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COVER NOTE

From:	Secretary-General of the European Commission, signed by Mr Jordi AYET PUIGARNAU, Director
date of receipt:	17 November 2017
To:	Mr Jeppe TRANHOLM-MIKKELSEN, Secretary-General of the Council of the European Union
Subject:	COMMISSION STAFF WORKING DOCUMENT For the Council Shipping Working party IMO - Union submission to be submitted to the 5th session of the Sub-Committee on Ship Systems and Equipment (SSE 5) of the IMO in London from 12 - 16 March 2018 concerning proposals on electrical connections to vehicle and cargo units in ro-ro and special category areas. doc. SWD(2017) 415 final

Delegations will find attached document SWD(2017) 415 final.

Encl.: SWD(2017) 415 final

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Brussels, 17.11.2017
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COMMISSION STAFF WORKING DOCUMENT

For the Council Shipping Working party

IMO – Union submission to be submitted to the 5th session of the Sub-Committee on Ship Systems and Equipment (SSE 5) of the IMO in London from 12 - 16 March 2018 concerning proposals on electrical connections to vehicle and cargo units in ro-ro and special category areas

COMMISSION STAFF WORKING DOCUMENT
For the Council Shipping Working party

IMO – Union submission to be submitted to the 5th session of the Sub-Committee on Ship Systems and Equipment (SSE 5) of the IMO in London from 12 – 16 March 2018 concerning proposals on electrical connections to vehicle and cargo units in ro-ro and special category spaces

PURPOSE

The document in Annex contains a draft Union submission to the 5th session of the Sub-Committee on Ship Systems and Equipment (SSE 5) of the IMO concerning proposals on electrical connections to vehicle and cargo units in ro-ro and special category spaces in relation to the review of SOLAS Chapter II-2 and associated Codes to minimize the incidence and consequences of fires on ro-ro spaces and special category spaces of new and existing ro-ro passenger ships. It is hereby submitted to the appropriate technical body of the Council with a view to achieving agreement on transmission of the document to the IMO prior to the required deadline of 5 January 2018[1].

Article 6(2)(a)(i) of Directive 2009/45/EC on Safety Rules and Standards for Passenger Ships[2] makes the application of SOLAS in its up-to-date version applicable to new Class A ships. The draft submission concerns amendments to SOLAS II-2 regulation 20 (Protection of vehicle, special category and ro-ro spaces) that will have a direct impact on Class A ships and therefore the said draft Union submission falls under EU exclusive competence.

[1] The submission of proposals or information papers to the IMO, on issues falling under external exclusive EU competence, are acts of external representation. Such submissions are to be made by an EU actor who can represent the Union externally under the Treaty, which for non-CFSP (Common Foreign and Security Policy) issues is the Commission or the EU Delegation in accordance with Article 17(1) TEU and Article 221 TFEU. IMO internal rules make such an arrangement absolutely possible as regards existing agenda and work programme items. This way of proceeding is in line with the General Arrangements for EU statements in multilateral organisations endorsed by COREPER on 24 October 2011.

[2] OJ L 163, 25.6.2009, p. 1.

SUB-COMMITTEE ON SHIP SYSTEMS AND EQUIPMENT
5th session
Agenda item 7

SSE 5/7/X
[...] December 2017
Original: ENGLISH

REVIEW SOLAS CHAPTER II-2 AND ASSOCIATED CODES TO MINIMIZE THE INCIDENCE AND CONSEQUENCES OF FIRES ON RO-RO SPACES AND SPECIAL CATEGORY SPACES OF NEW AND EXISTING RO-RO PASSENGER SHIPS

Proposal on electrical connections to vehicle and cargo units in ro-ro and special category spaces

Submitted by the European Commission on behalf of the European Union

SUMMARY	
Executive summary:	This document proposes specific measures regarding electrical connections to vehicles and cargo units aiming to lower the occurrence rate of fires in ro-ro and special category spaces of passenger ships.
Strategic direction:	5.2
High-level action:	5.2.1
Output:	
Action to be taken:	Paragraph 22
Related documents:	MSC 97/22, SSE 4/19, SSE 4/WP.5, MSC 96/6/2, MSC 96/INF.3, SSE 4/INF. 6, MSC 97/19/3

Introduction

1 This document is submitted in accordance with section 6.12.3 of the *Guidelines on the Organization and Method of Work of the Maritime Safety Committee and the Marine Environment Protection Committee and their subsidiary bodies* (MSC-MEPC.1/Circ.4/Rev.4).

2 MSC 97, as set out in paragraph 19.19 of MSC 97/22, agreed to include this output in the 2016-2017 biennial agenda of the SSE Sub-Committee and the provisional agenda for SSE 4. However, taking into account the high number of areas subject to be considered in the analysis, the Committee instructed SSE 4 to consider the scope and the work plan, and to advise MSC 98 accordingly.

3 As instructed by the Committee, SSE 4 produced the scope of work and work plan for this item which can be found in Annexes 13 and 14 of SSE 4/19 respectively. In addition SSE 4 endorsed a two-step approach, where the first step is the development of Interim Guidelines and the second step the development of amendments to SOLAS chapter II-2 and the associated codes. In this respect Member States and international organizations were invited to submit proposals for consideration at SSE 5.

4 This document proposes specific measures regarding electrical connections to vehicles and cargo units aiming to lower the occurrence rate of fires in ro-ro and special category spaces of passenger ships.

Background

4 The Working Group on Fire Protection at SSE 4 stated in SSE 4/WP.5 that the work should take into account the significant number of fire incidents that have occurred and indications that the incidence is continuing at a constant level or is potentially increasing. This document considers the prevention of such incidents, as far as practicable, to be of paramount importance.

5 One of the common elements that has been seen in studies and submissions (MSC 96/INF.3 by Germany, SSE 4/INF.6 by EC and MSC 96/6/2 by INTERFERRY), has been the focus on electrical connections to vehicles and cargo units. This reflects the increasing number of incidents that occur due to electrical faults in vehicles or cargo units connected to the ship, and that the proposed measures are feasible both for newbuildings and existing ships.

6 In terms of detailed accident statistics, the FIRESAFE study which is reported in SSE 4/INF.6 provided a fault tree regarding the electrical ignition model (**Figure 1**). The model is explained in part 3.1.2 of the study and the different assumptions made where less data were available are explained 3.1.3.

7 Electrical faults in vehicles and cargo units connected to the ship represent a significant percentage of the total number of fires, accounting for approximately 1 in 5 fires on ro-ro decks of passenger ships (19.3%).

Discussion

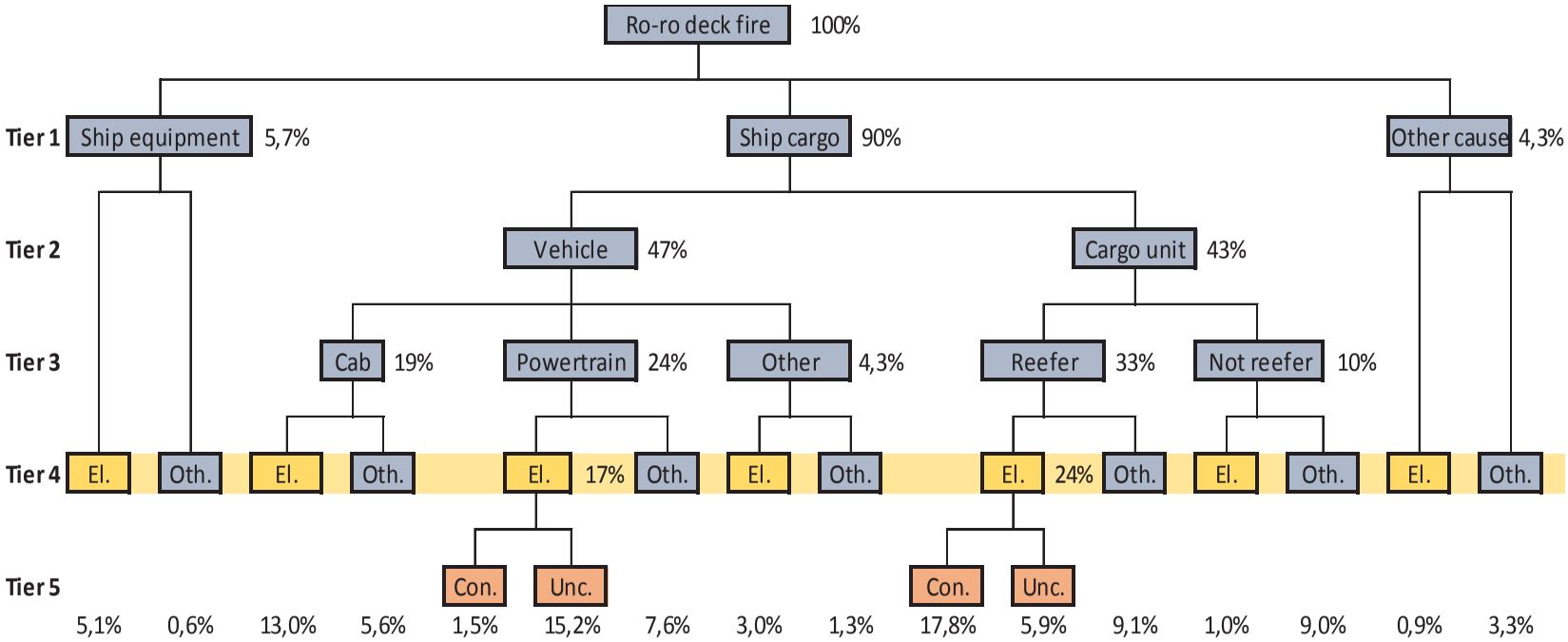
8 The studies and submissions also presented specific Risk Control Options (RCOs) or Best Practices (BPs) to reduce the current level of risk by reducing the occurrence rate of such incidents.

9 The relevant RCOs or BPs are as follows:

- FIRESAFE study (SSE 4/INF.6)
    1. Robust connection boxes (3.2.1)
    2. Only allow ship's cables and ship adapters (3.2.2)
    3. Only crew to make connections (3.2.5)
- INTERFERRY (MSC 96/6/2)
    1. Only ship's cables and connectors
    2. Only crew to make connections

3. Ground fault detection system on electric circuit providing reefer connections with an alarm to the Engine Control Room

- DNVGL study (MSC 96/INF.3)/IACS recommendation No 137
    1. Residual Current Device (RCD) protection on all outgoing distribution circuits



- **Figure 1 - Fault tree risk model for electrical fire as ignition source on ro-ro deck**

1. Only crew to make connections
2. Only ship's cables

10 Among the RCOs and BPs proposed by the submissions, several are practically identical in proposing the use of ship's cables and that only crew should make connections, while others contain similar elements regarding the protection of individual sockets using various technical options. Having in mind that in routes with short turnaround times some operators may face difficulties with limiting the connections of vehicles to crew only, a possible alternative is that specific arrangements on individual ships may enable the SMS to permit this to be done by drivers as well.

11 The RCO "robust connection boxes" which was presented by the FIRESAFE study contains a number of different features, the majority of which are already implemented on many existing ships. Some of the proposed measures are partially covered by SOLAS Ch. II-1, Reg. 45 which is the generic regulation covering precautions against shock, fire and other hazards of electrical origin, while the technical details of the features are currently covered under class rules.

12 Furthermore, as also identified in the studies and papers referred to above, improved maintenance of these connection boxes and cables is of great importance. While maintenance is an operational measure, assurance of the implementation of such measures and the verification of the condition of this equipment should also be done through surveys and inspections.

13 It should be noted that the proposals made are generally intended both for newbuildings and existing ships. More specifically, the FIRESAFE study presented a detailed cost benefit assessment for both categories and found these RCOs to be cost efficient by a significant margin. One proposal which has started to be implemented, although it is not yet common practice, is to protect each final sub-circuit against overcurrent, overload and earth fault. In order to facilitate the implementation of this proposal on existing ships protection against earth fault of limited groups of final sub-circuits may also be acceptable.

Proposals

14 Having in mind the increased number of fire incidents on ro-ro decks as presented in MSC 97/19/3, the statistics presented in paragraph 7 above and the issues presented in paragraphs 8 to 12 above, it is important to take specific and feasible measures.

15 Apart from the specific measures that are proposed, the aim of this proposal is to also raise awareness and focus on some of the issues that have been identified in studies in recent years. It is foreseen that the principal requirements in the proposals should be included in SOLAS, while it is suggested to draft Guidelines or preferably amendments to the FSS Code that will provide in detail the recommended best practices and technical solutions. The items that are proposed to be included in such Guidelines or in the FSS Code, as well as the proposed amendments to SOLAS are included in the Annex.

16 Furthermore, it is suggested to apply the proposed requirements to both newbuildings and existing ships as far as practicable. It is thought that many existing ships already comply with the proposed mandatory requirements as part of their compliance with the relevant class rules.

17 The amendment proposed in the Annex could be relevant to some existing regulations of SOLAS and the Subcommittee is invited to consider the most suitable location for its inclusion. While it seems that Ch.II-1 Reg. 45 contains requirements that are related to this subject, this issue is very specific for ro-ro and special category spaces and is intended to address fire protection issues, therefore Ch.II-2 Regulation 20 seems more appropriate.

18 Within Regulation 20 there are two available options, namely to include the amendment as 20.7 or as part of 20.3. A new subparagraph would avoid contradiction with existing regulations and is preferred; however it does not fit with the general format of regulation 20 which follows the typical stages of fire development.

19 In relation to maintenance of such connections, the proposals presented in the studies are supported and it is believed that increased attention should be given to maintenance of these items. Therefore, regular checks should be included in the maintenance plan to assure the proper working condition of cables and sockets which might suffer from both environmental and mechanical stresses.

20 In this respect, it is proposed that specific reference to maintenance of electric cables and sockets used to connect to vehicles and cargo units in ro-ro and special category spaces is made in SOLAS Ch.II-2. The relevant reference to Ch.II-2 should be in line with any decision for amendment that might be taken following the proposal in paragraphs 17 and 18 of this document, while it could also be added to Ch.II-2, reg. 14.3.

21 It is also proposed that a corresponding addition be made in the next update to the Annex of Res. A.1104(29) as presented in the Annex to this submission.

Action requested of the Sub-Committee

22 The Sub-Committee is invited to consider the discussion in paragraphs 8 to 13 above and the proposals in paragraphs 15 to 21 above, and take action as appropriate.

***

ANNEX

Proposed items to be included in SOLAS, Guidelines or the FSS Code to reduce the risk of fire caused by connections to vehicles or cargo units in passenger ship ro-ro and special category spaces:

Addition to Ch.II-2 Reg.20 (to be discussed according to paragraphs 18 and 19)

"XX.1 Electrical connections in ro-ro and special category spaces intended for power supply to vehicles or cargo units shall minimise the risk stemming from fire and other hazards of electrical origin. All ro-ro passenger ships shall comply with the requirements of the [guidelines developed by the Organization][Chapter 18 of the FSS Code].

XX.2 Ro-ro passenger ships constructed before [date] shall comply with the provisions in paragraph XX.1 not later than the first renewal survey after [X years after the date of entry into force].

Addition to Ch.II-2, Reg.14.3

"In addition to the fire protection systems and appliances listed in paragraph 2.2.3, ships carrying more than 36 passengers shall develop a maintenance plan for low-location lighting and public address systems, *as well as electrical cables and their sockets in ro-ro and special category spaces intended for power supply to vehicles or cargo units*."

Addition to the Annex of Res. A.1104(29)

"(PI) 5.1.2.67 confirming that precautions have been provided against shock, fire and other hazards of electrical origin *including electrical connections to vehicles and cargo units in ro-ro and special category spaces* (SOLAS 74/88 reg.II-1/45, *SOLAS XX reg.II-2/20.X*);" and
"(PR) 5.2.2.62 confirming that precautions provided against shock, fire and other hazards of electrical origin are being maintained *including electrical connections to vehicles and cargo units in ro-ro and special category spaces* (SOLAS 74/88 reg.II-1/45, *SOLAS XX reg.II-2/20.X*);"

Guidelines or FSS Code (chapter 18)

1. **Earth fault breakers / Individual circuit breakers**
   - *1.1. A separate final sub-circuit is to be provided for each socket outlet. Each final sub-circuit is to be automatically disconnected in case of overcurrent, overload and earth fault (e.g. with an earth fault breaker).*
   - *1.2. [Where it is impracticable for ro-ro passenger ships constructed before [date] to comply with paragraph 1.1 it may be accepted to group final sub-circuits in order for them to be automatically disconnected in case of earth fault (e.g. with an earth fault breaker). In that case, relevant operational procedures should also be in place.]*
   - *1.3. The temperature rise on the live parts of socket outlet and plugs is not to exceed 30°C. Socket outlets and plugs are to be so constructed that they cannot be readily short-circuited whether the plug is in or out, and so that a pin of the plug cannot be made to earth either pole of the socket outlet.*
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2. Individual and interlocked switches

2.1. *Socket outlets, regardless of rating, shall be provided with a switch, and be interlocked such that the plug cannot be inserted or withdrawn when the switch is in the 'on' position.*

3. IP-class

3.1. *In addition to Ch.II-2, reg.20.3.2, socket-outlets shall be provided with a degree of protection of at least [IP55] [IP56] in accordance with IEC 60529.*

3.2. *The equipment shall be provided with means to maintain the same degree of protection after the plug is removed from the socket-outlet. Where a loose cover is used for this purpose, it shall be anchored to its socket-outlet, for example by means of a chain.*

4. Secured cables

4.1. *In addition to Ch.II-1, reg.45.5, electric cables which may be damaged from vehicles or cargo units during loading and unloading operations are to be suitably protected by metallic protective casings, even when armoured, unless the ship's structure affords adequate protection. Metal protective casings are to be efficiently protected against corrosion and effectively earthed.*

5. Only ship cables

5.1. *The ship shall [provide and only] use its own connectors and cables for providing electrical power to "reefer" units and for charging of electrical vehicles during the voyage.*

6. Only crew connections

6.1. *Only [qualified ship's crew][competent persons] shall perform the connection and disconnections of "reefer" units and electrical vehicles.*