Technical Background

UR M10 (Rev. 3, Sept 2008) and UI SC 228 (New, Dec 2008)

Existing SOLAS Regulation Analysis

SOLAS Reg. II-1/27.5 requires:

Main turbine propulsion machinery and, where applicable, main internal combustion propulsion machinery and auxiliary machinery shall be provided with automatic shutoff arrangements in the case of failures ....which could lead rapidly to .... serious damage or explosion. The administration may permit overriding automatic shutoff devices.

SOLAS Reg. II-1/31.2.10 requires:

Automation systems shall be designed in a manner which ensures that threshold warning of impending or imminent slowdown or shutdown of the propulsion machinery is given to the officer in charge of the navigational watch in time to assess the navigational circumstances in an emergency. In particular, the system shall control, monitor, alert and take safety action to slow down or stop propulsion while providing the officer in charge of the navigational watch an opportunity to manually intervene, except for those case where manual intervention will result in total failure of the engine and/or propulsion equipment within a short time, for example in the case of overspeed.

SOLAS Reg. II-1/31.3 requires:

Where the main propulsion and associated machinery, including sources of main electrical supply, are provided with various degrees of automatic or remote control and are under continuous manual supervision from a control room the arrangements and controls shall be so designed, equipped and installed that the machinery operation will be as safe and effective as if it were under direct supervision; for this purpose regulations 46 to 50 shall apply as appropriate. Particular consideration shall be given to protect such spaces against fire and flooding.

SOLAS Reg. II-1/47.2 requires:

Internal combustion engines of 2,250 kW and above or having cylinders of more than 300 mm bore shall be provided with crankcase oil mist detectors or engine bearing temperature monitors or equivalent devices.

Summarising SOLAS:

Engines are to be fitted with safety system shutting off the engines to prevent serious damage or explosion and overrides may be permitted.

The safety system, either in attended or unattended machinery spaces, is to alert and take action (alarm + slow down or stop) but, when action is taken on the propulsion system, the watch officer is to be given an opportunity to intervene (alarm + override), except for those case where manual intervention will result in total failure of the engine and/or propulsion equipment within a short time.

For periodically unattended machinery, engines larger than a given size are to be equipped with oil mist detectors or bearing temperature monitors or equivalent devices (SOLAS does not specify which action they are to initiate); the same applies to machinery systems under automatic or remote control or under remote manual supervision.

Existing IACS UR Analysis

- IACS UR M10 in item 10.8 gives a requirement applicable to oil mist detectors (including type testing to UR M67), but does not require an oil mist detector (OMD) to be fitted.

- IACS UR M35 Table 1 (slow speed main engines in unattended machinery spaces) requires an OMD to be installed and give alarm and **slow** down.

- IACS UR M35 Table 2 (medium speed main engines in unattended machinery spaces) requires an OMD to be installed and give alarm and **shut** down.

- (IACS UR M36 Table 1 (auxiliary engines in unattended machinery spaces) requires an OMD to be installed and give alarm and shut down).

- IACS UR M67 gives standard type testing conditions for OMD.

Summarising IACS URs:
OMD (or equivalent arrangements) is to be fitted only to engines when installed in an unattended machinery space.
The actions to be taken are described in M35, M36.
The alarm system is to be in accordance with M29.
The safety system is to be in accordance with M30.
The OMD is to be type tested in accordance with M.67

Assessment of ISO TC8/SC1 WD 7240-26 "Fire detection and alarm systems - Point type oil mist detectors"
This document has been considered.
Summary of review:
It addresses requirements applicable to oil mist detectors to be used in open spaces for fire detection systems in buildings and vessels. (It is not deemed applicable to oil mist detectors to be used in engine crankcases, even if some part could be used as guidance).

Summarising findings – changes to M10 and new SC228
It is recognized that:
1. An OMD is a safety device and this also applies to bearing temperature devices and equivalent devices where fitted instead of an OMD.
2. Where OMD arrangements or alternative arrangements are used to initiate slow down, an alarm is to be given before intervention of the safety system.
3. Where OMD arrangements or alternative arrangements are used to initiate shut down, the alarm may be given upon intervention of safety system.
4. Where arrangements are provided for overriding a safety system, they are to be such that inadvertent operation is prevented.
5. Visual indication is to be given at the relevant control station(s) when a safety override is operated.
6. The consequences of overriding a safety system are to be established and documented.

The Rev.3 of UR M10 and a new UI SC228 has been prepared to address the above.

Submitted by Machinery Panel Chairman
30 July 2008

Permanent Secretariat note (January 2009):

- UR M10 Rev.3 was approved, with the following implementation statement, by GPG on 11 September 2008 (ref. 6098_IGj):

  "Note:
  1) The requirements of M10 Rev. 3 are to be uniformly implemented by IACS Societies for engines:
  i) when an application for certification of an engine is dated on or after 1 January 2010; or
  ii) which are installed in new ships for which the date of contract for construction is on or after 1 January 2010.
  2) The "contract for construction" date means the date on which the contract to build the vessel is signed between the prospective owner and the shipbuilder. For further details regarding the date of "contract for construction", refer to IACS Procedural requirement (PR) No.29."

- After initial review by GPG new UI SC228 was returned to Machinery Panel to clarify a possible discrepancy between the UI text and revised UR M10.8, before being approved by GPG on 22 December 2008 (ref. 6098_IGl).