IMO FP 54 Report

Lloyd's Register’s summary on the 54th session of the IMO Sub-Committee on Fire Protection

6th May, 2010

Hot topics:

- Comprehensive review of Fire Test Procedure (FTP) Code (Agenda item 4)
- Measures for preventing explosions of small oil & chemical tankers (Agenda item 6)
- Revision of the Recommendation for entering enclosed spaces aboard ships (Agenda item 17)
- Summary of decisions
Contents

Introduction 5
Agenda item 1 and Agenda item 2 5
Agenda Item 3 - Performance testing and approval standards for fire safety systems 5
Agenda Item 4 - Comprehensive review of the Fire Test Procedures Code 10
Agenda Item 5 - Fire resistance of ventilation ducts 11
Agenda Item 6 - Measures to prevent explosions on oil and chemical tankers transporting low-flash point cargoes 12
Agenda Item 7 - Clarification of SOLAS chapter II-2 requirements regarding interrelation between central control station and safety centre 13
Agenda Item 8 - Explanatory notes for the application of the safe return to port requirements 14
Agenda Item 9 - Recommendation on evacuation analysis for new and existing passenger ships 15
Agenda Item 10 - Consideration of IACS unified interpretations 15
Agenda Item 11 - Fixed hydrocarbon gas detection systems on double-hull oil tankers 18
Agenda Item 12 - Harmonization of the requirements for the location of entrance, air inlets and openings in the superstructures of tankers 18
Agenda Item 13 - Amendments to SOLAS chapter II-2 related to the releasing control and means of escape for spaces protected by fixed carbon dioxide systems 19
Agenda Item 14 - Means of escape from machinery spaces 19
Agenda Item 15 - Review of fire protection requirements for on-deck cargo areas 20
Agenda Item 16 - Analysis of fire casualty records 20
Agenda Item 17 - Revision of the Recommendation for entering enclosed spaces aboard ships 21

Agenda Item 18 - Fire integrity of bulkheads and decks of ro-ro spaces on passenger and cargo ships 22

Agenda Item 19 - Requirements for ships carrying hydrogen and compressed natural gas vehicles 22

Agenda Item 20 - Guidelines for a visible element to general emergency alarm systems on passenger ships 22

Agenda Item 21 - Means for recharging air bottles for air breathing apparatuses 23

Agenda Item 24 - Any other business 23

Date of the next session of the Sub-Committee 24

Summary of the decisions (list of the finalized instruments) 25
Introduction

The 54th session of the IMO Sub-Committee on Fire Protection was held from the 12th to 16th April, 2010 in London, the United Kingdom. The outcome relevant to the work of Lloyd’s Register is summarised below. Due attention should be paid to “Implication” and “Application” under each item.

Due to the close proximity between FP 54 and MSC 87, only the following urgent matters will be forwarded to MSC 87 (12 – 21 May, 2010). The rest will be considered by MSC 88 (December 2010)

2. Measures to prevent explosions on oil and chemical tankers transporting low-flashpoint cargoes (Agenda item 6);
3. Clarification of SOLAS chapter II-2 requirements regarding interrelation between central control station and safety centre (Agenda item 7);
4. Explanatory notes for the application of the safe return to port requirements (Agenda item 8);
5. Fixed hydrocarbon gas detection systems on double-hull oil tankers (Agenda item 11).

Agenda item 1 and Agenda item 2

There were no substantial discussions under these agenda items and, therefore, they are not covered in this document.

Agenda Item 3 - Performance testing and approval standards for fire safety systems

The following issues have been concluded at this session. It should be noted that these decisions of the Sub-Committee will be considered by MSC 88 in December 2010, not MSC 87 in May 2010, due to the close proximity of the sessions.

AMENDMENTS TO THE SOLAS CONVENTION

Fixed gas and water spraying fire-extinguishing systems for vehicle spaces, ro-ro, container and general cargo spaces (Regulation II-2/20: Protection of vehicle, special category and ro–ro spaces)

Amendments were agreed to SOLAS regulation II-2/20 as well as associated draft amendments to chapters 5 and 7 of the FSS code.

The amendments clarify the date of application, and the design requirements for piping for fixed gas fire fighting systems.

Implication: The SOLAS amendments clarify which requirements ships should comply with depending on the construction date. Also on design of piping such that it can meet the delivery requirements.

Manufactures/Builders: should already be familiar with the contents of the SOLAS chapter – the amendments only clarify the applicable standard for ships built in the
period between 1 July 2002 and the entry into force date of the new amendments – i.e. resolution MSC.99(73).

**Owners:** As above, owners should be aware of the application dates. Depending upon the interpretation/application at the time of construction, clarification introduced by this amendment may require retroactive application.

**Flag Administrations and its RO:** To ensure the new amendments are applied properly. Possible retroactive application need to be investigated.

**Application:** Ships constructed after 1 July 2002; Vehicle spaces and ro-ro spaces, of ships constructed on or after [date of entry into force]. Ships constructed on or after 1 July 2002 and before [date of entry into force] shall comply with the previously applicable requirements of paragraph 6.1.1 adopted by resolution MSC.99(73).

**Draft amendment to SOLAS II-20/10.5.6.3**

In the course of revision of MSC Circular on Revised guidelines for the Approval of Fixed Water-Based Local Application Fire-Fighting Systems for use in category A machinery spaces, amendments to the SOLAS regulation was agreed. Reference is to be made to the revised circular given below.

**AMENDMENTS TO THE FSS CODE**

1. **Draft amendment to Chapter 5 – Deletion of Section 2.4 Fixed Gas Fire-Extinguishing Systems- Systems using gaseous products of fuel combustion**

The Sub-Committee agreed to delete section 2.4 of chapter 5. This section had laid out requirements for such systems. Since it was agreed these systems were unlikely to be used, the section will be recommended for deletion at MSC 88.

**Implication:**

- **Manufactures/Builders:** the section is deleted and no such existing arrangements are known.
- **Owners:** to note.
- **Flag Administrations and its RO:** to note

**Application:** This section was originally intended for use where tankers were converted to bulk carriers and the existing tanker IG system might be used for fire extinguishing in the cargo holds.

2. **Draft amendment to Chapter 6 - Fixed high Expansion Foam Fire-Extinguishing Systems**

It is recommended that the chapter to be split with the principle requirements contained within chapter 6. Test standards are then developed in a separate appendix).

The new chapter 6 will introduce a number of options for fixed high expansion foam fire extinguishing systems, e.g. inside air foam systems, systems for the protection of vehicle, ro-ro, spaces, etc. The option chosen will affect the size of the system and other design & production elements of the equipment, e.g. space containing such system.

Associated guidelines are developed as an MSC circular. Reference is to be made to the circular given below.
Implication:

Manufactures/Builders: depending upon the discussion the new chapter 6 will introduce a number of options for fixed high expansion foam fire extinguishing systems, e.g. inside air foam systems, systems for the protection of vehicle, ro-ro, spaces, etc. The option chosen will affect the size of the system and other design & production elements of the equipment, e.g. space containing such system.

Owners: the change may affect cargo carrying capacity, especially for Ro-Ro ships. Since the items under consideration are additional options, although the date is in the past, existing systems should comply.

Flag Administrations and its RO: the workload as RO is basically similar to those in the present Code, however, at the initial stage, it will require additional work hours to let surveyors be familiar with the new requirement. Elements of the retroactive application should be considered carefully in actual application.

Application: Ships that need to comply with chapter II-2 of the SOLAS convention, i.e.; all ships constructed on or after 1 July 2002. Since the proposals introduce new options, existing systems on ships built since this date should be unaffected.

3. Draft amendment to Chapter 8 – Alternative extinguishing systems for control stations where water discharge from sprinklers may cause damage

A proposal was made to amend the relevant SOLAS regulation II-2/10.6.1.1 but it was agreed to amend para 2.1.1 of chapter 8 of the FSS code instead, with self explanatory text as follows:

“Control stations, where water may cause damage to essential equipment, may also be fitted with dry pipe sprinklers as permitted by SOLAS II-2/10.6.1.1"

Implication: These guidance notes should clarify requirements for newbuilds. No significant change to workload.

Application: Ships that need to comply with chapter II-2 of the SOLAS convention i.e. all ships constructed on or after 1 July 2002. Manufacturers, designers and vessel owners should be aware of the new guidance note. Although the application date is in the past, retrospective application should not be an issue since this is an additional method of complying. Further, ships that have already fitted such dry systems through separate agreements should now be shown to be in compliance.

OTHERS

1. Maintenance and Inspection of fixed carbon dioxide fire extinguishing systems

The proposed modifications to MSC.1/circ.1318 were not accepted.

2. Draft MSC Circular on Guidelines for the testing and approval of fixed high-expansion foam systems

The guidelines were developed in conjunction with the new chapter 6 of the FSS code introduced above.
**Implication:** Once adopted it is intended that the new systems meet the requirements for Fixed Foam Fire-Extinguishing Systems set out in the guidance. Manufacturers, designers, test centres and vessel owners should be aware of the new requirements.

**Application:** Fixed foam fire-extinguishing systems for the protection of machinery spaces in accordance with SOLAS regulation II-2/10.4.1.2, cargo spaces in accordance with regulation II-2/10.7.1.1, cargo pump-rooms in accordance with regulation II-2/10.9.1.2 and vehicle, special category and ro-ro spaces in accordance with regulation II-2/20.6.1.3.

All ships built after 1 July 2002, once the MSC circular is approved. Manufactures, designers, test centres and vessel owners should be aware of the new requirements. Ships already built after this date should already comply with a more stringent requirement than these proposals.

3. **Draft MSC Circular on Revised guidelines for the Approval of Fixed Water-Based Local Application Fire-Fighting Systems for use in category A machinery spaces (MSC.1/Circ.913)**

The revised guidelines were agreed and will be submitted to MSC 88 for approval.

The group also agreed to an amendment to SOLAS II-20/10.5.6.3 as follows;

**Regulation 10 – Fire fighting**

In paragraph 5.6.3, in subparagraph .1, the words "used for the ship's main propulsion and power generation” are deleted.

**Implication:** Once adopted it is intended that the new systems meet the requirements for the revised MSC/Circ 913. Manufactures, designers, test centres and vessel owners should be aware of the new requirements.

**Application:** New MSC circular equivalent for systems constructed and tested to MSC/Circ 913. All ships constructed after 1 July 2002 and after the adoption of this circular. Manufactures, designers, test centres and vessel owners should be aware of the new requirements. Since these equivalents are not designed to be more onerous than existing requirements, there should be no retroactive implication for ships built since 1 July 2002.

4. **Scientific methods on scaling of test volume for fire test on water-mist fire-extinguishing systems**

MSC/Circ.1165 Appendix B paragraph 2 states that when based on the scientific methods may be used for scaling and these were agreed, but not to exceed twice the tested volume. A draft MSC circular is recommended for approval at MSC 88 accordingly.

**Implication:** Once adopted it is intended that new vessels may be fitted with systems that are scaled as per the MSC circular. Manufactures, designers, test centres and vessel owners should be aware of the new requirements.

**Application:** All ships engaged on international voyages built after 1 July 2002 and after the adoption of this interpretation. New builds are to be fitted with such systems in
compliance with MSC/Circ.1165. These amendments should not affect ships built since 1 July 2002.

5. **Maintenance and inspections of fixed carbon dioxide fire-extinguishing systems (MSC.1/Circ.1318)**

It was noted that the circular did not fully identify the periodical testing standards. However, it was agreed not to amend the circular at this stage.

**ITEMS THAT WERE NOT CONCLUDED**

1. **Draft amendment to SOLAS regulation II-2/18 – Helicopter landing facility**

IMO has been working on the guidance standards to update the safety standards of the SOLAS Chapter II-2. It is pointed out that the ICAO standards are being updated at this time. It is noted that a vessel/MODU is not a stable platform; therefore the risk of accident is higher, and the MODU application rates are higher. However a vessel does not have regular helicopter flights and the helideck may be used only once in a vessel lifetime.

At this session, some further modification of the guideline was agreed on the fire safety equipment requirements. There was an extensive discussion on the equipment and pressure requirements for these systems. It was agreed that the Chairman should incorporate the comments made into the draft guidance and circulate to the Correspondence Group for comment.

**Implication:**
- **Builders:** The changes are relatively minor; however, they will affect design of the helicopter landing area and capacity of the fire fighting requirement. These will need to be addressed at the design stage of a ship.
- **Owners:** To note the change. It may affect helicopter landing operation and crew training.
- **Flag Administrations and its RO:** To provide instructions to surveyors once the matter is concluded.

**Application:** Vessels with Helicopter facilities (passenger ships engaged on international voyages regardless of tonnage and non-passenger ships of 500 gt or over constructed on or after the date decided by the MSC Committee).

2. **Proposed amendment to chapter 14 of the FSS Code (Fixed deck foam systems)**

The discussion is ongoing and will continue within the Correspondence Group.

This document reports on the outcome of BLG 14 with regard to matters related to amendments to chapter 14 of the FSS Code, regarding the application of fixed deck foam systems to oil tankers and chemical tankers.

FP 53 noted that the Working Group on Performance Testing and Approval Standards had considered the draft amendments to chapter 14 of the FSS Code concerning fixed deck foam systems and that the group had agreed that the requirements for chemical
tankers in SOLAS and the IBC Code were in need of revision and proposed that ships carrying flammable chemicals listed in chapters 17 and 18 of the IBC Code should be required to meet the higher IBC Code foam application rates regardless of flashpoint.

The BLG Sub-Committee, at its fourteenth session (8 to 12 February 2010), in discussing the proposed draft amendments to chapter 14 of the FSS Code, considered that the proposed amendments regarding fixed deck foam systems could imply a new carriage requirement for such a system for those vessels carrying substances listed in chapters 17 and 18 of the IBC Code. In view of the fact that chapter 18 lists substances to which the IBC Code does not apply, vessels carrying such substances need not normally follow the IBC Code.

The opinions expressed within the Working Group were recommended to be returned to BLG for further consideration with a view to finalisation at FP 55. Plenary recommended that a separate agenda item be made by MSC 87 as unplanned output in order to better coordinate and organise this work.

**Implication:** Once adopted it is intended that vessels carrying chapter 17 and 18 cargoes with a flash point below 60 °C. may be required to have a deck foam system. RO’s to note outcome of this item at FP 55. Manufactures designers and vessel owners to note above and should be aware of the possible requirements.

**Application:** Tankers and chemical tankers carrying flammable liquids listed in chapters 17 and 18 of the IBC code.

Manufacturers and operators of such ships should note the discussion.

LR will continue to monitor developments.

3. **Guidelines for the approval of helicopter facility for fire-fighting appliances**

This item was agreed to be further considered at FP 55.

**Implication & Application:** Information on requirements for helicopter facilities will be further considered in the relevant documents at FP 55. Manufacturers and operators should note. LR will continue to monitor developments.

**Agenda Item 4 - Comprehensive review of the Fire Test Procedures Code**


The FP Sub-Committee has been working on the comprehensive review of the FPT Code, in order to achieve a more unified approach of the Code.

The draft text was nearly completed at FP 53. The Sub-Committee:

- Considered editorial corrections identified by the Correspondence Group;
- Not to open any other substantial issues.

The final draft was approved by the Sub-Committee for formal approval by MSC 87 (May 2010) and final adoption adopted by MSC 88 (December 2010). The expected entry into force date is 1 July 2012.
This is a comprehensive revision of the Code. The following major changes were introduced:

- All relevant resolutions & circulars on fire test procedures into the Code incorporated
- Test requirements given in Part 5, Part 6, A. 653 (16) and A.687 (17) into Part 5 were merged, as they are essentially the same
- New parts on “Test for fire-restricting materials for high speed craft” and “Test for fire-restricting divisions for high speed craft” were incorporated
- Expiry period of the fire test certificate (15 years) was introduced
- Test report format (new additional 7 entry items in the report) was revised.

**Implications:** The fire test laboratories are to carry out the tests in accordance with the new procedure, once the amendments enter into force.

**Manufacturers of the materials** which are subject to these tests, e.g. fire resistant / proof materials. This would result in new testing (after some introductory period) and renewal testing (after 15 years expire period), which may lead to significant increase in cost.

**Application:** To the fire test procedures for the material regulated by SOLAS, e.g. firebulkheads, windows, deck coatings, surface materials of chairs, sofas etc.

**Draft MSC resolution on amendments to the guidelines for the application of plastic pipes on ships (resolution A.753(18))**

The Sub-Committee addressed the proposed amendments to this resolution with regard to the use of flexible rubber pipes. It was agreed to revise the resolution as an MSC resolution for adoption at MSC 87.

At this session, the proposal to include the content of the resolution A.753(18) into the FTP Code Draft was rejected on the basis that it was a guideline and therefore it is not mandatory.

**Implications:** The decision to reject the incorporation of A.753(18) into the new FTP Code will not affect manufacturers, shipbuilders and ship operators/owners at this time; although it will allow different requirements to continue to be applied by different Flag Administrations.

**Application:** For fire testing conducted on or after agreed implementation dates of the Code.

**Agenda Item 5 - Fire resistance of ventilation ducts**

The amendments to SOLAS requirements (II-2/9.7) were finalised at FP 52 and later approved as MSC169(85). Following that further proposals were made at FP 53 and, considering comments and concerns expressed there by several delegations, new proposals were presented for a complete rewriting of the above mentioned SOLAS regulations at this session.

The Sub-Committee agreed with the views expressed by a number of delegations that the fitting of automatic fire dampers in all ‘A’ class divisions would not substantially improve safety and would be very costly for passenger ships.
The Sub-Committee agreed to consider this matter via an Intersessional Correspondence Group, under the chairmanship of the United States of America. The principle matters to be discussed are:

- Validate the need and proposed size for cut offs for automatic fire dampers for ‘A’ class divisions.
- Consider provisions for ‘B’ class penetrations
- Clarify the provisions regarding smoke control / management systems

**Implications:** Builders and owners are to take into account the materials and designs of the ducts, once decisions are made by the IMO. Plan approval departments will need to be aware of the new requirements if they are accepted.

**Application:** To be developed at FP 55

**Agenda Item 6 - Measures to prevent explosions on oil and chemical tankers transporting low-flash point cargoes**

Currently, tankers of less than 20,000 dwt are not required to be fitted with Inert Gas System (IGS). Following several casualty reports on the explosion of such tankers, IMO has been addressing this issue since MSC 83 (October 2007).

At FP 53, it was agreed that new oil tankers of below 20,000 dwt carrying low-flash point cargoes should be fitted with IGS. The lower limit of such requirements was left for the further discussion.

Consequential amendments to SOLAS would be required and these would be discussed at FP 55, as well as BLG examining effects on the IBC code.

The Sub-Committee also addressed the following issues:

- Different operation between oil tankers and chemical tankers were duly recognized
- Opinions on installation requirements of IGS and inerting requirements for ships that may not be required for installing IGS, by e.g., supplying inert gas from shore side were exchanged;
- Concerns over the availability of “shore supply” of the inert gas
- Negative impact on environment if IGS is required, e.g. emission of such gas to the atmosphere and increase of fuel consumption.

After a lengthy discussion at the plenary, the following was agreed in general;

- the matter should be addressed “property based approach”, i.e., looking at the flashpoint of the cargo being transported;
- the application of the requirements should be, at first, new ships. Matters on existing ships should be considered at the 2nd stage.
- Different approach should be taken between oil tankers and chemical tankers.
- there was agreement that fixed IG should be required for new ships of 5000 dwt and above however a number of delegations where of the opinion that the lower limit should be 8000 dwt as a result the lower limit will be discussed further at FP 55
- It was also agreed that alternatives to fixed systems should be permitted i.e. shore supplied IG such as nitrogen.
The Sub-Committee recognised that changes to SOLAS regulation II-2/4.5.5 which lead to IG being a requirement for new ships below 20000 dwt would require a review of other parts of Chapter II-2 as consequential amendments.

In addition it was recognised that the IBC Code would be affected and agreed that BLG Sub-Committee should be requested to review the IBC Code to identify where amendments would be required – this in particular will affect column “h” in chapter 17 to ensure there is no confusion between the global requirements for the inert tanks and the specific requirements for certain cargoes as identified by column “h” in chapter 17.

The Sub-Committee also had a lengthy discussion on the relation between this agenda item and agenda item 17 - Revision of the Recommendation for entering enclosed spaces aboard ships.

It was generally agreed that the separate tank entry recommendations for chemical tankers were not as required they could be covered in the generic guidance in the resolution A.864(20)) and any amendments dealt with by the review of the resolution A.864 currently being undertaken by DSC Sub-Committee.

The Sub-Committee agreed that the DSC Correspondence Group on the revision of the Recommendation for entering enclosed spaces aboard ships should deal with this matter in particular the draft tank entry recommendation for chemical tankers submitted to FP 54. In addition, the Sub-Committee agreed that the same document should be sent to BLG Sub-Committee to identify the items relating to chemical tankers only in particular the hazards associated with the tanks inerted with nitrogen.

**Implications:** Major impact on shipbuilders, ship owners and ship managers for the design and operation of small oil and chemical tankers, and to seafarers training.

**Application:** New oil tankers less than 20,000 dwt and chemical tankers carrying low-flash point cargoes, date of entry into force is yet to be discussed. No decision has yet been made as to whether the requirements will be applied retrospectively to existing ships. There is ongoing considerable discussion regarding the lower limit, and the decision is expected to be taken between 5000gt and 8000gt.

**Agenda Item 7 - Clarification of SOLAS chapter II-2 requirements regarding interrelation between central control station and safety centre**

**Draft MSC circular on Clarifications of SOLAS Chapter II-2 requirements regarding interrelation between central control station, navigating bridge and safety centre**

The amendment made to the SOLAS Convention by resolution MSC.216 (82) introduced a ‘Safety Centre’. However, it was recognized that there was a need to make the relation between the central control station, the navigating bridge and the safety centre clearer. For this reason, this circular was prepared for the approval by the MSC 87, prior to the entry into force of the requirements on 1 July 2010.

The Correspondence Group that developed this circular noted that SOLAS regulation II-2/23.6.15 requires the functionality of atrium smoke extraction system is to be available.
at the safety centre. However, since no current regulation requires operation, control, monitoring, alarm or any combination thereof at a central location for this system, there might be the necessity for amending either SOLAS regulation II-2/8.5 or II-2/23.6.15.

Implications: The outcome is expected to be released as an MSC circular in May 2010, which will provide useful clarification on items such as operational controls, alarms, functions etc for these items, in order to assist in the application of the new SOLAS requirements which will come into force on 1 July 2010.

Where a recognised organisation needs to assess arrangements for compliance, the new circular is not expected to introduce requirements for new equipment, but rather to subdivide and relocate equipment already required.

Application: All passenger ships engaged on international voyages, constructed on or after 1 July 2010.

**Agenda Item 8 - Explanatory notes for the application of the safe return to port requirements**

The new SOLAS regulations II-1/8-1, II-2/21 and II-2/22 adopted by the resolution MSC.216 (82) introduced “Safety return to port” requirements after a fire or flooding casualty for passenger ships. The Sub-Committee was tasked to developed necessary documentation for the mandatory implementation of the requirement entering into force on 1 July 2010.

Further, the Sub-Committee agreed that the ship systems’ capabilities should be included in the list of operational limitations issued in accordance with SOLAS regulation V/30 and that the quantities of operational parameters, arrangements and procedures to be applied in respect to the possible different areas of operation of the ship should be described in detail in the ship’s safety management manual.

These Explanatory Notes have been developed in the light of the experience gained so far in the early application of the aforementioned requirements, taking into account the guidance contained in the Performance standards for the systems and services to remain operational on passenger ships for safe return to port and orderly evacuation and abandonment after a casualty (MSC.1/Circ.1214). This circular, once approved, will supersede MSC.1/Circ.1214.

The appendix to this circular provides a comprehensive set of interpretations of relevant SOLAS regulations. It was agreed that some of these interpretations will be forwarded to SLF Sub-Committee and NAV Sub-Committee for their review and subsequent issuance of another set of interpretations upon completion.

The Sub-Committee approved the text for final approval by MSC.87.

One delegation expressed concern over the concept of “critical system” which allows one hour recovery period after casualty with manual intervention. In the opinion of the delegation, this to be an unacceptable time delay, particularly in the case of both propulsion and steering systems, and, in their opinion, there is no technical reason why these systems cannot be brought into service in a near seamless fashion in the same way...
that emergency electrical power is supplied without manual intervention following failure of the primary source of electrical power.

**Implications:** The conclusion by the Sub-Committee would be imperative for the implementation of the requirements. Noting that design of some ships may have already been approved for construction on or after 1 July 2010; they may have to be reviewed once again based upon the decision of the Sub-Committee.

Once the relevant SOLAS regulations (II-1/8-1, II-2.21 & ./22) come into force, the new requirements are likely to introduce a step change on the design of passenger ships to which the regulations apply and the Interim Explanatory Notes now developed under this Agenda item should provide extensive guidance for their uniform application.

This will significantly increase the amount of work required to verify compliance with SOLAS chapter II-2 in a view of the issue of Passenger Ship Safety Certification, both at the plan approval and at the survey stage (survey of newbuilding ships and subsequently when existing ships, as the regulations are not retroactive).

**Application:** All passenger ships built after 1 July 2010, greater then 120m in length or with 3 or more vertical fire zones.

**Agenda Item 9 - Recommendation on evacuation analysis for new and existing passenger ships**

At FP 52, it was pointed out by a member government that there was no mandatory requirement to apply the current Guidelines for evacuation analysis and although they were originally developed to provide guidance on the performance of the mandatory evacuation analysis for ro-ro passenger ships (SOLAS regulation II.2/28.1.3) they were successfully applied to passenger ships other than ro-ro passengers ships and were proven to be useful to identify and to improve evacuation shortcomings.

Since then the Sub-Committee further considered this matter in order to decide whether to require evaluation analysis to passenger ships in addition to ro-ro passenger ships.

The Sub-Committee at this session agreed, in general to improve present Guidelines (MSC.1/Circ.1238) with a view to encompassing “Safe return to port” concept. However, the decision on mandatory requirements was postponed to the next session.

**Implications:** Although this requirement is of a recommendatory nature, it will affect design of passenger ships in the future.

**Application:** Passenger ships (on voluntary basis)

**Agenda Item 10 - Consideration of IACS unified interpretations**

The following matters were considered:

1. **Location of the fire main isolation valves in tankers under SOLAS regulation II-2/10.2.1.4.4**
IACS was seeking clarification on what can be considered a ‘protected location’. Among two options presented by the IACS, the Sub-Committee agreed with the second option, i.e. the isolation valve would need to be located within the accommodation space, but within the general area of the front of the deck-house structure.

IACS will develop a unified interpretation and will submit it to the next session of the Sub-Committee.

**Implication:** Location of the isolation valve and piping arrangements of fire main may be re-examined in accordance with this decision.

**Application:** Fire main isolation valve on tankers.

2. **Revised IACS UI SC216 on water based fire extinguishing systems**

Although the UI was generally agreed, the extent of measures was not and so the UI was not approved. The subject was concluded.

However, during discussions, a new interpretation of paragraph 17 of MSC/Circ.1165 for total flooding systems was agreed and forwarded to MSC 88 for approval.

**Implication:**
- **Builders:** new interpretation for total flooding systems
- **Owners:** To note the change.
- **Flag Administrations and its RO:** To provide instructions to surveyors once the requirements are finalized.

**Application:** All ships engaged on international voyages built after 1 July 2002 and after the adoption of this interpretation. Since this allows a wider interpretation existing systems will continue to comply.

3. **Unified interpretation of SOLAS regulation II-2/10.5.6.3.1**

IACS initiated a discussion on differing interpretations of SOLAS regulation II-2/10.5.6.3.1 concerning the fitting of fixed local application fire-fighting systems (FLAFFS).

Among two options proposed, the Sub-Committee agreed with the 2nd option, i.e. internal combustion machinery located in a category ‘A’ machinery space greater than 500m3 should be protected by FLAFFS.

IACS will develop a unified interpretation and will submit it to the next session of the Sub-Committee.

**Implication:** Depending upon the current practice, this could mean “additional” requirements for installing FLAFFS for diesel engine driven hydraulic power packs.

**Application:** New ships – but to be further clarified at the next session.

4. **Clarification on the suction piping of emergency fire pumps, which are run through the machinery space**
IACS initiated a discussion on the suction piping of emergency fire pumps, which are run through the machinery space. The proposal presented by the IACS in reading SOLAS regulation II-2/10.2.1.4.1 which was in principle supported by the Sub-Committee. It was as follows:

- “The valve” should be interpreted as “sea inlet valve”
- “Short length” may be interpreted as piping being as short as practicable consistent with the arrangement of the ship, but such a qualification does not provide for uniform implementation unless an upper limit (e.g. 3 m to 4 m) is established. IACS stated that the length will be 4m
- There may be some consideration of the fact that “distance pieces”, “sea inlet valves” and “sea-chests” are always wet from the inside, insofar as determining the extent to which such equipment may be excluded from the range of “A-60” class insulation. In this regard, the practical aspects of insulating valves to satisfy “A-60” class standards should be considered given the valve’s moving parts such as handles, reach rod connections and actuators
- The wording ““A-60” class standards” may be interpreted to mean that objects such as pipes and ducts are to be covered/protected in a practical manner by insulation material which is approved as a part of “A-60” class bulkheads in accordance with the FTP Code
- Where the sea inlet valve is in the machinery space and remotely controlled and the type of valve is not a fail-open type, the control piping and electric cables are to be fire resistant type or to be insulated to “A-60” class standard. In no case should fail-close type valve should be accepted.

IACS will submit a unified interpretation based upon the above.

Implication: This will affect the design of such suction piping, valves and sea chests in the engine room for new ships.

Application: New ships

5. Unified interpretation of paragraph 9.2.2 of the FSS Code – Sources of power supply for fixed fire detection and fire alarm systems)

IACS informed IMO about the intention to continue to use the revised UI SC35 relevant to paragraph 9.2.2 of the FSS Code on sources of power supply for fixed fire detection and fire alarm systems.

The Sub-Committee agreed that elements of the UI SC35, such as use of batteries, needed a substantial discussion. It was agreed that the matter would be further considered by the Correspondence Group established under agenda item 3.

Application: This will affect the newbuilds complying with chapter 9 of the FSS code


This UI had a lengthy history in its development well back to FP 51. The debate was whether to require position of suction of emergency fire pump in all conditions or only in voyage conditions. The final conclusion was to specify ballast arrival condition. The draft circular was agreed for approval at MSC 88.
Implication: It may affect the position of the suction, but may not change current practice in general, depending on individual designs.

Application: New ships constructed on or after approval of this circular.

**Agenda Item 11 - Fixed hydrocarbon gas detection systems on double-hull oil tankers**

**Draft MSC Circular on Guidelines for the design, construction and testing of fixed hydrocarbon gas detection systems**

The revised text of SOLAS regulation II-2/4 requiring fixed hydrocarbon gas detection systems on double hull spaces of double hull oil tankers is expected to be adopted at MSC 87, therefore, in order to assist timely implementation of the requirement, the Sub-Committee was further tasked to complete these Guidelines.

The Sub-Committee, using the text prepared by the Correspondence Group as a basis of its work, developed draft Guidelines for submission to MSC 87 for approval.

In the course of the discussion, the following points were considered:

- Not to include test procedure at this stage, as there are no concrete test proposed at this session
- Duplicated extraction (automatic back up) pump will not be required, but provide a spare extraction pump as minimum
- Switchover sequence – even after the detection at one sampling point, it will still continue to change one after another
- Automatic reset function was not agreed
- Definition and references with regard to Gas Analysis Unit & Gas detector were carefully addressed.

Implications: Electrical wiring arrangements as well as extraction pump arrangements are to be considered at the design stage of new tankers. While testing and survey requirements are not included in the guidelines, such elements must be put into practice.

Application: To new double hull tankers, of 20,000 DWT or above. The date will be finalized by MSC 87 in conjunction with the adoption of the amendments to SOLAS regulation II-2/4.

**Agenda Item 12 - Harmonization of the requirements for the location of entrance, air inlets and openings in the superstructures of tankers**

FP 51 had recognised that SOLAS, IBC and IGC codes had different distances for these items. Further, IEC standards and MSC circulars did not give consistent results.

The Sub-Committee continued the work on harmonization of the requirements for the location of entrances, air inlets and openings in the superstructures of tankers, taking into account any documents submitted on the subject to the session.

FP 54 discussed various options for harmonising the requirements such as;
• Produce a comparative table
• Amend the FSS code introducing a new chapter for the harmonised requirements
  and subsequently amending SOLAS and the IBC and IGC Codes.

The Sub-Committee therefore agreed to take a broader approach and invited proposals
and comments for FP 55.

The target completion year was extended to 2011 accordingly.

Implications: Pending the actual submissions, harmonisation should make matters
simpler.

Application: When completed this will clarify the requirements for design and build of
tankers – dates are expected to be clarified by the completion year.

Agenda Item 13 - Amendments to SOLAS chapter II-2 related to the
releasing control and means of escape for spaces protected by fixed
carbon dioxide systems

The Sub-Committee continued the work on amendments to SOLAS chapter II-2 related
to the releasing controls and means of escape for spaces protected by fixed carbon
dioxide systems, taking into account any documents submitted on the subject to the
session, and took actions as appropriate.

Having noted that no document was submitted this agenda was deleted from the work
programme of the Sub-Committee.

Agenda Item 14 - Means of escape from machinery spaces

Following an engine-room fire accident on a Danish cargo ship, where the lack of
sufficient means of escape from the engine control room caused fatalities, the FP Sub-
Committee was tasked to develop a mandatory requirement.

FP 53 considered proposed amendments to SOLAS regulations II-2/13.4.1 and II-2/13.4.2
on means of escape from machinery spaces on cargo and passenger ships to introduce
requirements on independent means of escape from enclosed working spaces, such as
machinery control rooms and workshop spaces within machinery spaces and agreed, in
principle, to the proposed SOLAS amendments.

However, there were outstanding elements that required further clarification, such as
definition of “workshop spaces”, “ladders shielded” and “access to the open deck”,
which were left for further discussion at this session.

The Sub-Committee, while reviewing re-submitted draft SOLAS amendments, still found
unclear elements of the proposed requirements, such as
• “Enclosed spaces in which crew members normally stay to carry out work”
• “Enclosed space”
• Meaning of “ladder” that requires protection from fire.

Difficulties in applying the proposed requirements to small ships were further expressed.
The Sub-Committee agreed that further work would be required. It should be noted that the majority of the Sub-Committee was of the view that new requirements would be applicable only to new ships.

The Sub-Committee invited comments and proposals for FP 55.

Implications: Possible design change in a way of engine rooms, i.e., either to provide another means for escape or eliminate such enclosed spaces, depending upon the discussion at next session.

Application: Most likely to new passenger ships and cargo ships that will be constructed on or after a future date, if accepted, with possible exemption of ships that are smaller than certain size may be decided at next session.

Agenda Item 15 - Review of fire protection requirements for on-deck cargo areas

At present, contrary to cargo spaces below deck, the weather deck area is not provided with any fixed fire-suppression system. The arrangements provided for fire fighting on deck consist of manual intervention equipment only, and crew members have to approach the scene for fire fighting activities. Equipment available for that purpose comprises fire hoses and portable fire extinguishers. Apart from the risk to life when crew is involved in the manual fire fighting, the required fire pump capacity seems to be insufficient and should be reconsidered in light of the ever-growing container stack height and number of containers carried on deck.

MSC 85 agreed to include new work programme in the Sub-Committee to deal with this concerns.

The Sub-Committee reviewed the result of the FSA study and its recommendation on the revision of SOLAS regarding fire of on deck containers submitted to this session. It contained the proposed amendments to the SOLAS requiring portable fire fighting equipment, i.e., mobile water monitors (cannons) and a water mist lances. It also suggested increase fire main capacity.

FP 54 noted the potential for requiring monitors and thermal cameras on deck and invited further proposals and comments for FP 55.

Implications: Possible change in fire-fighting capabilities for deck areas of a container ship.

Application: Container ships carrying more than four tiers of containers (to be further developed)

Agenda Item 16 - Analysis of fire casualty records

This item examined fire casualties to decide whether the analysis shows if amendments are needed to IMO conventions or other documents.

For FP 54 the only document was released regarding the fire aboard the factory ship ‘Hercules’ in which 11 people perished, which summarised that the fire was caused by
poor quality lamp fixtures and that fire fighting was hampered by lack of air supply in the breathing apparatus. Accordingly proposals are being made to amend SOLAS.

The submission stated the coordinated work, and reports on the casualty including its principle recommendations; type approval for lamp fixtures and air compressors for refilling air bottles.

**Implications:** Potential changes to SOLAS for all ships through DE (electrical installations) and FP (air compressors) Sub-Committees’ work items.

**Application:** See two new work items:
1. ‘General Requirements for Electrical installations’ in DE sub committee (new item to be discussed at future DE sessions), and
2. FP 54 item 21 (below) for ‘Means for recharging air bottles for air breathing apparatus’.

**Agenda Item 17 - Revision of the Recommendation for entering enclosed spaces aboard ships**

The matter was originally discussed at the DSC Sub-Committee following the fatal accident on a ship carrying wood pellet and other wood product, causing the oxygen depletion condition.

MSC 85 approved a new work programme on the review and revision, as necessary, of the specific provisions of the Recommendations for entering enclosed spaces aboard ships (resolution A.864(20)). The DSC Sub-Committee was appointed as a co-ordinator and the same work has been allocated to BLG, FP and STW Sub-Committees as well.

The opinions exchanged were:
- whether to have single guidance of generic nature of ship specific (Chemical tanker) guidance as a separate one
- whether to consider this issue together with agenda item 6
- whether ship specific elements were addressed in the management company’s Safety Management System required by the ISM Code.

The majority of the Sub-Committee agreed that there should be one guideline, and that the provisions of the ISM code needed strengthening in these areas.

In general, FP 54 noted the outcomes of DSC 14, BLG and STW, and that various items had already been submitted to DSC.

The Sub-Committee agreed to extend the target completion date to 2011.

**Implications:** Safety onboard ships, training for crew and visitors

**Application:** All ships as well as all places where ships visit such as ports, repair yards and newbuilding yards. Land based safety procedures for visiting ships.
Agenda Item 18 - Fire integrity of bulkheads and decks of ro-ro spaces on passenger and cargo ships

As instructed by MSC 85, the Sub-Committee has been working on fire integrity of boundary bulkheads and decks of ro-ro spaces for passenger ships carrying not more than 36 passengers and cargo ships, with a view to classifying both special spaces and ro-ro cargo spaces of ro-ro passenger ships as high-fire risk spaces.

The Sub-Committee at this session, having confirmed that the new requirements should be applicable only to new ships agreed to the proposed amendments for submission to MSC 88.

The draft amendments to the SOLAS convention are intended to be submitted to MSC 88.

Implications: Increased structural fire protection requirements for ro-ro ships (both passengers and cargoes)

Application: New ro-ro ships (both passengers (regardless tonnage) and cargo ships (500 gt or over)) engaged on international voyages, date to be decided.

Agenda Item 19 - Requirements for ships carrying hydrogen and compressed natural gas vehicles

Compressed Natural Gas Vehicles (CNGVs) have already been developed and utilized as more environmentally friendly motor vehicles than conventional ones. Furthermore, Hydrogen Fuel Cell Vehicles (HFCVs), which emit no CO2, have also been developed.

Accordingly, demand and supply for such vehicles are successfully increasing in recent years. Under such circumstances, demand for seaborne trade of new types of vehicles, represented by HFCVs and CNGVs, is also increasing and carriage by Pure Car Carriers (PCCs) is becoming essential for efficient transport of such vehicles. On the other hand, the current SOLAS regulations have been developed based on the carriage of the conventional vehicles with gasoline in their tanks.

The Sub-Committee established a correspondence group under the chairmanship of Japan to;

• identify hazards, including high voltage and high capacity batteries
• clarify the necessary safety requirements
• prepare proposed amendments and submit report to FP 55.

Implication: Not known as yet

Application: Ships carrying vehicles with new or unusual power supplies

Agenda Item 20 - Guidelines for a visible element to general emergency alarm systems on passenger ships

As instructed by MSC 86, the Sub-Committee commenced work on the development of the non-mandatory Guidelines regarding a visible element to the general emergency alarm on passenger ships to accommodate passengers who are deaf or hard of hearing,
taking into account documents MSC 86/23/10 and MSC 86/INF.2, and any other
documents submitted on the subject to the session, and took action as appropriate.

The Sub-Committee agreed to postpone consideration of this item in order to await the
outcome from DE 54, and invited proposals and comments to FP 55.

**Implication:** This is likely to provide a non-mandatory guidance should passenger
shipowners or yards wish to incorporate additional measures into their alarm systems
for passengers who are deaf or hard of hearing.

**Application:** This is intended to be non-mandatory and for new passenger ships only,
but may be applicable to provisions and retrofits on existing passenger ships as well.

**Agenda Item 21 - Means for recharging air bottles for air breathing
apparatuses**

By amendments adopted as the resolution MSC.269(85) passenger ships constructed on
or after 1 July 2010 are required to have recharging arrangement for breathing
apparatus.

This agenda item is driven by FP 54 item 16 – analysis of fire casualty records, in
particular the update provided regarding “Hercules” for requiring the same
arrangements to cargo ships.

No documents were submitted and the Sub-Committee invited proposals for FP 55.

**Implications:** Potential provision of means to recharging air breathing bottles or other
alternatives for all ships from a date to be decided.

**Application:** Unknown – potentially all ships. Note that there is an interesting parallel
with the requirements for passenger ships – and useful information may be
promulgated.

**Agenda Item 24 - Any other business**

The following matters were addressed:

1. **Emergency escape breathing devices**

An amendment to SOLAS regulation II-2/13.3.4 was proposed concerning the storage
location and use of emergency escape breathing devices within accommodation spaces.

The Sub-Committee was of the view that this proposal requires a new work programme
item. Therefore no substantial discussion was made at this session.

2. **Arrangement of foam-type fire extinguishers**

A delegation expressed doubts regarding effectiveness of 45 and 135 litre foam-type
fire extinguishers in the engine-rooms of cargo ships. It was argued that test and
practice indicate that 45 and 135 litre wheeled foam-type fire extinguishers have the
capability to extinguish a fuel oil pool fire, but they do not have the capability to extinguish a fuel oil spray fire and fuel oil flowing fire.

In general, the above view was supported by the Sub-Committee. The delegation will make a formal submission to MSC 88 for a new work programme.

3. Outcome of DE 53 - Safety provisions applicable to tenders operating from passenger ships

A report on the outcome of DE 53 with regard to matters related to the safety provisions applicable to tenders operating from passenger ships was submitted to FP 54 for initial review. The Sub-Committee was requested by the DE Sub-Committee to look at the fire safety elements of the draft guideline for passenger ship tenders, namely, fuel used in propulsion – whether to follow more than 43 °C (in accordance with LSA Code) or more than 60°C.

The following views were initially expressed at this session:

- the guideline should not be applicable to tenders used for coastal sightseeing, i.e., only to the transfer from ship to shore or between ships
- whether to meet lifeboat requirements as minimum was also questioned.

The Sub-Committee will consider making full consideration at the next session under proper agenda item.

4. Annual FP Circulars

The Sub-Committee noted that the following latest annual FP circulars had been circulated in January 2010:
- FP.1/Circ 39 on Test laboratories
- FP.1/Circ. 40 on Halon Banking and reception facilities

Date of the next session of the Sub-Committee

Next session of the FP Sub-Committee is scheduled from 21 to 25 February 2011. The following groups are envisaged:

- **WG1** Performance testing and approval standards for fire safety systems
- **WG2** Measures to prevent explosions on oil and chemical tankers transporting low- flash point cargoes
- **WG3** Requirements for ships carrying hydrogen and compressed natural gas vehicles
- **DG1** Fire resistance ventilation duct

The following Intersessional Correspondence Groups will be formed

- **CG1** Performance testing and approval standards for fire safety systems (agenda item 3)
- **CG2** Fire resistance ventilation ducts
- **CG3** Requirements for ships carrying hydrogen and compressed natural gas vehicles
- **CG4** Review of fire protection requirements for on-deck cargo areas
### Summary of the decisions (list of the finalized instruments)

#### Draft amendments to the SOLAS Convention

<table>
<thead>
<tr>
<th>Regulation</th>
<th>Title</th>
<th>Approval</th>
<th>Adoption</th>
<th>Effective date</th>
<th>Ref. (Section)</th>
</tr>
</thead>
<tbody>
<tr>
<td>II-2/9</td>
<td>Fire integrity of bulkheads and decks of ro-ro spaces on passenger and cargo ships</td>
<td>MSC 88</td>
<td>MSC 89</td>
<td>TBD</td>
<td>Agenda item 18</td>
</tr>
<tr>
<td>II-2/10.5.6.3.1</td>
<td>Fire extinguishing arrangements in machinery spaces</td>
<td>MSC 88</td>
<td>MSC 89</td>
<td>TBD</td>
<td>Agenda item 3</td>
</tr>
<tr>
<td>II-2/20</td>
<td>Protection of vehicle, special category and ro–ro spaces</td>
<td>MSC 88</td>
<td>MSC 89</td>
<td>TBD</td>
<td>Agenda item 3</td>
</tr>
</tbody>
</table>

#### Draft Amendments to the FSS Code

<table>
<thead>
<tr>
<th>Chapter/Section</th>
<th>Title</th>
<th>Approval</th>
<th>Adoption</th>
<th>Effective date</th>
<th>Ref. (Section)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.2.4</td>
<td>Systems using gaseous products of fuel combustion</td>
<td>MSC 88</td>
<td>MSC 89</td>
<td>TBD</td>
<td>Agenda item 3</td>
</tr>
<tr>
<td>6</td>
<td>Fixed foam fire-extinguishing systems</td>
<td>MSC 88</td>
<td>MSC 89</td>
<td>TBD</td>
<td>Agenda item 3</td>
</tr>
<tr>
<td>8</td>
<td>Alternative extinguishing systems for control stations where water discharge from sprinklers may cause damage</td>
<td>MSC 88</td>
<td>MSC 89</td>
<td>TBD</td>
<td>Agenda item 3</td>
</tr>
</tbody>
</table>

#### Draft Amendments to the FTP Code

<table>
<thead>
<tr>
<th>Title</th>
<th>Approval</th>
<th>Adoption</th>
<th>Effective date</th>
<th>Ref. (Section)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Draft 2010 FTP code (New)</td>
<td>MSC 87</td>
<td>MSC 88</td>
<td>TBD</td>
<td>Agenda item 4</td>
</tr>
</tbody>
</table>

#### Draft MSC Resolutions

<table>
<thead>
<tr>
<th>Title</th>
<th>Approval</th>
<th>Effective date</th>
<th>Ref. (Section)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Draft MSC resolution on amendments to the Guidelines for the application of plastic pipes on ships (res A.753(18))</td>
<td>MSC 88</td>
<td>TBD</td>
<td>Agenda item 6</td>
</tr>
</tbody>
</table>

#### Draft MSC Circulars

<table>
<thead>
<tr>
<th>Title</th>
<th>Approval</th>
<th>Effective date</th>
<th>Ref. (Section)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Draft MSC Circular on Guidelines for testing and approval of fixed high expansion foam systems.</td>
<td>MSC 88</td>
<td>TBD</td>
<td>Agenda item 3</td>
</tr>
<tr>
<td>Draft MSC Circular for Revised guidelines for the approval of fixed water based local application fire-</td>
<td>MSC 88</td>
<td>TBD</td>
<td>Agenda item 3</td>
</tr>
<tr>
<td>Fighting systems for use in category A machinery spaces (MSC/Circ.913)</td>
<td>MSC 88</td>
<td>TBD</td>
<td>Agenda item 10</td>
</tr>
<tr>
<td>Draft MSC Circular on amendments to MSC/Circ.1165 regarding total flooding (following discussion on IACS UI SC 216)</td>
<td>MSC 88</td>
<td>TBD</td>
<td>Agenda item 3</td>
</tr>
<tr>
<td>Draft MSC circular on Scientific methods for scaling of test volume on water mist fire extinguishing systems</td>
<td>MSC 88</td>
<td>TBD</td>
<td>Agenda item 7</td>
</tr>
<tr>
<td>Draft MSC Circular on Interim clarification of SOLAS chapter II-2 requirements regarding interrelation between central control stations</td>
<td>MSC 87</td>
<td>TBD</td>
<td>Agenda item 8</td>
</tr>
<tr>
<td>Draft Interim Explanatory note for the assessment of passenger ship system's capabilities after a fire or flooding casualty</td>
<td>MSC 87</td>
<td>TBD</td>
<td>Agenda item 10</td>
</tr>
<tr>
<td>Draft MSC Circular on unified Interpretation of the provisions of the International Code for Fire Safety Systems (FSS Code), chapter 12, paragraph 2.2.1.3</td>
<td>MSC 88</td>
<td>TBD</td>
<td>Agenda item 10</td>
</tr>
<tr>
<td>Draft MSC circular on Guidelines for the design, construction and testing of fixed hydrocarbon gas detection systems</td>
<td>MSC 87</td>
<td>TBD</td>
<td>Agenda item 11</td>
</tr>
</tbody>
</table>
For further information, please contact any of the following offices

**External Affairs**
Lloyd’s Register
71 Fenchurch Street
London EC3M 4BS, UK
Tel: +44 (0)20 7423 2748
Fax: +44 (0)20 7423 2213
Email: external-affairs@lr.org

**Lloyd’s Register EMEA**
71 Fenchurch Street
London EC3M 4BS, UK
Tel: +44 (0)20 7709 9166
Fax: +44 (0)20 7423 2557
Email: emea@lr.org

**Lloyd’s Register Asia**
Suite 3501 China Merchants Tower
Shun Tak Centre
168-200 Connaught Road Central
Hong Kong, SAR of PRC
Tel: +852 2287 9333
Fax: +852 2526 2921
Email: asia@lr.org

**Lloyd’s Register Americas, Inc.**
1401 Enclave Parkway, Suite 200
Houston, Texas, 77077, USA
Tel: +1 281 675 3100
Fax: +1 281 675 3139
Email: americas@lr.org

www.lr.org
© 2010 Lloyd’s Register
Services are provided by members of the Lloyd's Register Group.
Lloyd's Register is an exempt charity under the UK Charities Act 1993.