INTERNATIONAL MARITIME ORGANIZATION

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UNIFIED INTERPRETATION OF PROVISIONS OF IMO SAFETY, SECURITY, AND ENVIRONMENT RELATED CONVENTIONS

Fire detection and alarms for boilers in unattended machinery spaces

Submitted by IACS

SUMMARY

Executive summary:	The annex to this document provides a draft unified interpretation on fire detection and alarms for boilers in unattended machinery spaces, as required by SOLAS regulation II-1/47.1, on which IACS seeks the view of the Sub-Committee
Strategic direction, if applicable:	6
Output:	6.1
Action to be taken:	Paragraph 8
Related documents:	SSE 5/12/3 and SSE 5/17 (paragraph 12.7)

Introduction

1 SOLAS regulation II-1/47.1 states the following:

"Means shall be provided to detect and give alarms at an early stage in case of fires:

.1 in boiler air supply casings and exhausts (uptakes); and

.2 in scavenging air belts of propulsion machinery,

unless the Administration considers this to be unnecessary in a particular case."

2 IACS discussed the need to clarify the following issues related to the means provided to detect and provide an alarm at an early stage in the event of a fire, as required by SOLAS regulation II-1/47.1:

.1 the type and design of the boiler that is subject to this regulation; and

.2 the location(s) within the boiler of this means of fire detection.

Discussion

3 Although it is understood that SOLAS regulation II-1/47.1 is based upon the premise that fires are likely to occur in boiler air supply casings and exhausts (uptakes), it is unclear to what type of boiler the regulation applies (oil fired boilers, exhaust gas boilers, economizers, composite boilers).

4 This regulation appears to imply that fires are equally likely to occur in both air supply casings and exhausts (uptakes). In the view of IACS, this assumption may not be accurate. The main cause of fires is the accumulation of soot on surfaces in the way of the hot gas flow. Only surfaces in the hot gas flow have such inherent fire risk. For example, in an auxiliary composite boiler (i.e. a boiler working both as an oil fired boiler or as an exhaust gas boiler), such as shown in figure 1 below, the duct from the draft fan to the burner (see "A" in figure 1 below) is considered to correspond to "air supply casings" but there is no reason to expect that fires will occur at such locations. Therefore, it is considered that this location should not be subject to the provisions of SOLAS regulation II-1/47.1.

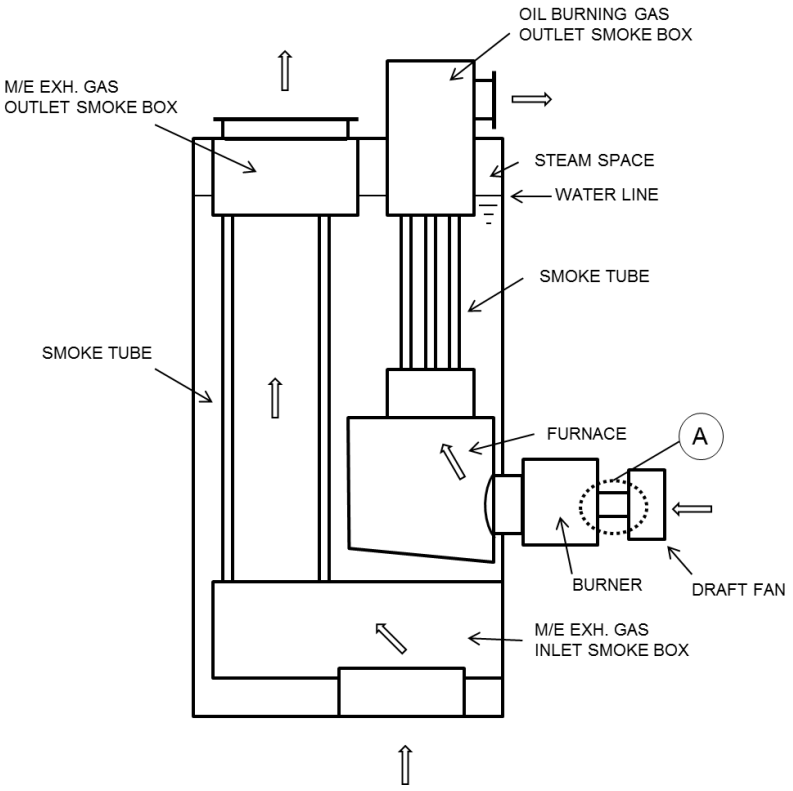

Figure 1: Example of auxiliary composite boiler

It is considered that only boilers with an inherent fire risk should be subject to the provisions of this regulation and in this context:

.1 "inherent fire risk in exhaust uptake" means fire risk introduced by deposited soot on extended heating surfaces, e.g. finned water tubes or pinned water tubes; and

.2 "inherent fire risk in air supply casing" means fire risk introduced by the presence of heat, oxygen and fuel soot to the air supply casing (as may be the case in, e.g. rotary heat exchangers).

5 In this regard, IACS notes the following views expressed when the Sub-Committee considered document SSE 5/12/3 (IACS) (SSE 5/17, paragraph 12.7):

.1 the assessment and limits of inherent risk to determine the application of SOLAS regulation II-1/47 were unclear;

.2 there was no certainty about how the tendency to accumulate soot on surfaces would be assessed by surveyors; and

.3 the basis for the definitions proposed were unknown.

6 In response, IACS offers the following further clarification:

.1 No type of boiler is, per se, exempt from the provisions of SOLAS regulation II-1/47.1. The presence of an inherent fire risk is considered a design feature. During the design assessment it is established whether such a fire risk exists.

.2 It is considered that heat, oxygen and fuel soot need to be present simultaneously to constitute a fire risk. In the absence of devices, such as rotary heat exchangers, where fuel soot can accumulate, the mere presence of heat and oxygen is not considered critical and, therefore, the fire risk is negligible.

.3 Regular visual inspections are carried out as part of the survey regime.

.4 The definitions are based on the most commonly used terminology in the marine boiler industry.

7 Taking the above comments and analysis into consideration, IACS has drafted a unified interpretation, as set out in the annex to this document with a view to clarifying the application of SOLAS regulation II-1/47.1.

Action requested of the Sub-Committee

8 The Sub-Committee is invited to consider the foregoing and the draft unified interpretation, as set out in the annex, and take action, as appropriate.

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ANNEX

DRAFT UNIFIED INTERPRETATION OF SOLAS REGULATION II-1/47

SOLAS regulation II-1/47.1 states:

"Means shall be provided to detect and give alarms at an early stage in case of fires:

.1 in boiler air supply casings and exhausts (uptakes); and

.2 in scavenging air belts of propulsion machinery,

unless the Administration considers this to be unnecessary in a particular case."

Interpretation

1 For the purpose of this interpretation:

.1 "inherent fire risk in exhaust uptake" means fire risk introduced by deposited soot on extended heating surfaces, e.g. finned water tubes or pinned water tubes; and

.2 "inherent fire risk in air supply casing" means fire risk introduced by the presence of heat, oxygen and fuel soot to the air supply casing (as may be the case in, e.g. rotary heat exchangers).

2 SOLAS regulation II-1/47.1 applies to oil fired boilers, to exhaust gas boilers and economizers, and to composite boilers.

3 For boilers with no inherent fire risk in the air supply casing, it is deemed unnecessary to provide means to detect and give alarms at an early stage in case of fire.

4 For boilers with no inherent fire risk in exhaust uptake, it is deemed unnecessary to provide means to detect and give alarms at an early stage in case of fire.