

SUB-COMMITTEE ON SHIP DESIGN AND
CONSTRUCTION
6th session
Agenda item 6

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**MANDATORY INSTRUMENT AND/OR PROVISIONS ADDRESSING SAFETY STANDARDS
FOR THE CARRIAGE OF MORE THAN 12 INDUSTRIAL PERSONNEL ON BOARD
VESSELS ENGAGED ON INTERNATIONAL VOYAGES**

Report of the Correspondence Group

Submitted by Norway

SUMMARY

Executive summary: This document provides the report of the Correspondence Group on Carriage of more than 12 Industrial Personnel (IP) on Board Vessels Engaged on International Voyages, established at SDC 5

Strategic direction, if applicable: 2

Output: 2.4

Action to be taken: Paragraph 19

Related documents: SDC 5/WP.4, SDC 5/15 and SDC 6/6

General

1 The Sub-Committee, at its fifth session, re-established the Correspondence Group on Carriage of more than 12 Industrial Personnel on Board Vessels Engaged on International Voyages under the coordination of Norway.

2 Representatives from the following Member States participated in the Group:

AUSTRALIA
BAHAMAS
BELGIUM
BRAZIL
CANADA
CHILE
CHINA
CYPRUS
DENMARK

FINLAND
FRANCE
GERMANY
IRAN (ISLAMIC REPUBLIC OF)
IRELAND
JAPAN
LIBERIA
MARSHALL ISLANDS
NETHERLANDS

NORWAY
PHILIPPINES
RUSSIAN FEDERATION
SINGAPORE

SWEDEN
UNITED KINGDOM
UNITED STATES
VANUATU

and observers from the following non-governmental organizations in consultative status:

INTERNATIONAL CHAMBER OF SHIPPING (ICS)
INTERNATIONAL ASSOCIATION OF CLASSIFICATION SOCIETIES (IACS)
OIL COMPANIES INTERNATIONAL MARINE FORUM (OCIMF)
INTERNATIONAL ASSOCIATION OF DRILLING CONTRACTORS (IADC)
COMMUNITY OF EUROPEAN SHIPYARDS' ASSOCIATIONS (CESA)
INTERNATIONAL MARINE CONTRACTORS ASSOCIATION (IMCA)
INTERNATIONAL TRANSPORT WORKERS' FEDERATION (ITF)

Terms of reference

3 The Correspondence Group was instructed to: "taking into account the relevant information contained in the documents submitted to SDC 5 under this output and the outcome of the IP Working Group, as outlined in parts 1 (SDC 5/WP.4) and 2 of its report, to:

- .1 further develop the draft new SOLAS chapter [XV];
- .2 further develop the draft new code; and
- .3 submit a report to SDC 6."

Draft new SOLAS chapter XV

4 Following the decision at MSC 99 (MSC 99/22, paragraph 10.17), the Group revisited the draft new SOLAS chapter XV, as set out in annex 1 to document SDC 5/WP.4, and amended it as follows:

- .1 any reference to smaller vessels or vessels not on international voyages has been deleted;
- .2 proposals for the application to high speed craft (HSC) have been included;
- .3 proposals for inclusion of possible carriage of special personnel have been included;
- .4 proposals for clarifications on the treatment of different categories of persons have been included; and
- .5 proposals for further clarification of the relationship between the new chapter XV, the IP Code and other SOLAS chapters have been included.

5 The Group has made good progress on the draft amendments, however, further consideration is needed, in particular on the possible application of the draft new chapter and code to existing ships that may want to carry industrial personnel after the entry into force of the draft new chapter. The application to HSC, which was only included in the last rounds, will also need further considerations. The draft amendments to SOLAS are set out in annex 1.

6 During the discussions, questions were raised on the application of the draft IP Code. The decision of MSC 99 that "the aggregated total maximum number of passengers, industrial personnel and special personnel which may be carried on board in order not to require compliance with the new code should be 12" (MSC 99/22, paragraph 10.17.1) was questioned by some members. In their view, prior discussions and work have been related to the carriage of more than 12 industrial personnel, not an aggregated number of persons, and this should not be changed (reference is made to resolution MSC.418(97)). In order to be able to finalize the draft SOLAS amendments, clear instructions from the Sub-Committee are sought on the application of the draft new SOLAS chapter and the IP Code.

Draft new code

7 The Group considered the draft new code, based on the annex to part 2 of the Report of the Working Group (SDC 6/6), taking into account the relevant information contained in the documents submitted to SDC 5 under this output.

8 Taking into account the discussions at SDC 5, the Group preliminarily agreed to amend the structure of the draft IP Code. In particular, it was agreed to have a separate section for the goals and functional requirements, with subsections for specific ships types, such as high speed craft, as necessary.

Preamble

9 The Group further developed the preamble and agreed that, in order to ensure consistency between the preamble and the content of the draft IP Code, the preamble might need to be revisited when the draft text of the new code was more mature.

10 Having received the outcome of the discussions at MSC 99, the Group agreed to include paragraphs 6 and 7 in the preamble in order to encourage the use of the Code and, in particular, its functional requirements for smaller vessels and vessels not on international voyages. However, these vessels will not be addressed in the draft new SOLAS chapter XV or the draft new Code.

Part I General

11 The Group briefly considered the definitions and made some amendments and insertions. It was agreed that updates and amendments to the definitions would be a continuous task as the draft code developed.

12 The Group decided to defer discussions on certification to a later stage, possibly in connection with discussions on regulation 5 of the draft new SOLAS chapter.

Part II Goals and functional requirements

13 Based on the additional risks (AR) to be considered in the development of the draft new code, as identified by the WG at SDC 5 (SDC 6/6, annex), the Group further developed the goals and functional requirements set out in parts 2.1 and 2.2 of the draft Code. Part 2.3 has not been discussed in any depth.

14 The Group could not agree on whether or not to include the functional requirements related to additional vibrations due to contact loading and agreed to consider this issue further in a working group.

15 It should be noted that there is a general understanding in the Group that the functional requirements may need to be revisited as the regulations in the draft code mature to ensure consistency.

16 The Group briefly considered proposals for functional requirements related to cargo handling, the carriage of dangerous goods and hazardous and noxious liquid substances while carrying industrial personnel (parts 3.8, 3.9 and 3.10 of the draft goals and functional requirements). The Group agreed that this could, in general, be allowed. However, it was also agreed that this was a matter for the PPR and CCC Sub-Committees to decide. It is proposed that drafting of those parts of the IP Code that require decisions and consideration by other sub-committees, together with questions and proposals to these sub-committees, should be given priority in order to minimize any delay in finalizing the draft code.

17 The suitability of the draft functional requirements to high speed craft has not been discussed and needs further consideration.

Regulations

18 The Group had no time to discuss the regulations set out in part III of the draft code. It should be noted that the content of that part is a proposal developed by the coordinator as a starting point for discussions only. The draft IP Code is set out in annex 2.

Action requested of the Sub-Committee

19 The Sub-Committee is invited to note the progress made on the draft new SOLAS chapter XV and the draft IP Code and, in particular:

- .1 decide on the applicability of the draft IP Code with regard to different categories of persons carried on board (paragraphs 5 and 6 and annex 1); and
- .2 concur with the Group's view that those parts of the draft IP Code which require consideration by other sub-committees should be given priority (paragraph 16 and annex 2).

ANNEX 1

DRAFT AMENDMENTS TO THE INTERNATIONAL CONVENTION FOR THE SAFETY OF LIFE AT SEA, 1974, AS AMENDED

The following new draft chapter XV is added after the existing chapter XIV:

"CHAPTER XV SAFETY MEASURES FOR SHIPS CARRYING INDUSTRIAL PERSONNEL

Regulation 1 – Definitions

For the purpose of this chapter:

[1 *Existing ships* means (refer to regulation 3.3)]

2 *HSC Code* means.....

3 *Industrial Personnel (IP)* means all persons who are transported or accommodated on board [solely] [primarily] for the purpose of offshore industrial activities performed on board other ships and/or offshore facilities.

4 *IP Code* means the International Code of Safety for Ships carrying Industrial Personnel, as adopted by resolution MSC...., as may be amended, provided that amendments to the IP Code, are adopted, brought into force and take effect in accordance with the provisions of article VIII of the present Convention concerning the amendment procedures applicable to the annex other than chapter I.

5 *Offshore industrial activities* means the construction, maintenance, decommissioning, operation or servicing of offshore facilities related, but not limited, to exploration and exploitation of resources by, the renewable or hydrocarbon energy sectors, aquaculture, ocean mining or similar activities.

[6 *Repairs, alterations and modifications of a major character* means.....]

7 *Ship constructed* means a ship the keel of which is laid or which is at a similar stage of construction.

8 *At a similar stage of construction* means the stage at which:

.1 construction identifiable with a specific ship begins; and

.2 assembly of that ship has commenced comprising at least 50 tonnes or 1% of the estimated mass of all structural material, whichever is less.

[9 *Special personnel* means all persons who are not passengers or members of the crew or children under one year of age and who are carried on board in connection with the special purpose of that ship or because of special work being carried out aboard that ship.]

Regulation 2 - General

(Note: If we end up with some requirements applicable to new ships only in the IP Code, we may want to consider a phase in scheme, see for example SOLAS XII reg 3. However. This should be decided at a later stage.)

1 Notwithstanding the provisions of chapters [I, II-1, II-2, III, IV and regulations V/18, V/19 and V/20], a ship certified in accordance with the requirements of this chapter and the IP Code shall be deemed to have complied with the requirements of chapters [I, II-1, II-2, III, IV and regulations V/18, V/19 and V/20].

2 Notwithstanding the provisions of regulation 2.1 above, for ships to which chapter X applies and notwithstanding the provisions of chapters [2-12 and 18] in the HSC Code, a ship certified in accordance with the requirements of this chapter and the IP Code shall be deemed to have complied with the requirements of chapters, [2-12 and 18] of the HSC Code.

3 Industrial Personnel shall not be treated or considered as passengers.

Alternative 1

[4 Wherever in this chapter, or in the IP Code, the number of persons on board appears as a parameter, it is the aggregated number of crew, Industrial Personnel [Special Personnel] and passengers carried on board, where the number of passengers shall not exceed 12.]

Alternative 2

[3bis For the purpose of this chapter and the IP Code, if a ship shall carry a combination of Industrial Personnel and Special Personnel, Special Personnel [meeting a standard acceptable to the Organization]¹ shall be [considered as] [included in the number of] Industrial Personnel.]

[3ter Wherever in this chapter, or in the IP Code, the number of Industrial Personnel appears as a parameter, it shall include the number of passengers carried on board which shall not exceed 12.]

Alternative 3

[.4 Wherever in this chapter, or in the IP Code, the number of Industrial Personnel appears as a parameter, it shall include the number of Special Personnel¹ and passengers carried on board, where the number of passengers shall not exceed 12.]

Regulation 3 – Application

1 Unless expressly provided otherwise, this chapter applies to ships carrying more than 12 Industrial Personnel.

2 Ships [constructed before [date]] authorized by the Administration to carry Industrial Personnel in accordance with the recommendations developed by the Organization² shall meet the [relevant] requirements of the IP Code no later than [date].

(Note: Application of the various regulations will be stated in the IP Code.)

¹ Refer to the Code of safety for special purpose ships, 2008.

² Refer to the *Interim recommendations on the safe carriage of more than 12 industrial personnel on board vessels engaged on international voyages* (resolution MSC.418(97)).

[2bis Ships constructed before [date] being authorized to carry Industrial Personnel on or after [date] shall meet the [relevant] requirement of the IP Code.]

[3 All ships which undergo repairs, alterations, modifications and outfitting shall continue to comply with at least the requirements previously applicable to these ships. Repairs, alterations and modifications of a major character and outfitting shall meet the requirements for ships constructed on or after the date on which any relevant amendments enter into force, insofar as the Administration deems reasonable and practicable.]

4 Nothing in this chapter shall prejudice the rights or obligations of States under international law.

Regulation 4 – Application of other chapters

1 The regulations for cargo ships contained in the other chapters of the present Convention apply to ships described in regulation 3.1, except as modified by this chapter or the IP Code.

2 For ships to which the HSC Code apply, the regulations for cargo ships in that Code apply except as modified by this chapter or the IP Code.

Regulation 5 – Requirements

1 Ships of 500 gross tonnage and above [to which this chapter applies] shall:

- .1 [[be certified] [as a cargo ship]] [hold cargo ship certificates] in accordance with chapter I or X;
- .2 meet the requirements of the IP Code; and
- .3 in addition to the requirements of regulation I/8, I/9, and I/10 [or sections [[1.5-1.9] [1.5, 1.6 and 1.8] of the HSC Code], as applicable, be surveyed and certified, as provided for in the IP Code.

2 Ships to which this chapter applies holding a certificate issued pursuant to the provisions of paragraph 1 shall be subject to the control established in regulations I/19 and XI-1/4 or XI-1/4 and section 1.10 of the HSC Code, as applicable. For this purpose, such certificates shall be treated as a certificate issued under regulations I/12 or I/13.

3 All Industrial Personnel shall be at least 16 years of age, be medically fit, and have received appropriate safety training and ship familiarization, as set out in chapter [...] of the IP Code.

4 Information verifying that the Industrial Personnel fulfil the requirements of this chapter and the provisions of the IP Code shall be made available to the master before departure.

(Note: to be revisited when we have decided on type of documentation.)

[Regulation 6 – Alternative design and arrangement

(Note: The need for this regulation is questioned.)

1 The goal of this regulation is to provide a methodology for alternative design and arrangements for structure, machinery, and electrical installations, fire safety and life-saving appliances and arrangements.

2 Structural arrangements, machinery and electrical installation, fire safety design and arrangement measures and as well as life-saving appliances and arrangements may deviate from the prescriptive requirements set out in chapters [...] of the IP Code, provided that the alternative design and arrangements meet the intent of the goal and functional requirements concerned and provide an equivalent level of safety to the requirements in those chapters.

3 When alternative designs or arrangements deviate from the prescriptive requirements of chapters [...] of the IP Code, an engineering analysis, evaluation and approval of the design and arrangements shall be carried out based on the guidelines approved by the Organization.³

4 Any alternative designs or arrangement deviating from the prescriptive requirements shall be recorded in the [name] Certificate, also defining the technical and operational measures and conditions for the allowed deviation.]

³ Refer to the *Guidelines for the approval of alternatives and equivalents as provided for in various IMO instruments* (MSC.1/Circ.1455), the *Guidelines on alternative design and arrangements for SOLAS chapters II-1 and III* (MSC.1/Circ.1212) and the *Guidelines on alternative design and arrangements for fire safety* (MSC/Circ.1002), as applicable.

ANNEX 2

**DRAFT [INTERNATIONAL CODE OF SAFETY FOR SHIPS
CARRYING INDUSTRIAL PERSONNEL]**

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Preamble

1 As the maritime offshore and energy sectors are expanding, new offshore industrial activities have emerged and have in turn created a growing demand on the shipping sectors' supporting industry offshore to i.e. provide for the safe carriage of Industrial Personnel to and from other ships and/or offshore facilities.

2 It is recognized that the safety standards in the existing IMO instruments do not fully cover specific risks of maritime operations within the offshore sectors, such as personnel transfer operations.

3 Furthermore, it is agreed that Industrial Personnel are a special category of persons outside the SOLAS I/2 mentioned categories currently known in SOLAS (passengers, crew or other persons in crew-like positions, and infants).

4 However, the difficulties caused by the lack of a clear definition for Industrial Personnel and the lack of an international safety standards for the carriage of Industrial Personnel on board in the existing IMO instruments is also recognized.

5 The International Code of Safety for Ships carrying Industrial Personnel has been developed to supplement existing IMO instruments in order to meet the demand from the offshore and energy sectors and overcome these difficulties. The Code, in addition to the cargo ship requirements in the International Convention for the Safety of Life at Sea, 1974, as amended provides an international standard of safety for ships carrying Industrial Personnel which will facilitate safe carriage and safe personnel transfer [by addressing additional risks connected to such operations].

6 The Code has been developed for ships operating on international voyages as defined in SOLAS I/2(d). However, it is recognized that the transport of a large number of Industrial Personnel will take place either within the confines of a particular coastal State or between a base port and an offshore installation outside territorial waters. To facilitate international movement and safe operations of ships carrying IP, Administrations are encouraged to apply this Code also to ships operating only on such voyages.

7 The Code applies to ships of 500 gross tonnage and above. However, it is recognized that ships below 500 gross tonnage may also carry an aggregated number of passengers [special personnel] and Industrial Personnel in excess of 12. In such cases the Administration may apply the goals and functional requirements of the Code as far as practicable.

Alternative proposal

7 [The Code applies to ships of 500 gross tonnage and above carrying more than 12 Industrial Personnel, but SOLAS chapter [XV] do not preclude ships of less than 500 gross tonnage from carrying more than 12 Industrial Personnel. Consequently, it is recognized that ships below 500 gross tonnage also may carry an aggregated number of passengers and Industrial Personnel in excess of 12. In such cases, the Administration should apply the goals and functional requirements of the code as far as practicable. [If such vessels are in compliance with the IP Code, Administrations may consider to issue an IP Certificate for a ship carrying more than 12 Industrial Personnel, as long as all relaxations are indicated in this certificate.]]

Part I – General

1.1 Goal

The goal of this Code is to provide for the safe carriage of Industrial Personnel on ships and their safety during personnel transfer operations by addressing any risks present not adequately mitigated by the applicable safety standards in the International Convention for the Safety of Life at Sea, 1974, as amended.

1.2 Structure of the Code

(Note: To be considered when the structure is finally agreed.)

[Where the chapters of the Code consist of goal(s) of the chapter, functional requirements to fulfil the goal, and regulations, a ship shall be considered to meet a functional requirement when all the regulations associated with that functional requirement are complied with.]

[Part II of the present code consists of goals for the various chapters in part III and functional requirements to fulfil these goals. A ship shall be considered to meet a functional requirement when:

- .1 all the regulations in part III [and ...] associated with that functional requirement are complied with; or
- .2 part(s) or all of the ship's relevant design and arrangements have been reviewed and approved in accordance with regulation [6] of SOLAS chapter [XV], and any remaining parts of the ship comply with the relevant regulations.]

(Note:

- .1 As you have agreed to have the goal and the functional requirements in a separate part, I have indicated an alternative wording.
- .2 The additional sub-paragraph .2, is pending decision on regulation 6 (Alternative Design and Arrangements) of the draft new SOLAS chapter [XV].)

1.3 Definitions

1.3.1 *Carriage* means transportation, accommodation or both.

1.3.1*bis* *Essential systems* means.....

1.3.1*ter* *High Speed Craft, 1994 (1994 HSC Code) Code* means the International Code of Safety for High-Speed Craft, 2000, as adopted by the Maritime Safety Committee of the Organization by resolution MSC.36(63), as amended.

1.3.2 *High Speed Craft, 2000 (2000 HSC Code) Code* means the International Code of Safety for High-Speed Craft, 2000, as adopted by the Maritime Safety Committee of the Organization by resolution MSC.97(73), as amended.

[1.3.2*bis* *Industrial Personnel (IP)* means all persons who are transported or accommodated on board for the purpose of offshore industrial activities performed on board other ships and/or offshore facilities.]

[1.3.3 *IP-Certificate* means.....] (Note: TBD.)

[1.3.3*bis* *Offshore industrial activities* means the construction, maintenance, decommissioning, operation or servicing of offshore facilities related, but not limited, to exploration and

exploitation of resources by the renewable or hydrocarbon energy sectors, aquaculture, ocean mining or similar activities.]

1.3.3 *Personnel transfer* means the full sequence of the operation of transferring personnel and their equipment to or from a ship to which this Code applies and from or to another vessel or an offshore facility, including [approaching and leaving] [the preparation to approach or leave] the other ship or offshore facility.

1.3.4 *SOLAS* means the International Convention for the Safety of Life at Sea, 1974, as amended.

Additional definitions as deemed necessary.

[1.4 Certificate and survey

1.4.1 Every ship to which this Code applies shall have on board a valid IP Certificate.

(Note: Title of the certificate, see draft new chapter [XV].)

1.4.2 The IP Certificate shall be issued after an initial or renewal survey to a ship which complies with the [relevant] [applicable] requirements of this Code.

1.4.3 The certificate referred to in this regulation shall be issued either by the Administration or by any person or organization recognized by it in accordance with SOLAS regulation XI-1/1. In any case, the Administration assumes full responsibility for the certificate.

1.4.4 The IP Certificate shall be drawn up in a form corresponding to the model given in [...] to this Code. If the language is not English, French or Spanish, the text shall be translated into one of these languages.

1.4.5 The IP Certificate validity, survey dates and endorsements shall be harmonized with the relevant SOLAS certificates in accordance with the provisions of SOLAS regulation I/14. The certificate shall include a supplement recording equipment required by the present Code.]

Part II - Goals and functional requirements

(Note: When we develop the regulations, they will have specific references to the various functional requirements.)

Chapter 2.1 – Design, systems and equipment

2.1.1 - Ship structure

2.1.1.1 Goal

The goal of this chapter is to provide for additional structural protection [to that required for cargo ships by SOLAS] against the forces acting on the ship during intentional contact between the ship and another ship and/or offshore facility during personnel transfer.

2.1.1.2 Functional requirements

In order to achieve the goal set out in paragraph 2.1.1.1 above the following functional requirements are embodied in the regulations in part [III]:

- .1 any area of the ship that is intended to be in direct contact with another ship and/or offshore facility during personnel transfer shall be designed and constructed to withstand the loads it is subjected to;
- .2 [ships expected to be subject to additional vibrations due to contact loading during transfer of personnel shall be designed and constructed to minimize such vibrations and able to absorb their effects on the structure; and]
- [.3 equipment for personnel transfer shall be designed and constructed and maintained to withstand the loads it is subjected to.]

(Note: Support for moving this to section 2.3, see also section 2.3.)

2.1.2 – Subdivision and stability

2.1.2.1 Goal

The goal of this chapter is to provide for adequate stability of the ship, both in its intact and damaged condition, taking into consideration the total number of persons on board.

(Note: For HSC, the mode of operation and category of craft (A or B) should also be considered?)

2.1.2.2 Functional requirements

In order to achieve the goal set out in paragraph 2.1.2.1 above, the following functional requirements are embodied in the regulations in part [III]:

- .1 the ship shall be designed with weathertight and watertight boundaries providing for an adequate stability standard both in intact and damaged conditions taking into account the total number of persons on board; and
- .2 have sufficient residual stability to withstand flooding due to accidental contact damage that may occur during operation in close proximity to other ships or offshore facilities.

2.1.3 – Machinery installations

2.1.3.1 Goal

The goal of this chapter is to provide for machinery installations capable of delivering the required functionality to ensure safe navigation and the safe carriage of persons on board both during normal operation and in any emergency situation, taking into account the total number of persons on board.

(Note for section 2.1.3: For HSC the category of craft (A or B) could also be considered.)

2.1.3.2 Functional requirements

In order to achieve the goal set out in paragraph 2.1.3.1 above, the following functional requirements are embodied in the regulations in part [III]:

- [.1 where the capacity needed to ensure the required functionality of any machinery system is dependent on the number of persons on board (e.g. bilge pumping systems), necessary additional capacity shall be provided;]
- [.1bis steering gear systems shall be capable of maintaining steerage after any incident affecting machinery installations;]
- .2 essential systems shall have the necessary redundancy or isolation or a combination thereof in order to ensure the capability of safely accommodate persons on board after any incident affecting machinery installations, taking into account the number of persons on board; and
- .3 [ships expected to be subject to additional vibrations due to contact loading during transfer of personnel shall be designed and constructed to minimize such vibrations and be able to absorb their effects on the machinery installations]
- [.4 personnel transfer systems shall be designed and constructed to fail safe in the event of a loss or reduction in their associated machinery functionality.]

(Note: Support for moving this to section 2.3, see also section 2.3.)

2.1.4 – Electrical installations

2.1.4.1 Goal

The goal of this chapter is to provide for:

- .1 emergency sources of power capable of delivering the required functionality of essential systems in emergency situations taking into account the total number of persons on board;
- .2 protection of all persons on board from electrical hazards; and
- .3 measures to avoid additional electrical hazards during emergency situations.

(Note: May need to define essential systems.)

2.1.4.2 Functional requirements

In order to achieve the goals set out in paragraph 2.1.4.1 above, the following functional requirement is embodied in the regulations in part [III]:

- .1 emergency power supply to essential systems shall have the necessary redundancy or isolation or a combination thereof to ensure the capability to safely accommodate persons on board after damage taking into account the number of persons on board and the time for orderly evacuation;
- .2 [the impact on electrical equipment located in any area of the ship that may be affected by [hazardous environments][flammable air mixtures] as a result of emergencies on supported installations shall be considered];

(Note: To be further considered at a later stage.)

- [.3 personnel transfer systems shall be designed and constructed to fail safe in the event of electrical failure causing a loss or reduction in their associated machinery functionality]
- [.3bis personnel transfer system shall be capable of safely returning person in the system to the host vessel after loss of power.]

(Note: Support for moving this to section 2.3, see also section 2.3.)

2.1.5 – Periodically unattended machinery spaces

Note: HSC to be further considered.

2.1.5.1 Goal

The goal of this chapter is to ensure that if and when a machinery space is periodically unattended, this does not impair the safety of the ship or the persons on board.

2.1.5.2 Functional requirements

In order to achieve the goal set out in paragraph 2.1.5.1 above, the following functional requirements are embodied in the regulations in part [III]:

- .1 manning of the machinery space shall provide for safe operations, taking into account the number of persons on board; and
- .2 a periodically unattended machinery space shall be equipped with additional controls-, monitoring- and alarm-systems to provide for safe operation taking into account the number of persons on board, in order to achieve an equivalent safety to that of a normally attended machinery space.

2.1.6 – Fire safety

2.1.6.1 Goal

[The goal of this chapter is to fulfil the fire safety objectives of SOLAS regulation II-2/2.1, or the basic principles of section 7.1.1 of the HSC Code as applicable, taking into account the number of persons on board and their level of training and knowledge.]

(Note: Please note that some of these paragraphs refers to passengers. May need clarification?)

2.1.6.2 Functional requirements

In order to achieve the goal set out in paragraph 2.1.6.1 above, the means to fulfil the fire safety functional requirements of SOLAS regulation II-2/2.2 or the basic principles of section 7.1.1 of the HSC Code, as appropriate, taking into account the number of persons on board and their level of training and knowledge, are embodied in the regulations in part [III].

2.1.7 – Life-saving appliances and arrangements

2.1.7.1 Goal

The goal of this chapter is to provide for appropriate and sufficient means to ensure safe abandonment of the ship.

2.1.7.2 Functional requirements

In order to achieve the goal set out in paragraph 2.1.7.1 above, the following functional requirements are embodied in the regulations in part [III]:

2.1.7.2.1 To provide for safe abandonment:

- .1 the capacity of the survival craft shall be sufficient to accommodate all persons on board;
- .2 appropriate and sufficient personal life-saving appliances shall be available for all persons on board;
- .3 sufficient space for assembling and mustering must be ensured; and
- .4 onboard communication and alarm systems shall be provided to ensure emergency communication to all persons on board.

2.1.8 – Carriage of dangerous goods

2.1.8.1 Goal

[The goal of this chapter is to provide for safe carriage of Industrial Personnel while transporting dangerous goods on ships certified in accordance with this Code, taking into consideration the total number of persons on board.]

2.1.8.2 Functional requirements

[In order to achieve the goal set out in paragraph 2.1.8.1 above, as well as the goals on fire safety (2.1.6.1), life-saving appliances and arrangements (2.1.7.1), safe transfer of personnel (2.3.1), the functional requirements in 2.1.6.2, 2.1.7.2 and 2.3.1.1 shall take into account any additional hazard caused by the carriage of dangerous goods and shall minimize the risk to all persons on board having regard to the nature of the dangerous goods.]

[2.1.9 –Transport and handling of dangerous liquid chemicals and liquefied gases in bulk]

2.1.9.1 Goal

[The goal of this chapter is to provide for safe carriage of Industrial Personnel while transporting dangerous liquid chemicals and liquefied gases in bulk on ships certified in accordance with this Code, taking into consideration the total number of persons on board.]

2.1.9.2 Functional requirements

[In order to achieve the goal set out in paragraph on fire safety (2.1.6.1), on life-saving appliances and arrangements (2.1.7.1), on the safe transfer of personnel (2.3.1) and 2.1.9.1 above, the functional requirements in 2.1.6.2, 2.1.7.2 and 2.3.1.1 shall take into account any additional hazard caused by the carriage of dangerous liquid chemicals and liquefied gases and shall minimize the risk to all persons on board having regard to the nature of the products.]

2.1.10 – Cargo handling

2.1.10.1 Goal

[The goal of this chapter is to provide for safe carriage of Industrial Personnel while conducting cargo-handling operations taking into consideration the total number of persons on board.]

2.1.10.2 Functional requirements

[In order to achieve the goal set out in 2.1.10.1 above, ships shall be designed and operated so that cargo-handling operations can be conducted without causing risk to IP.]

[2.1.11 – [Seakeeping arrangements] [Seakeeping capabilities]

2.1.11.1 Goal

[The goal of this chapter is to provide for the capability of safely carrying out [the additional navigational] operations connected to personnel transfer.]

(Note: 1. If there are other navigational issues, we will need a new/additional goal.
2. Support for moving this to section 2.3, see also section 2.3.)

2.1.11.2 Functional requirements

In order to achieve the goal set out in paragraph 2.1.11.1 above, the following functional requirement are embodied in the regulations in part [III]:

[Means for position keeping shall be provided and arranged in a manner that prevent accidents during transfer of personnel and which are suitable for the mode of operation and interactions with other ships or offshore facilities.]

(Support for moving this to section 2.3, see also section 2.3.)

Any additional sections as needed.

[Chapter 2.2 – Industrial Personnel

2.2.1 Goal

[The goals of this chapter are to provide for:

- .1 the safe operation during carriage of Industrial Personnel; and
- .2 that Industrial Personnel are medically fit and familiar with the hazards associated with the operational environment including the risks associated with personnel transfer operations.

2.2.2 Functional requirements

In order to achieve the goals set out in paragraph 2.2.1 above, the following functional requirements are embodied in the regulations in part [III].

2.2.2.1 Means shall be provided to ensure that Industrial Personnel:

- .1 are medically fit;
- .2 are able to communicate with the ship's crew; and
- .3 have knowledge and understanding [and proficiency/demonstration] of:
 - .1 personal survival techniques while at sea;
 - .2 fire situations at sea;
 - .3 first aid;
 - .4 environmental considerations in the marine environment;
 - .5 ship-specific safety information; and
 - .6 ship-specific procedures for the transfer of personnel.

2.2.2.2 Means shall be provided to ensure that at any time and in particular at sea, the information on the number of people on board, their identity and their role is kept updated at all times.]

(Note: Consider relocation.)

[Chapter 2.3 – Safe transfer of personnel

2.3.1 Goal

The goal of this chapter is to provide for the safety of all persons involved in personnel transfer including safe and suitable means of transfer and the capability of safely carrying out the [additional navigational] operations connected to personnel transfer.

2.3.2 Functional requirements

In order to achieve the goal set out in paragraph 2.3.1 above, the following functional requirements are embodied in the regulations in part [III].

2.3.2.1 Means shall be provided to avoid injuries during personnel transfer as appropriate.

(Note: Could for example be non-slippery surfaces, personal safety equipment. I assume this will depend on the transfer system.)

2.3.2.2 Systems for personnel transfer shall :

- .1 be designed, constructed and maintained to withstand the loads it is subjected to;
- .2 be designed and constructed to fail safe in the event of a loss or reduction in their associated machinery functionality;
- .3 be designed and constructed to fail safe in the event of electrical failure causing a loss or reduction in their associated machinery functionality; and
- .4 be capable of safely returning person in the system to the host vessel after loss of power.]

2.3.2.3 Means for position keeping shall be provided and arranged in a manner that prevent accidents during transfer of personnel and are suitable for the mode of operation and interactions with other ships or offshore facilities.]

[Part III – Regulations

(Note: This part may be split into regulations for displacement ships, HSC,.....)
(To be considered when the goal and functional requirements have been agreed.)

Chapter 3.1 – Design, systems and equipment

3.1.1 Ship structure

3.1.1.1 In order to meet the functional requirement set out in part II/2.1.1.2.1 the area(s) that may be in direct contact with the offshore structure when Industrial Personnel board or leave the offshore structure shall comply with the requirements in SOLAS regulation II-1/3-1 taking into account the additional loads the area(s) may be subjected to.]

3.1.1.2 In order to meet the functional requirement set out in part II/2.1.1.2.2, ships subjected to additional vibrations due to contact loading during transfer of personnel shall.....

(Note: There are no common IACS rules on this, so we will have to develop specific criteria if we keep the FR in 2.1.1.2.2.)

3.1.1.3 In order to meet the functional requirements set out in Part II/2.1.1.2.3, equipment for personnel transfer shall [be in accordance with a standard acceptable to the Organization].

(Note: Move to 3.2? Do we have any IMO standards to refer to as footnotes?)

3.1.2 Subdivision and stability

3.1.2.1 In order to meet the functional requirement set out in Part II/2.1.2.2.1, the following apply:

- .1 ships shall meet the requirements of SOLAS regulation II-1/5 where the ship is considered a passenger ship and Industrial Personnel are considered passengers;

(Note: This refers to the passenger crowding requirements. We may want to refer to the relevant regulation in the IS Code if kept. Unless we add something here, we need to delete any reference to intact stability in the goal and functional requirements.)

- .2 subdivision and damage stability shall [in general] be in accordance with SOLAS chapter II-1, where the ship is considered a passenger ship and Industrial Personnel are considered passengers, with an R value calculated in accordance with SOLAS regulation II-1/6.2.3 as follows:

- .1 where the ship is certified to carry more than [...] persons on board (2008 SPS Code value: 240 persons on board) the R value is assigned as R ;
- .2 where the ship is certified to carry not more than [...] persons on board (2008 SPS Code value: 60 persons on board), the R value is assigned as $0.8 \cdot R$; or
- .3 where the ship is certified to carry more than [...] persons on board (but not more than [...]), the R value should be determined by linear interpolation between the R values given in .1 and .2 above;

- .3 ships to which the HSC Code apply, [in lieu of meeting the requirements in 3.1.2.1.2 above] shall meet the requirements of Part A, regulation 2.10; and (Note: proposal Denmark round 2).
- .4 for ships to which the HSC Code apply, [in lieu of meeting the requirements in 3.1.2.1.2 above], subdivision and damage stability shall [in general] comply with part A and B of chapter 2 of the HSC Code, as follows:
- .1 where the ship is certified to carry more than [...] persons on board, where the ship is considered a passenger ship and Industrial Personnel are considered passengers; or
- .2 where the ship is certified to carry not more than [...] persons on board, the ship is considered a cargo ship and the Industrial Personnel are not considered passengers.

(Note: We need to determine if the passenger ship requirements shall apply regardless of number of persons on board, or if at some point the cargo ship requirements are sufficient.)

3.1.2.2 In order to meet the functional requirement set out in Part II/2.1.2.2.2, for any damage between transversal watertight bulkheads the value "s" calculated in accordance with SOLAS regulation II-1/7-2 shall equal 1, as follows:

- .1 where the ships is certified to carry more than [...] persons on board, the θ_{min} is 7° and the θ_{max} is 15° ; or (passenger ship values); and
- .2 where the ship is certified to carry not more than [...] persons on board, the θ_{min} is 25° and the θ_{max} is 30° . (cargo ship values);

3.1.2.2.3 Ships to which the HSC Code apply are considered to meet the functional requirement in Part II/2.1.2.2.2.

(Note: Similar requirements are in the OSV Code (written before SOLAS 2009), however the OSV Code uses a deterministic approach whereas the SPS-Code uses a probabilistic approach and hence may have a "one-compartment damage" that the ship will not survive. Ships to which the HSC code apply have deterministic requirements and could be considered to meet this requirement if kept.)

3.1.3 Machinery installations

In order to meet the functional requirement set out in Part II/2.1.3.2.[1] the following apply: [...].

3.1.3.1 Steering gear installations shall be in accordance with regulation II-1/29 except that:

- .1 where the ship is certified to carry not more than [...] persons on board (2008 SPS Code value: 240 persons on board), regulation 29.6.1.1 shall not apply; and
- .2 where the ship is certified to carry more than [...] persons on board (2008 SPS Code value: 240 persons on board), regulation 29.6.1.2 shall not apply.

(Note: This is related to "redundancy" of steering gears and the relevance to number of people on board, is the additional risk with more persons on board. The requirements are taken from the SPS-Code. This could be taken as fulfilling the original proposal for FR 2.1.3.2.1. If we go for the alternative proposal, we need to include more on bilge pumping and other "essential systems", however as far as I can see, SOLAS requirements for machinery

installation only differ between cargo and passenger ships with regard to steering gears and bilge pumping. Everything else should be covered by the requirement to have a cargo ship certificate as the bottom line. Essential systems are only referred to in the safe return to port requirements.)

3.1.3.2 In order to meet the functional requirement set out in part II/2.1.3.2.x bilge pumping arrangement shall be in accordance with regulation II-1/35-1 except that where the ship is certified to carry more than [...] persons on board, in which case regulation II-1/3 shall apply.

3.1.3.3 Ships to which the HSC Code apply are considered to meet the requirements in 3.1.3.1 above, except that for category B craft when certified to carry more than [...] persons on board, chapter 9, part B shall apply.

(Note: for HSC the only difference for steering gear installation for passenger ships compared to cargo ships, is for category B passenger ships.)

3.1.3.4 For ships to which the HSC Code applies [in lieu of meeting the requirements in 3.1.3.2 above], where the ship is certified to carry more than [60] Industrial Personnel, chapter 10, part B shall apply.

(Note: this is related to bilge pumping.)

(Note: regarding the personnel transfer FR on fail safe, we will get back to where to locate that.)

3.1.4 Electrical installations

3.1.4.1 In order to meet the functional requirement set out in part II/ 2.1.4.2.1, [ships shall comply with the requirements of chapter II-1/part D except that] where the ship is certified to carry more than [...] persons on board, regulation 42 and 42-1 shall apply.

3.1.4.2 For ships to which the HSC Code applies [in lieu of meeting the requirements in 3.1.4.1 above] where the ship is certified to carry more than [60] persons on board, chapter 12, part B shall apply.

(Note: Regarding protection of persons from hazards, this should be covered by current SOLAS requirements, as cargo ship certification is required.)

3.1.5 Periodically unattended machinery spaces

3.1.5.1 In order to meet the functional requirement set out in part II/ 2.1.5.2.1, ships carrying more than [240] persons on board shall be specially considered by the Administration as to whether or not their machinery spaces may be periodically unattended.

3.1.5.2 In order to meet the functional requirement set out in part II/ 2.1.5.2.2, for ships carrying more than [240] persons on board and operate with periodically unattended machinery spaces [additional systems?]

(Note: SOLAS leaves this to the Administration. Is this relevant to HSC?)

3.1.6 Fire safety

3.1.6.1 In order to meet the functional requirement set out in part II/ 2.1.6.2.1 the following apply: [...].

- .1 where the ship is certified to carry more than [...] persons on board (2008 SPS Code value: 240 persons on board), the requirements of SOLAS

chapter II-2 for passenger ships carrying more than 36 passengers shall be complied with;

- .2 where the ship is certified to carry more than [...] persons on board (2008 SPS Code value: 60 persons on board), but not more than [...] persons on board (2008 SPS Code value: 240 persons on board), the requirements of SOLAS chapter II-2 for passenger ships carrying not more than 36 passengers shall be complied with;
- .3 where the ship is certified to carry not more than [...] persons on board (2008 SPS Code value: 60 persons on board), the requirements of SOLAS chapter II-2 for cargo ships shall be complied with; and
(Note: If the cargo ship certification is the bottom line, paragraph 8.3.3 may not be necessary.)
- .4 if the ship is intended to transport dangerous goods, regardless of number of persons carried, the requirements of SOLAS regulation II-2/19, shall be complied with.
(Note: The 2008 SPS Code has some text on this that is not suitable for a mandatory code, so it is necessary to consider this in depth.)

3.1.6.2 In lieu of meeting the requirements in paragraph 3.1.6.1 above], ships to which the HSC Code applies, regardless of number of persons carried, shall:

- .1 comply with parts A and B of the HSC Code;
- .2 if arranged with cargo spaces, comply with paragraph 7.15 of part C of chapter 7 of the HSC Code; and
- .3 if intended to transport dangerous goods, comply with part D of chapter 7 of the HSC Code.

3.1.7 Life-saving appliances

In order to meet the functional requirement set out in part II / 7.1.7.2.1, the following apply: [...].

3.1.8 Carriage of dangerous goods

In order to meet the functional requirement set out in part II / 2.1.8.2, the following apply: [...].

[3.1.9 Transport of limited amounts of hazardous and noxious liquid substances in bulk]

In order to meet the functional requirement set out in part II/2.1.9.2, the following apply: [...].

[3.1.10 Cargo handling]

In order to meet the functional requirement set out in part II/ 2.1.10.2, the following apply: [...].

3.1.10bis Radio Communication

[3.1.11 Safety of Navigation]

Any additional sections as needed.

Chapter 3.2 Regulations for Industrial Personnel

(To be considered when the goal and functional requirements have been agreed.)

In order to meet the functional requirements set out in Part II/2.2.2.1, all Industrial Personnel shall:

- .1 prior to boarding the ship, receive appropriate basic training or instruction in:
 - .1 personal survival techniques that include, but are not limited to:
 - .1 knowledge of types of emergency situations that may occur;
 - .2 knowledge of type of life-saving equipment carried and the location of the equipment; and
 - .3 knowledge on how to use the equipment;
 - .2 fire prevention and fire fighting that includes, but is not limited to:
 - .1 knowledge of shipboard fire-fighting organization;
 - .2 knowledge of location of firefighting appliances and emergency escape routes; and
 - .3 knowledge on actions to be taken on board ships;
 - .3 elementary first aid including that includes, but is not limited to:
 - .1 understanding of immediate measures to be taken in case of emergency.
 - .4 personal safety and social responsibilities that includes, but is not limited to:
 - .1 compliance with emergency procedures;
 - .2 taking precautions to prevent pollution of the marine environment; and
 - .3 observing safe working practices;

Administrations may accept other industrial training standards⁴ if they consider these appropriate alternatives;

 - .2 receive on board ship-specific safety familiarization that includes, but is not limited to:
 - .1 the layout of the ship;

⁴ Such as those of the Global Wind Organisation (GWO), Offshore Petroleum Industry Training Organisation (OPITO), Basic Offshore Safety Induction and Emergency Training (OPITO accredited).

- .2 the handling of the safety equipment, as appropriate; and
- .3 the understanding of safety information symbols, signs and alarms;
- .3 be familiarized with specific procedures, e.g. transfer procedures on and off the ship while at sea, as appropriate;
- .4 be accounted for in the ship's life-saving equipment;
- .5 be equipped with personal protective clothing and equipment suitable for the safety risks to be encountered both while on board the ship and being transferred at sea; and
- .6 meet appropriate medical standards to be physical able to fulfil the requirements in .1-.3 above and:
 - .1 demonstrate adequate hearing and speech to communicate effectively and detect any audible alarms;

(Note: I have deleted all references to the STCW Convention and codes and included some text from the earlier referenced parts. Further discussion on what to include is needed.)

3.2 Safe transfer

In order to meet the functional requirement in Part II/2.3.2 the following apply:

Part IV – Operation

Part V – Documentation]
