



GUIDE FOR

**IMPLEMENTATION OF INTERNATIONAL SAFETY GUIDE
FOR OIL TANKERS (ISGOTT)**

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**American Bureau of Shipping
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Foreword

In addition to the *ABS Rules for Building and Classing Steel Vessels (Steel Vessel Rules)* required criteria, this Guide outlines equipment and arrangement requirements that are identified in the *International Safety Guide for Oil Tankers and Terminals (ISGOTT)* for Oil Carriers. This Guide includes enhanced criteria for the cargo oils and associated systems such as the ballast system, gas testing equipment, cargo vapor emission control systems, tank cleaning and gas-freeing systems. However, it does not include or attempt to address operational requirements for Oil Carriers as well as the requirements for terminals identified in the *International Safety Guide for Oil Tankers and Terminals (ISGOTT)* for Oil Carriers.

This Guide also introduces an optional notation, **ABS-ISGOTT** that will be granted to those Oil Carriers that meet the requirements identified in this Guide. This Guide is intended to encourage owners to pursue increased levels of safety by providing means to recognize such efforts via an optional notation.

It should also be noted that the Guide does not relate to cargoes other than crude oil and petroleum products that are carried in Oil Carriers. Therefore, it does not cover the carriage of chemicals or liquefied gases, which are the subject of other industry guides.

This Guide becomes effective on the first day of the month of publication.

Users are advised to check periodically on the ABS website www.eagle.org to verify that this version of this Guide is the most current.

We welcome your feedback. Comments or suggestions can be sent electronically by email to rsd@eagle.org.



GUIDE FOR

IMPLEMENTATION OF INTERNATIONAL SAFETY GUIDE FOR OIL TANKERS (ISGOTT)

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SECTION 1 General

1 Introduction

This Guide provides criteria for the notation **ABS-ISGOTT**, which is offered to Oil Carriers which are provided with the supplementary equipment and arrangements specified herein. The requirements and notation identified in this Guide are optional for classification.

Where the notation identified in this Guide is requested, the requirements herein are in addition to any and all applicable Oil Carrier requirements in the relevant ABS Rules and Guides as well as those in all applicable national or international regulations.

3 Application

3.1 Vessels

Self-propelled vessels classed in accordance with the *ABS Rules for Building and Classing Steel Vessels (Steel Vessel Rules)* in Part 5A and Part 5B, Pt 2, Ch. 2 (Common Structural Rules for Double Hull Oil Tankers), Part 5C, Chapter 1 [Vessels Intended to Carry Oil in Bulk (150 meters (492 feet) or more in Length)] or in Part 5C, Chapter 2 [Vessels Intended to Carry Oil in Bulk (under 150 meters (492 feet))] are eligible for the **ABS-ISGOTT** notation.

3.3 Regulatory Requirements

Compliance with regulatory requirements is considered a prerequisite for the optional notation. Therefore; vessels are to comply with all applicable IMO safety requirements for the type of vessel involved. This may be established by the submittal of the appropriate IMO certificates or through independent verification by ABS.

5 Class Notations

Vessels that meet the criteria in this Guide will be eligible to receive the optional notation **ABS-ISGOTT**.

7 Reference Documents

Implementation of International Safety Guide for Oil Tankers (ISGOTT)

ABS Rules for Building and Classing Steel Vessels (Steel Vessel Rules)

9 Plans and Details to be Submitted

The following documentation, as applicable, is to be submitted for review:

- Operation Manuals for Cargo and Ballast systems
- Loading rate calculations for Cargo and Ballast tanks
- Details of gas measuring instruments and sampling system for the gas monitoring system
- Details of vapor detection equipment for toxic gas for the vessel carrying oils containing Benzene
- Details of and operations manual for the pump room communications system
- Detailed maintenance instructions for the electrical equipment in the pump room
- Details of and operations manual for fixed gas detection system in the pumproom
- Details of and operations manual for the oxygen sampling system
- Details of and operations manual for temperature monitoring devices
- Details of the high level bilge alarm system for pumproom
- Detail arrangements of the manually activated trips for the main cargo pumps
- Detail of the spray arrestors around the glands of rotary cargo pumps
- Cargo pump shaft seal arrangements and leakage alarm system
- Backup fire-fighting system for cargo pump room
- Arrangement of Emergency Escape Breathing Devices (EEBD) in pumproom
- Details of vapor manifold arrangements
- Arrangement and calculation for tank water washing system
- Detail of portable tank washing machines, hoses and portable hoses
- Operations manual for tank washing system
- Arrangement and details of gas-freeing system and details of portable fans or blowers
- Crude oil washing system and operational manual
- Operations Manual for the cargo measurement, ullaging, dipping or sampling equipment



SECTION 2 Cargo and Ballast Systems

1 Operations Manual

Up-to-date drawings and information on the cargo and ballast systems, as well as an Operations Manual describing how the cargo and ballast systems are arranged and operates are to be provided onboard.

Arrangements to protect the cargo piping system from overpressurization and shock loads are to be provided.

3 Loading Rates

3.1 Venting Arrangements

The Master of the vessel is to have information available that identifies the maximum permissible loading rates for each cargo and ballast tank and, where tanks have a combined venting system, for each group of cargo or ballast tanks.

When determining the maximum loading rates, a maximum venting line velocity is not to exceed 36 meters per second. The volume throughputs may be added together where a common vent riser is used, but the maximum flow rate is not to be exceeded anywhere within the system.

3.3 Flow Rates in Loading Lines

The maximum loading rates for each cargo tank are to be calculated and identified in the Operations Manual. All possible cargoes and loading scenarios for each cargo tank are to be addressed and the maximum loading rates are to be based on the following:

- i) A maximum linear velocity of 1 meter/second at the tank inlet for the initial loading rate for static accumulator cargoes into non-inerted tanks until the inlet is submerged.
- ii) A maximum linear velocity of 7 meters/second for bulk loading static accumulator cargoes into non-inerted tanks once the inlet is submerged.
- iii) A maximum linear velocity of 12 meters/second for loading nonstatic accumulator cargoes and also for loading static accumulator cargoes into inerted tanks.

Where a number of tanks are loaded through a common manifold, the limiting maximum loading rate may be determined by the flow rate through the manifold or individual drop lines. In such cases, the Operations Manual is to identify the number and location of cargo tank valves that may be open simultaneously in order to maintain a suitable loading rate for the particular loading operation.

Offshore floating hoses that meet OCIMF guidelines and have a nominal diameter of less than 400 mm may be considered suitable for continuous operation at a flow velocity of up to 21 m/s. Offshore floating hoses that have a diameter greater than 400 mm may be considered suitable for continuous operations at a flow velocity of up to 15 m/s. However, the maximum loading rate may be controlled by the size of the ship's loading line inboard of where the hose is connected.

3.5 Rate of Rise of Liquid in the Cargo Tank

The maximum loading rate for a cargo tank is not to result in a rate of rise of liquid of more than 150 mm/minute.

3.7 Loading Rates for Ballast Tanks

Loading rates for ballast tanks are to be determined in the same manner as for cargo tanks, taking into account the size of vent outlets using a vent velocity of 36 meters/second. Liquid filling rates are to be calculated using a maximum pipeline flow rate of 12 meters/second and a similar rate of rise of liquid of 150 mm/minute.



SECTION 3 Gas Testing Equipment

1 Alarm Functions on Gas Measuring Instruments

Audible alarms are only to be fitted to gas measuring instruments necessary for personnel safety, such as a personal gas alarm monitor. Analytical instruments that provide numerical values for gases and vapors for enclosed space entry certification do not need to have an alarm function.

Instruments with an alarm capability are to be designed so that the alarm inhibit and activate function cannot be changed by the instrument operator.

3 Sampling Lines

Sampling lines of gas monitoring systems are to be impervious to the gases present in the atmospheres being monitored. They are also to be resistant to the effects of hot wash water.



SECTION 4 Enclosed Spaces

1 Vapor Detection Equipment for Toxic Gases

Vapor detection equipment is to be provided on board all vessels intended to carry cargoes in which benzene may be present.

3 Pump Room Communication Systems

- i) A communication system is to be provided between the pump room, navigation bridge, engine room and cargo control room. In addition, audible and visual repeaters for essential alarm systems, such as the general alarm and the machinery space fixed extinguishing system alarm, are to be provided within the pump room.
- ii) Arrangements are to be established to enable effective communication to be maintained at all times between personnel within the pump room and those outside. The Operations Manual is to specify that regular communication checks are to be made at prearranged intervals and the system is to be arranged so that failure to respond is to raise the alarm.
- iii) VHF/UHF communication is not to be used as a primary communication method unless it can be established that such arrangements will provide a reliable means of communication. Where communication by VHF/UHF is determined acceptable, the Operations Manual is to require that (1) a standby person be available who could be positioned on the pump room top in case communications through VHF/UHF become difficult during all cargo operations and (2) that a mean for the individual entering into the pump room to communicate with the standby person is readily available.
- iv) Notices are to be displayed at the pump room entrance prohibiting entry without formal permission.

5 Pump Room Operational Precautions

5.1 Maintenance of Electrical Equipment in the Pump Room

The vessel is to be provided with detailed maintenance instructions for the electrical equipment fitted in the pump room.

5.3 Additional Safety Systems and Arrangements

The following arrangements to enhance the safety of pump rooms are to be provided on board. In addition, appropriate operations manuals are to be provided on board for the equipment and systems listed below:

- i) A fixed gas detection system is to be fitted in the pump room in accordance with 5C-1-7/17.1.4 of the *Steel Vessel Rules*. The Operations Manual for the fixed gas detection system is to contain procedures for the regular inspection and calibration of the system. Procedures are also to be developed and contained within the Operations Manual with regard to the actions to be taken in the event of an alarm occurring, and include instructions for vacating the space and stopping the cargo pumps.
The gas detection is to monitor multiple levels within the pump room, not just the lower area.
- ii) A fixed sampling arrangement is to be provided to enable the oxygen content within the pump room to be monitored from the deck by a portable meter prior to pump room entry. The arrangement is to ensure that remote parts of the pump room can be monitored.

Section 4 Enclosed Spaces

- iii) Temperature monitoring devices are to be fitted to pumps located in pump room in order to provide remote indication of the temperature of pump casings, bearings and bulkhead seals, in accordance with 5C-1-7/3.3.1(e) of the *Steel Vessel Rules*. Procedures are to be developed with regard to the actions to be taken in the event of an alarm occurring and are to be contained in the Operations Manual.
- iv) In addition to the cargo control room and the navigating bridge as required by 5C-1-7/7.5 of the *Steel Vessel Rules*, the high level bilge alarm for the pump room is also to activate audible and visual alarms in the engine room.
- v) Manually activated trips for the main cargo pumps are to be provided at the lower pump room level and at the top (main deck) level.
- vi) Spray arrestors around the glands of all rotary cargo pumps are to be provided.
- vii) Cargo pumps are to be fitted with a double seal arrangement to contain any leakage from the primary seal and to activate a remote alarm to indicate that leakage has occurred. The impact of any retrofit on the integrity of the pump is to be assessed in conjunction with the pump manufacturer, and documentation verifying the suitability of the same is to be submitted.
- viii) In addition to the primary fire-fighting system, the cargo pump room is to be provided with a backup fire-fighting system that complies with all applicable Rule requirements identified in 5C-1-7/29 of the *Steel Vessel Rules*.
- ix) Emergency Escape Breathing Devices (EEBDs) are to be located within the pump room and be readily accessible.



SECTION 5 Shipboard Operations

1 Cargo Vapor Emission Control (VEC) Systems

In addition to those required in 5C-1-7/21.9.2 and 5C-1-7/21.9.3 of the *Steel Vessel Rules*, full details of vapor manifold arrangements, materials and fittings are to be in accordance with the OCIMF publication “*Recommendations for Oil Tanker Manifolds and Associated Equipment*”, and documentation verifying the same is to be submitted.

3 Tank Cleaning

3.1 Tank Water Washing in a Non-Inert Atmosphere

For cargo tank water washing in a non-inert atmosphere, individual tank washing machines are not to have a throughput greater than 60 m³/h and the total throughput per cargo tank is to be kept as low as practicable and is not to exceed 180 m³/hr.

3.3 Precautions for Tank Water Washing

3.3.1 Portable Tank Washing Machines and Hoses

For portable tank washing machines and hoses,

- i) The outer casing of portable machines is to be of a material that will not give rise to an incentive spark on contact with the internal structure of a cargo tank.
- ii) The coupling arrangement for the hose is to be such that effective bonding can be established between the tank washing machine, the hoses and the fixed tank cleaning water supply line.
- iii) Washing machines are to be electrically bonded to the water hose by means of a suitable connection or external bonding wire.
- iv) When suspended within a cargo tank, machines are to be supported by means of a natural fiber rope and not by means of the water supply hose.

3.3.2 Portable Hoses for Use with both Fixed and Portable Tank Washing Machines

For portable hoses for use with both fixed and portable tank washing machines,

- i) Bonding wires are to be incorporated within all portable tank washing hoses to ensure electrical continuity. Couplings are to be connected to the hose in such a way that effective bonding is ensured between them.
- ii) Hoses are to be indelibly marked to allow identification. A record is to be kept showing the date and the result of electrical continuity testing.

3.3.3 Isolation of Tank Water Washing System from the Engine Room

Cargo tank water washing system, including its water supply is to be located in cargo block area.

5 Gas Freeing

5.1 Portable Fans

Portable fans or blowers are to be water, hydraulically, pneumatically or steam driven. Their construction materials are to be such that no hazard of incendiary sparking arises if, for any reason, the impeller touches the inside of the casing. If steam-driven fans are utilized, care is to be taken to ensure that the exhaust does not vent into the cargo tank, in order to prevent possible build-up of static electricity.

The capacity and penetration of portable fans are to be such that the entire atmosphere of the tank on which the fan is employed can be made nonflammable in the shortest possible time, and documentation verifying the same is to be submitted.

To assist in gas freeing deep cargo tanks and tanks with deep structural members in the tank bottom, the use of extension tubes for the fans may be used is known to be effective. Where these extension tubes incorporate synthetic materials, arrangements are to be provided to effectively bond them to the ship's structure.

The Operation Manual is to specify the positions of portable fan.

The ventilation openings are to be arranged so that all parts of the tank being ventilated are equally and effectively gas freed. Ventilation outlets are generally to be as remote as possible from the fans.

Portable fans are to be so connected to the deck that an effective electrical bond exists between the fan and the deck.

7 Crude Oil Washing

7.1 Cautionary Notice

On vessels fitted with a crude oil washing system, a notice is to be prominently displayed in the cargo and engine control rooms, on the bridge and on the notice boards that a crude oil washing system is fitted. As a minimum, the notice is to also indicate that:

- The tank washing lines on the vessel may contain crude oil, and
- The tank washing valves are not to be operated by unauthorized personnel.

9 Cargo Measurement, Ullaging, Dipping, and Sampling

9.1 Introduction of Equipment into a Tank

When equipment for cargo measurement, ullaging, dipping, or sampling is to be introduced into a non-inerted tank, the following measures to avoid introducing a spark ignition hazard are to be provided on board and clearly specified in the Operations Manual:

- If any form of dipping, ullaging, or sampling equipment is used in a possibly flammable atmosphere where an electrostatic hazard exists or can be created, precautions are to be taken to ensure that they do not act as an unearthed conductor at any time during the operation. Metallic components of any equipment to be lowered into a tank are to be securely bonded together and to the tank before the sampling device is introduced, and are to remain earthed until after removal. Bonding and earthing cables are to be metallic.
- Equipment is to be designed to facilitate earthing. For example, the frame holding the wheel on which a metal measuring tape is wound is to be provided with a threaded stud to which a sturdy bonding cable is bolted. The stud is to have electrical continuity through the frame to the metal measuring tape. The other end of the bonding cable is to terminate in a spring-loaded clamp suitable for attachment to the rim of an ullage opening.
- Those responsible for the supply of nonconductive and intermediate conductive equipment to the vessels are to be satisfied to avoid introducing a spark ignition hazard. It is essential that non-conducting components do not lead to the insulation of any metal components from earth. For example, if a plastic sample bottle holder includes a metallic weight, the weight is to be bonded as described above or fully encapsulated in a minimum of 10 mm thick plastic.



SECTION 6 Surveys After Construction

1 General

In addition to all Annual or Special Survey requirements identified in the applicable Rules for an Oil Carrier, where the **ABS-ISGOTT** notation addressed in this Guide is selected, the survey of the associated safety systems and equipment is to also include the following.

3 ABS-ISGOTT Notation

3.1 Annual Surveys

3.1.1 Cargo and Ballast Systems Manuals

Confirm the manuals for the cargo and ballast systems required by Subsection 2/1 are readily available to the crew.

3.1.2 Vapor Detection Equipment

Confirm the vapor detection equipment required by Subsection 4/1 is on board for any vessel intended to carry benzene.

3.1.3 Pump Room Communication System

Confirm the Operations Manual for pump room communication system required by Subsection 4/3 is readily available to the crew.

3.1.4 Electrical Equipment System in Pump Room

Confirm detailed Maintenance Instructions for the electrical equipment required by 4/5.1 is readily available to the crew.

3.1.5 Equipment and Manuals for Pump Room

Confirm the proper operation of the following equipment and systems and that appropriate operations manuals are readily available to the crew:

- i)* Fixed gas detection system and operations manual required by 4/5.3i)
- ii)* Fixed oxygen sampling system required by 4/5.3ii)
- iii)* Temperature monitoring devices and operations manual required by 4/5.3iii)
- iv)* High-level bilge alarm required by 4/5.3iv)
- v)* Manually activated trips for the main cargo pumps required by 4/5.3v)
- vi)* Installation of spray arrestors around the glands for rotary cargo pump required by 4/5.3vi)
- vii)* Seal arrangement for cargo pumps and leak detection system required by 4/5.3vii)
- viii)* Backup fire-fighting system for pumproom required by 4/5.3viii)
- ix)* Availability of Emergency Escape Breathing Devices (EEBD) in pumproom required by 4/5.3ix)

3.1.6 Precautions for Tank Washing

- i)* Verify the details of portable tank washing machines and hoses as required by 5/3.3.1.
- ii)* Verify the arrangement of portable hoses for use with both fixed and portable tank washing machines as required by 5/3.3.2.
- iii)* Confirm the availability of the operations manual of tank washing system and the arrangement of the isolation of tank washing system from engine room as required by 5/3.3.3.

3.1.7 Gas-freeing System

Verify Operations Manual for gas-freeing system as required by 5/5.1.

3.1.8 Crude Oil Washing

Confirm the cautionary notices are displayed at the locations as required by 5/7.1.

3.1.9 Cargo Measurement, Ullaging, Dipping, or Sampling

Confirm the Operations Manual as required by 5/9.1 is available on board.

3.3 Special Periodical Surveys

Verify items identified in 6/3.1 above and confirm no modifications to piping systems.