment 14
Article 9, paragraph 2

2. Where a shipment cannot be completed or if the conditions for shipment are not complied with in accordance with the provisions of this Directive, the competent authorities of the Member State of origin shall ensure that the radioactive waste or the spent fuel in question is taken back by the holder, unless an alternative safe arrangement can be made on the basis of the applicable legislation on the management of spent fuel and radioactive waste. They shall ensure that the person responsible for the shipment takes corrective safety measures where necessary.

Amendment 15
Article 9, paragraph 3

3. The holder shall be liable for costs arising in cases where the shipment cannot or may not be completed.

Amendment 16
Article 10, paragraph 1, subparagraph 3

The consignee shall be liable for costs arising in cases where the shipment cannot or may not be completed.

Amendment 17
Article 10, paragraph 5

5. The Member State of destination or any Member State of transit may decide that the shipment may not be completed if the conditions for shipment are no longer complied with in accordance with the provisions of this Directive, or are not in accordance with the authorisations or consents issued pursuant to this Directive. Such Member State shall forthwith inform the competent authorities of the country of origin of this decision. The consignee will be liable for costs arising in cases where the shipment cannot or may not be completed.
Amendment 18

Article 11, paragraph 5

5. A Member State of transit may decide that the shipment may not be completed if the conditions for shipment are no longer complied with in accordance with the provisions of this Directive, or are not in accordance with the authorisations or consents issued pursuant to this Directive. Such Member State shall forthwith inform the competent authorities of the country of origin of this decision. The responsible person referred to in paragraph 1 shall be liable for costs arising in cases where the shipment cannot or may not be completed.

Amendment 19

Article 12, paragraph 5

5. The Member State of origin or any Member State of transit may decide that the shipment may not be completed if the conditions for shipment are no longer complied with in accordance with the provisions of this Directive, or are not in accordance with the authorisations or consents issued pursuant to this Directive. Such Member State of transit shall forthwith inform the competent authorities of the Member State of origin of this decision. Article 9, paragraph 2, applies. The holder will be liable for costs arising in cases where the shipment cannot or may not be completed.

Amendment 20

Article 16, paragraph 1

1. Member States shall promote agreements in order to facilitate the safe management, including the final disposal, of radioactive waste from countries that produce it in small quantities and where the establishment of appropriate facilities would not be justified from the radiological point of view.
More research and innovation — investing for growth and employment

European Parliament resolution on implementing the Community Lisbon Programme: more research and innovation — investing for growth and employment: A common approach (2006/2005(INI))

The European Parliament,


— having regard to the Presidency Conclusions of the Lisbon European Council of 23 and 24 March 2000, which resolved to make the Union the most competitive and dynamic knowledge-based economy in the world,

— having regard to the Presidency Conclusions of the Brussels European Council of 22 and 23 March 2005,

— having regard to the Presidency Conclusions of the Brussels European Council of 23 and 24 March 2006,


— having regard to the Commission Communication entitled ‘Investing in research: an action plan for Europe’ (COM(2005)0226),


— having regard to the Commission Communication entitled ‘Common Actions for Growth and Employment: The Community Lisbon Programme’ (COM(2005)0330),

— having regard to the Commission’s annual report on research and technological development activities of the European Union in 2004 (COM(2005)0517),


— having regard to the Commission Communication entitled ‘Implementing the renewed partnership for growth and jobs — Developing a knowledge flagship: the European Institute of Technology’ (COM(2006)0077),


having regard to the European Innovation Scoreboard 2005 — Comparative Analysis of Innovation Performance which clearly shows that the United States and Japan are leaders in terms of innovation,

— having regard to the Expert Group Report of July 2004 entitled ‘Improving institutions for the transfer of technology from science to enterprises’,


— having regard to the report of January 2006, drawn up by the Independent Expert Group on R&D and Innovation appointed following the Hampton Court Summit, entitled ‘Creating an Innovative Europe’ (the Aho-report),

— having regard to its resolution of 10 March 2005 on science and technology — Guidelines for future European Union policy to support research (1),

— having regard to its resolution of 19 January 2006 on implementing the European Charter for Small Enterprises (2),

— having regard to its resolution of 14 March 2006 on a European information society for growth and employment (3),

— having regard to Rule 45 of its Rules of Procedure,

— having regard to the report of the Committee on Industry, Research and Energy and the opinions of the Committee on Culture and Education and the Committee on Employment and Social Affairs (A6-0204/2006),

A. whereas Europe lags behind the United States and Japan in terms of growth, research and productivity, failing to capitalise on Information and Communication Technologies (ICT) application or to attract R&D investment into Europe,

B. whereas increasing the resources available for R&D is a prerequisite for the successful innovation needed for economic growth and the creation of jobs,

C. whereas reports from the Organisation for Economic Co-operation and Development (OECD) show that R&D grants help firms with strategic change and organisational routines, and improve attitudes towards technology,

D. whereas while Europe’s best companies invest at world class levels, the private sector must make a greater effort in the area of R&D,

E. whereas the contributions of small and middle-sized enterprises (SMEs) to the development of new technology-based products and services and markets are dependent upon their capacities to innovate, increase their research efforts, outsource research, extend their networks, better exploit research results and acquire technological know-how,

F. whereas market innovation could benefit those European sectors which directly affect Member States’ citizens and account for the highest levels of GDP,

G. whereas support organisations such as training and research centres, financial institutions, innovation and intellectual property consultants and local and regional development agencies can help to maximise firms’ creative business potential,

H. whereas Europe’s weak labour market performance, inefficient use of human resources, market fragmentation and reduced labour mobility largely explain the poor progress made towards the Lisbon and Stockholm objectives,

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1. whereas structural barriers and insufficient incentives prevent greater mobility of established researchers,

J. whereas European Technology Transfer Institutions and Innovation Relay Centres, allow faster commercialisation, a better dissemination of new technologies, the improved management of intellectual property, a better implementation of research results and better coordination with existing national and regional schemes,

K. whereas adoption of the 'Open Innovation' approach would boost R & D capacity in the EU,

L. whereas the Commission's proposed research budget should not be back-loaded within the Financial Framework,

M. whereas a critical mass of EU budget resources for financial instruments is necessary, to enhance SME financing, tackle market failures and optimise Community resources, leveraging public and private capital,

N. whereas researchers need pre-seed finance in order to conduct market assessments, develop pilot and demonstration projects and working prototypes, for company start-ups and to commercialise new research products, and whereas venture capital is needed for subsequent company growth,

O. whereas State aid provisions should be simple, transparent and effective, used only as a last resort where the market fails, and granted on a temporary basis;

1. Urges Member States to promote entrepreneurship from the early stages of education onwards and to strengthen their support for life-long learning by actively encouraging ICT training amongst both employed and unemployed persons;

2. Notes the Union's delays in implementing the Lisbon Strategy in the area of education and training; appeals to the Member States to take it on themselves to relaunch the Lisbon Strategy;

3. Stresses the need to raise the profile of scientific career paths and to promote existing incentives and awards such as the Descartes, Aristotle and young scientist's awards;

4. Calls for greater support to be given to the best European researchers, especially early-stage researchers, in the form of more attractive working conditions, the reduction of legal, administrative and geographical barriers and the equal treatment of European researchers with their foreign counterparts;

5. Firmly supports the necessary objective of a single market for researchers, as set out by the Commission in its abovementioned communication on 'Implementing the Community Lisbon Programme: More Research and Innovation — Investing for growth and employment: A common approach';

6. Acknowledges that incentives to improve employment conditions for scientists and researchers and the ongoing training of the workforce are essential to encourage the sharing of scientific knowledge;

7. Believes that training establishments can make a major contribution in this respect and is convinced that, firstly, contact with science and research should commence at school, and secondly; it is necessary to promote creative collaboration between university research staff and the business sector; further considers that obstacles to researchers' mobility should be eliminated by improving their status and career development, objectives which cannot be achieved without improving cooperation between Member States on taxation and the transfer of certain social benefits;

8. Supports the European Charter for Researchers and Code of Conduct for the Recruitment of Researchers, since these initiatives may encourage more European students to take up research at university while serving as an incentive to the best foreign researchers, who should be encouraged to pursue their research careers in Europe, either permanently, or temporarily as part of a cooperation agreement through a specific policy of granting short term visas;
9. Calls on the EU to combat effectively its brain drain and to put in place all appropriate measures to attract excellence to its territory, among other things by promoting exchange programmes with third countries — Erasmus Mundus, for example — aimed at students, researchers, and teachers; takes the view that a European qualifications framework would be important for helping to establish a European labour market open to researchers, and supports efforts to reduce obstacles to the latter’s mobility;

10. Notes the importance of fostering a culture which celebrates innovation; urges Member States to allow innovation policy to penetrate all areas of research;

11. Stresses the fundamental role of universities in creating and spreading knowledge and strongly recommends that their importance be enhanced by developing synergies between higher education, research, lifelong learning and the productive sectors within the economy; will therefore pay attention to the Commission report on higher education;

12. Urges the Commission and the Member States to institute and promote European prizes for innovation;

13. Stresses the importance of promoting the integration of products, processes and knowledge-based services and the introduction of different support systems into non-technological sectors; draws attention in this connection to the fact that non-technological innovation also encompasses social innovation and institutional innovation;

14. Proposes offering selected SMEs which show a particular flair for innovation and business creation limited additional research support for their ventures;

15. Recommends paying particular attention to ensuring the adequate participation of SMEs in R&D by taking concrete measures such as earmarking a portion of research funding for SMEs;

16. Points to the need to support SMEs with regard to their research capacity;

17. Urges Member States to create an innovation-friendly market for citizens and businesses, ensuring better regulation, standards, public procurement and intellectual property rights; urges the Commission to provide information on the protection of the intellectual property rights;

18. Takes note of the Commission’s view that the EU must acquire a cost-effective, legally watertight and user-friendly system of intellectual property protection so as to attract technologically advanced companies; considers that the protection of intellectual property must not interfere with open access to public goods and public knowledge; urges the Commission to promote a socially inclusive knowledge-based society by supporting, for example, free and open source software and licensing concepts like the General Public License (GPL) and the Public Documentation Licence (PDL);

19. Notes the need for regional info-points for the coordination of relevant information regarding research and innovation;

20. Proposes the revised use of standard-setting powers to demand high technical performance levels and quickly reach agreement on new standards;

21. Proposes the Europeanization of national clusters, conglomerates, co-operatives and consortia to increase competitive power and critical mass, including multidisciplinary research, mature industries and start-ups;

22. Recognises the importance of creating poles and zones of innovation at regional level and of their networking with corresponding structures in other regions and Member States or third countries;

23. Urges clear target setting in the creation of centres of excellence, all of which should have creativity labs;

24. Notes the need for a Community patent and trademark, and for improved reciprocity between the European, United States’ and Japanese patent systems; stresses that an integrated Community patent system based on democratic legal standards must be part of an innovation strategy, in which it is essential to ensure a balance between protection of industrial property, dissemination of technical knowledge and free and unrestricted competition; underlines that the purpose of the protection provided by a patent is the safeguarding of an invention and not the controlling of market sectors;
25. Asks the Council to end the stalemate over the proposed Community patent as far as the language regime is concerned;

26. Draws the attention of the Commission and the Member States to the recent changes concerning the protection and dissemination of scientific know-how, to the success of scientific reviews published with free access and to the ‘Science Commons’ licence;

27. Urges the Commission to create a general reporting system to monitor indicators such as revenues from contract research, patents filed and granted, licences and revenues from licensing, the number of active contracts, the number of client enterprises (including SMEs) and the number and development of spin-offs, with qualitative interpretation;

28. Urges Member States to help put institutes for applied research in closer contact with industry, incubators and neighbouring science or industrial parks, enabling them to achieve critical mass;

29. Notes that key European sectors continue to suffer from poor coordination and integration, bottlenecks, and poor knowledge management; notes that more SME involvement in European technology platforms would help address these issues;

30. Stresses the need to support researchers in accessing pre-seed financing which would enable them to fund activities aimed at proving to investors that a new technology has a certain level of commercial and technical viability;

31. Expresses its concern that, even if the vital importance of promoting technological research and innovation is recognised at European level, results obtained within the EU will be limited in terms of funding, performance and capacity utilisation;

32. Notes the importance of creating spin-offs as a means to commercialise research results, and, in particular, the importance of providing credit facilities for this purpose;

33. Stresses the need for a more developed system of public-private partnerships to improve the quality of research by providing up-to-date equipment, infrastructure and services;

34. Welcomes the important role of business angels in providing otherwise unavailable investment to innovative firms, especially SMEs;

35. Notes that eco-innovation, in particular methods of boosting energy efficiency, offers competitive advantages to European companies;

36. Notes that individually negotiated loans and grants, where the precise form of the instrument is determined in close contact with customers, will lead to the effective use of funds in terms of volume and time-to-market, focused on real needs;

37. Notes that adequate venture capital is necessary for the creation, growth, boosting and bringing together of research and innovation amongst new entrepreneurial firms;

38. Urges the Commission, in cooperation with the Member States, to provide SMEs with a framework of structural assistance to upgrade their knowledge management and technological resources, enabling them to play an active role in a demand-led innovation market and become actively involved in technological research and development;

39. Observes that it is necessary to provide SMEs with improved access to funding;

40. Supports the idea, endorsed by the March 2006 Brussels European Council, of easier and wider access to loans from the European Investment Bank for businesses, particularly SMEs which are most in need of encouragement in the field of innovation and research;

41. Proposes that structural funds should be seen as a key means of supporting research and innovation capacity, especially in the pursuit of cohesion; proposes a trebling of the amount of structural funds to be spent on research and innovation;
42. Notes that using public procurement to foster research and innovation is key but that it should not distort competition or favour major market players;

43. Considers that public procurement should not be limited to providing private investment inducements but should play a strategic role, inspiring companies to promote innovation and acquire fresh know-how;

44. Recognises, that networking between SMEs and large contractors from both the private and the public sector can play an important role in reinforcing innovation; emphasises that public provision of innovative products at both national and Community level can help to fill gaps in the market and promote innovative products and services in general;

45. Commends the sweeping reform of the EU’s State aid rules, shifting subsidies from big, ailing companies to small and innovative businesses;

46. Notes that flexibility and transparency are prerequisites for innovation;

47. Considers it necessary to find a wider range of ways to secure investment in research equipment;

48. Proposes the implementation of a tax credit system to encourage the service sector to take an interest in research findings and their implementation;

49. Proposes a ‘single fund structure’ to avoid the double taxation of investors located in one Member State investing through a fund in another;

50. Emphasises the need to examine whether the current structures and mechanisms with particular expertise in innovation are adequate to ensure a broad approach to innovation and able to promote it by contributing to a better coordination of action and policies;

51. Asks the Council to report annually to the European Parliament on the trends in investment from national budgets in public research (the objective being 1% of GDP);

52. Notes that the objective of investing 3% of EU GDP in research by 2010 will probably not be achieved; regrets that at the March 2006 Brussels European Council the Member States did not make firmer commitments in favour of research and innovation; regrets that they did not fix a minimum target for increasing public aid in 2010;

53. Believes that Community instruments such as the i2010 strategy, the seventh Framework Programme for research, technological development and demonstration activities and the Competitiveness and Innovation Framework Programme can contribute to bridging the gap between research findings and financial gain;

54. Stresses that improved research and innovation policies must contribute to new employment opportunities through sustainable development, with a focus on eco-innovation and sustainable production (e.g. solar-hydrogen technologies, wind energy, fuel cells, biomass, plant based chemical industry), eco-efficient services (energy conservation, mobility services, re-use and recycling) and sustainable engineering and management methods (e.g. bionics, Integrated Product Policy);

55. Welcomes the Commission’s recommendation that within the framework of the ‘Better Regulation’ initiative, the impact assessment should include assessments of the effects of recommendations in the field of research and innovation;

56. Calls on the Member States to make better use of the European funds allocated to them and draws attention to those Member States which have put job creation at the heart of their plans by investing more than 35% of the appropriations from the European Social Fund in the modernisation of their education and training systems;

57. Instructs its President to forward this resolution to the Council, the Commission, and to the governments of the Member States.
Towards a more integrated approach for industrial policy

European Parliament resolution on a policy framework to strengthen EU manufacturing — towards a more integrated approach for industrial policy (2006/2003(INI))

The European Parliament,

— having regard to the communication from the Commission entitled ‘Implementing the Community Lisbon Programme: A policy framework to strengthen EU manufacturing — towards a more integrated approach for industrial policy’ (COM(2005)0474),


— having regard to the conclusions of the Competitiveness Council of 28 November 2005,

— having regard to the Presidency conclusions of the Brussels European Council of 23 and 24 March 2006,

— having regard to the opinion of the European Economic and Social Committee to the aforementioned Commission communication (INT/288 — CESE 595/2006),

— having regard to Rule 45 of its Rules of Procedure,

— having regard to the report of the Committee on Industry, Research and Energy and the opinion of the Committee on Employment and Social Affairs (A6-0206/2006),

A. whereas the abovementioned Commission communication outlines, on the basis of a detailed screening of the competitiveness of 27 individual sectors, a work programme for industrial policy in manufacturing industries for the coming years,

B. whereas a dynamic and highly competitive industrial sector and high social and environmental standards are the ingredients of the European model of economic development,

C. whereas the EU manufacturing industry provides around 20 % of EU output and employs some 34 million people more than half of which work in small and medium-sized enterprises (SMEs),

D. whereas the Council recognises the importance of the manufacturing industry as a generator of new and innovative products,

1. Welcomes the Commission communication, which sets out a policy framework and an enhanced work programme for the manufacturing industries for the coming years; considers this communication a major building-block for shaping a sound and balanced industrial policy by combining concrete sectoral actions with cross-sectoral policy initiatives;

2. Recognises the important role of the manufacturing industries in the EU; points out that manufacturing, services and trade are strongly and increasingly interlinked in the modern business environment; strongly supports, therefore, the development of a coherent industrial policy at European level to tackle the challenges of globalisation;

3. Recalls that the EU must aspire to remain a major industrial power, and not merely confine itself to developing its services sector;

4. Considers that the EU should take care to ensure the joint development of competitiveness strategies in the industrial and service sectors and promote good practice as regards the entrepreneurial environment and entrepreneurship, including corporate social responsibility and equal opportunities for men and women;
5. Recalls that the objectives of the Lisbon strategy are minimum objectives which the Member States should commit themselves to upholding; notes that, recently, several Member States adopted national policies to strengthen manufacturing industries; believes that isolated national policies could hamper the development of a European industrial policy and that better coordination between actions taken by the Member States and Community actions could strengthen both; therefore urges the Commission and the Member States to devise mechanisms to effectively coordinate actions in this field, involving governments, industry and stakeholders at European, national and regional level.

6. Notes that, without government action, it will be impossible to establish a framework for industry which is stable and attractive and affords legal certainty; points out that the work of a modern public sector is vital for dealing with infrastructure and fostering both education and innovation.

7. Considers that the Community policy of aid and support for national industrial policies must aim to develop European Flagships for Excellence, creating synergies between the skills of local labour markets and research centres, without neglecting a political and macroeconomic environment which is geared to development, and as a means of promoting greater investment and creating wealth and high-quality jobs with rights; welcomes the fact that the Commission communication gives a definition of a European industrial policy; stresses, however, that this approach must not be purely horizontal but that there is also a need to think in sector-specific terms.

8. Reminds the Commission of the need to mainstream energy-saving and efficiency measures in all policy areas; notes that energy costs are a major factor in many industries and calls, therefore, on the Commission to propose specific measures and programmes in this respect as part of its industrial policy.

9. Supports the initiatives set out in the Commission communication; welcomes the detailed analysis of the 27 sectors and the clear focus in the recommendations; sees, however, the concrete implementation of the initiatives as the current challenge; believes that, to guarantee coherent implementation in the long term, the initiatives proposed will need to be coordinated within one directorate-general, the Directorate-General for Enterprise and Industry, and one Council configuration, the ‘Competitiveness’ configuration; in this respect, calls on the Commission also to consider the possibility of a systematic evaluation and regular assessment of the benefits and added value of initiatives such as high-level groups, innovation panels and working parties in those sectors in which they operate.

10. Encourages the Commission to pay adequate attention to all sectors of the manufacturing industries and, where necessary, to fill in the gaps, both with regard to the analysis of certain sectors and to the actions to be taken, bearing in mind the high degree of regional concentration existing in some industries.

11. Recognises the need for increased competitiveness in manufacturing industries; welcomes the fact that the Commission stresses the social responsibility of business and the need for sustainable development; calls on the Commission to accord the same weight to the working environment and to the health and safety of workers as to ensuring the creation of more and better jobs.

12. Recognises that, to pursue a European industrial policy in sectors of strategic interest to Member States’ economies, it is essential to strengthen existing industries, to keep the internal market open, to regulate as and where necessary, and to allow for factors related to competitiveness which could affect employment levels in many Member States, as well as supporting the modernisation of all European industry that is already competitive or could become competitive.

13. Is convinced that the future of Europe’s manufacturing industries lies in increased added value and better quality; is therefore concerned that overall EU trade is still concentrated in sectors with medium-high technologies and low to intermediate labour skills; believes that education and training at all levels are key issues, both in terms of improving labour force qualifications and facilitating structural change; regrets the fact that the Commission communication does not pay enough attention to education, lifelong learning and training; urges the Member States to increase their efforts to attract more young students into technical and scientific studies.
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14. Welcomes the Commission’s recognition of the fact that a well-trained and flexible labour force is the EU’s most important resource and competitiveness factor; calls on the EU to concentrate on enhancing skills development for workers at all levels, particularly unskilled workers;

15. Takes a positive view, furthermore, of the Commission’s proposals to address the shortage of special skills facing industry through policies to promote transparency and the transfer and recognition of qualifications and to identify current needs for skills per sector and where skills shortages lie;

16. Points out that more clear-cut investment is needed to improve the skill levels of the workforce, for instance by way of training-related operational programmes for science and technology aimed at guaranteeing the quality of, and diversifying, training opportunities in the various Member States;

17. Calls on undertakings to ensure the best possible training conditions for workers by providing ongoing training for their employees, with undertakings drawing up skills plans and taking responsibility in a general way for lifelong learning and the continuing training of their workers;

18. Considers that the transfer of knowledge and the application of research results in new products and processes is still too weak in the manufacturing industries, and especially in SMEs; in this respect, sees a clear need to bridge the current gap between the research community and the market sector; is convinced that special attention must be given to jointly tackling this problem and urges the Commission and the Member States to swiftly come forward with concrete measures to solve it; to this end stresses that the possibilities offered by the Competitiveness and Innovation Framework Programme should be utilised rationally and as effectively as possible;

19. Believes that consideration should be given to the specific needs of micro and small businesses, since the problems they face cannot be compared with those facing large enterprises;

20. Recognises that schemes need to be devised to provide direct support for research activities carried out in consortia, involving companies and research units or university teams, thus enabling skills and technologies to be transferred more rapidly;

21. Emphasises, in line with the 2006 Report of the Independent Expert Group on R&D and Innovation, entitled ‘Creating an Innovative Europe’, that State aid to companies other than SMEs is appropriate when it is granted for the purpose of encouraging cooperation with other companies, SMEs, academic institutions in ‘open innovation clusters’, poles of excellence, and collaborative R&D programmes;

22. Points out that the EU’s prosperity depends on developing world-class innovative European industries;

23. Welcomes the concept of Technology Platforms which will provide a boost to developing lines of research which will meet the requirements of the market; believes, however, that more funding is needed for applied research leading to innovative products; in this respect, welcomes the European Investment Bank’s (EIB) intention to increase substantially the financing available for growth-enhancing investments in R&D and SMEs; recalls the conclusions of the abovementioned Brussels’ European Council, expecting up to 30 billion Euro in venture capital and guaranteed bank loans to support innovation and to reinforce action in R&D; encourages the Commission and the EIB, together with the private sector, to give follow-up to these conclusions in practical terms;

24. Stresses the major potential of nano-sciences and nano-technologies and urges the manufacturing industry to keep up to date with technological progress and the provisions of the 2005 to 2009 European programme of action in this field so as to be in a position to take advantages of the opportunities and new perspectives opening up for each of its sectors;

25. Stresses the problem of access to finance and venture capital, especially for innovative start-ups and SMEs; therefore, asks the Commission to closely involve the EIB and the European Investment Fund in the work of the sectoral initiatives;
26. Considers that it might be very useful to set up a high-level group to ensure that legislation concerning industry, energy, and the environment is consistent with the aim of improving sustainability and competitiveness; points out that, as well as the electricity market, the market in natural gas likewise needs to be analysed, bearing in mind that both entail far-reaching implications for some manufacturing industries.

27. Points out that the manufacturing industries are often marked by regional concentration; therefore urges regional and national authorities, working in close collaboration with economic and social players, to draw up local strategy plans for areas which are, or have the potential to become, centres of innovative manufacturing clusters; to this end, calls for local strategy plans to be targeted at making the best possible use of the primary wealth producing sector, research potential and any comparative benefits offered by each region; calls on Member States to make full use of the possibilities in the Structural Funds in this respect.

28. Points out that future European industrial policy measures must allow not just for the sectoral dimension, but also for the territorial dimension; notes that areas with a high concentration of manufacturing industry have to have industrial and economic policies geared to their specific needs; calls on the Commission, therefore, to follow up the proposals announced in its communication by bringing further consideration to bear on the questions whether cooperation should be intensified among regions facing similar problems and challenges and how manufacturing companies in those regions might be encouraged to set up networks within which to pursue and coordinate the necessary industrial and economic policies.

29. Welcomes the Commission proposal to integrate and coordinate industrial policy with other policies, including cohesion, environmental, R&D, and energy policies; notes that cohesion policy and industrial policy are interrelated, given that infrastructure and human resources are needed to enable industrial policy to succeed and to enhance the significant role of the European Works Councils, and hence that it is essential to bring policies into a coherent relationship and secure a high degree of involvement within society.

30. Believes that sectors facing fierce international competition should jointly adopt measures to facilitate their restructuring and modernization; in this respect, cites a number of initiatives, such as LeaderSHIP 2015, CARS21 and the High-Level Group on textiles and clothing, as good examples; in view of the urgent need for action in those sectors, calls on the Commission to submit concrete proposals by Autumn 2006 with a view to their adoption by the Council, following an opinion from the European Parliament, before the end of 2006; welcomes the intention of the Commission to set up such sector-specific initiatives for the pharmaceutical, chemical, defence, space and mechanical engineering industries.

31. Is of the opinion that, as far as individual sectors are concerned, workers’ trade unions, consumer associations, and employers’ organisations must be involved in the debate so as to help ensure that industrial policy solutions will be better suited to their purpose and more comprehensive.

32. Stresses the importance of establishing a dialogue with all the parties concerned, and welcomes the creation of the High-Level Group on Competitiveness, Energy and the Environment.

33. Welcomes the European Globalisation Adjustment Fund; insists that it focus on helping workers made redundant due to globalisation to find new jobs, mainly by improving and adapting their qualifications.

34. Maintains that no Community aid should be granted to companies which, after receiving such support in a Member State, transfer their manufacturing operations to another country without completely fulfilling the agreements entered into with the Member State concerned.

35. Calls for the rights of workers to be protected when manufacturing companies are restructured and hence for information to be made fully available to workers’ representative bodies.

36. Points out that dialogue between management and workers has a key role to play in matters related to modernisation and in coming up with ways to anticipate and to implement the changes needed for sectors to remain or become competitive.
37. Calls on the Commission to make an in-depth analysis of the current situation of the manufacturing industries in the new Member States and the challenges ahead and to ensure that Community legislation is properly enforced; this will make it possible to obtain aggregated data for the 25 Member States and, on the basis of those data, to analyse the various sectors and draw up recommendations to guide industrial policy;

38. Calls on the Commission to take further measures in support of exporting companies and those which invest on the largest scale in research and innovation projects;

39. Urges the Commission to focus on the area of market surveillance and the fight against unfair competition and counterfeiting; invites the Commission to come forward before the end of 2006 with concrete proposals in the area of protection and enforcement of intellectual property rights; in this regard, considers that efforts need to be intensified with a view to hunting out imported counterfeit products from non-member countries and that, to unearth practices of this kind, Member States should exchange information and employ more advanced technology applications at the points where goods enter the EU;

40. Calls on the Commission to monitor and record the extent to which imported products comply with European environmental and consumer health protection legislation and affect the competitiveness of European products;

41. Stresses the importance of market access for the manufacturing industries; urges the Commission to continue its efforts, working in tandem with the sectors affected, to identify international practices which can adversely affect the competitiveness of European undertakings, particularly regulations and subsidies, and tackle barriers to trade and investment that are in breach of international rules; sees in bilateral agreements a good opportunity to overcome these challenges in a fair, transparent and forward-thinking manner and hence to make the principle of reciprocity the general rule in the Union's trading relations;

42. Stresses that legislation seeking to include environmental matters in economic policies and strategies should allow the Member States scope for flexibility in the choice of economic and financial instruments;

43. Believes that, as regards the measures to be taken, especially in the WTO, it is necessary to allow for the context obtaining in, and the specific characteristics of, each sector, the opportunities and challenges that may arise, and the difficulties posed for individual Member States;

44. Calls on the Member States and the Commission to pursue sustainable development objectives by bringing economic, social, and environmental aspects into an even balance;

45. Instructs its President to forward this resolution to the Council and Commission, and to the governments and parliaments of the Member States.