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Agenda item 17

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BIENNIAL STATUS REPORT AND PROVISIONAL AGENDA FOR SSE 11

Proposal to include the output "Development of amendments to chapter 6 of the 2009 MODU Code regarding electrical equipment capable of operation after shutdown" in the provisional agenda of SSE 11

Submitted by IACS

SUMMARY

Executive summary: This document proposes to include the output "Development of amendments to chapter 6 of the 2009 MODU Code regarding electrical equipment capable of operation after shutdown" in the provisional agenda for SSE 11.

Strategic direction, if applicable: 1

Output: Not applicable

Action to be taken: Paragraph 12

Related document: MSC 104/15

Background

1 The twenty-sixth session of the Assembly adopted the *Code for the construction and equipment of mobile offshore drilling units, 2009* (referred to in this document as the "2009 MODU Code" or the "Code") (resolution A.1023(26)), as amended by resolutions MSC.359(92), MSC.384(94), MSC.407(96), MSC.435(98) and MSC.506(105).

2 At MSC 105, the Committee considered document MSC 104/15 (Germany et al.), proposing a new output to revise paragraphs 6.5.1 and 6.5.5 of the 2009 MODU Code to clarify the application of requirements to electrical equipment that is capable of operation after shutdown.

3 Having noted support for the proposal, the Committee agreed to include in its post-biennial agenda an output on "Development of amendments to chapter 6 of the 2009 MODU Code regarding electrical equipment capable of operation after shutdown", with one session needed to complete the item, assigning the SSE Sub-Committee as the associated organ (MSC 105/20, paragraph 18.3).

Discussion

4 IACS considers that certain aspects of chapter 6 of the 2009 MODU Code require further clarification in order to facilitate their global and consistent implementation. In particular, IACS considers that paragraphs 6.5.1 and 6.5.5 of the Code would benefit from further explanation, recognizing that the Code does not address emergency shutdown (ESD) systems arranged with multiple levels of ESD, as discussed in the paragraphs below.

5 Paragraphs 6.5.1 and 6.5.5 of the 2009 MODU Code state:

"6.5.1 In view of exceptional conditions in which the explosion hazard may extend outside the above-mentioned zones, special arrangements should be provided to facilitate the selective disconnection or shutdown of:

- .1 ventilation systems, except fans necessary for supplying combustion air to prime movers for the production of electrical power;
- .2 main generator prime movers, including the ventilation systems for these; and
- .3 emergency generator prime movers.";

"6.5.5 Equipment which is located in spaces other than enclosed spaces and which is capable of operation after shutdown as given in paragraph 6.5.1 should be suitable for installation in zone 2 locations. Such equipment which is located in enclosed spaces should be suitable for its intended application to the satisfaction of the Administration. At least the following..."

6 It has been recognized that for ESD systems arranged with multiple levels of ESD, a clarification is needed as to whether the term "after shutdown" in paragraph 6.5.5 of the 2009 MODU Code relates to any single ESD level or to the total shutdown level of the unit.

7 One view is that upon activation of any single ESD level related to gas release, the provision in paragraph 6.5.5 of the 2009 MODU Code applies and external electrical equipment is to be suitable for zone 2. Consequently, the need for equipment suitable for a gas release/leak by applying this provision at the first tier of ESD (i.e. detection at the ventilation system) appears to be very conservative and not practical. Normally, equipment that is expected to be out of operation during drilling operations (such as shore power panel, towing winches, windlass, jacking motors, etc.) is not rated for zone 2.

8 Another view is that paragraphs 6.5.1 and 6.5.5 of the 2009 MODU Code need to be considered together and that the term "shutdown" refers to the point where all electrical equipment and the emergency generator are shut down, i.e. the third and last tier. In this case, a question is whether the management of the emergency situation, i.e. before shutdown of the emergency generator, can be left to the operator. In a similar way to other fire events, the operator will first need to determine the extent and risk involved before deciding what the next course of action is. Thus, the operator will first need to decide whether it is necessary to elevate the shutdown level. A typical first level ESD is shutdown of the ventilation systems in the accommodation spaces. This is to restrict any possible gas from entering the accommodation block. The operator would only activate an ESD if gas was detected, when any unprotected equipment in exterior locations could potentially become a source of ignition. However, all equipment located in open areas or spaces not protected by defined mitigating measures against impingement by a flammable gas release, that continue operating after ESD due to a gas release incident, should be suitable for installation in zone 2 locations.

9 Equipment located in enclosed spaces and which is capable of operation after a MODU ESD event require special consideration. This would include the utilization of appropriate mitigating measures for such equipment and the enclosure they are located within. This is to enable such equipment, which is potentially not suitable for installation in zone 2 locations, to continue operating in an installation gas release incident. Examples of such equipment are fire and gas detection logic panels, emergency shutdown logic panels, UPSs, firewater pump drives, emergency power generators, etc. Such equipment is typically not certified to zone 2 hazardous area operation, as these items are typically not available on the market. The mitigating measures for continued operation of such equipment located in protected enclosed spaces should include, for example:

- .1 the enclosure is defined as a non-hazardous space;
- .2 design of the enclosure divisions (bulkheads and decks, etc.) inhibits potential flammable gas ingress;
- .3 consideration of enclosure overpressure ventilation arrangements, with suitable flammable gas detection on the associated ventilation air intakes to the enclosures; and
- .4 the ventilation air intake gas detection should be located upstream of suitably rated fire and gas dampers. The ventilation dampers should close and the associated enclosure ventilation fans should be stopped on gas detection at the air intake.

Proposal

10 In order to progress this output, IACS prepared draft amendments to paragraphs 6.5.1 and 6.5.5 of the 2009 MODU Code, as set out in the annex.

11 Noting that MSC 105 agreed to place the item on the post-biennial agenda with one session of SSE Sub-Committee to complete the work, IACS proposes that the item is placed on the agenda of SSE 11 to discuss and conclude the proposed changes.

Action requested of the Sub-Committee

12 The Sub-Committee is invited to consider the above, the proposal in paragraph 11 and take action, as appropriate.

ANNEX *

DRAFT AMENDMENTS TO THE 2009 MODU CODE

CHAPTER 6

MACHINERY AND ELECTRICAL INSTALLATIONS IN HAZARDOUS AREAS FOR ALL
TYPES OF UNITS

The following changes are proposed:

"6.5 Emergency conditions due to drilling operations

...

6.5.5 Equipment which is located in spaces other than enclosed spaces and which is capable of operation after each stage of selective shutdown as given in paragraph 6.5.1 should be suitable for installation in zone 2 locations, except for the equipment which is de-energized during drilling operations (such as shore power panel, towing winches, windlass, jacking motors etc.). Such equipment which is located in enclosed spaces should be suitable for its intended application to the satisfaction of the Administration. At least the following facilities should be operable after an emergency shutdown:

- .1 emergency lighting under paragraphs 5.4.6.1.1 to 5.4.6.1.4 for half an hour;
- .2 blow-out preventer control system;
- .3 general alarm system;
- .4 public address system; and
- .5 battery-supplied radiocommunication installations.

6.5.6 The selective disconnection required in paragraph 6.5.1 may also be arranged so as to enable the isolation of ignition sources on the basis of shipboard location (i.e. accommodation block, drill floor, machinery space, etc.), system, or function specific considerations. However, the equipment located in open areas or within spaces not protected by specific mitigating measures against impingement by a flammable gas release, and that continue to operate after each stage of ESD, should be suitable for installation in zone 2 locations.

6.5.7 The equipment located in enclosed spaces that continue to operate after each stage of ESD, are to be arranged with appropriate mitigating measures for such equipment and the enclosure they are located within. This is to enable such equipment, which is potentially not suitable for installation in zone 2 locations, to continue operating in an installation gas release incident."

* The annex is provided in the English language only. Tracked changes are indicated using "strikeout" for deleted text and "grey shading" to highlight all modifications and new insertions, including deleted text.