Isle of Man Ship Registry Technical Advisory Notice

Revised Enclosed Space Entry Recommendations	Ref. TAN 005-26 Issued: 28/10/2026 (Rev. 2)

1. Introduction

The International Maritime Organization (IMO) adopted Resolution MSC.581(110) - Revised Recommendations for Entering Enclosed Spaces Aboard Ships (the revised recommendations), at the 110th session of the Maritime Safety Committee (MSC) on 27th June 2025. The revised recommendations were adopted and took effect on 3rd December 2025 and supersede and revoke the long standing Resolution A.1050(27).

These revised recommendations have been developed in response to the continued loss of life during enclosed space entry operations and introduce a more structured, risk-based and prevention-focused framework. This Technical Advisory Notice (TAN) is issued to:

- Summarise the key developments introduced by the revised recommendations; and
- Explain the status of the revised recommendations, including how they are intended to be applied, in support of existing mandatory requirements under SOLAS and the International Safety Management (ISM) Code.

As MSC.581(110) now addresses the specific dangers associated with carbon dioxide, TAN 005-24 has been withdrawn, with the relevant aspects incorporated into this Notice. Technical Advisory Notices 007-19 and 008-19 remain in force and should be read in conjunction with this notice.

2. Application

This notice applies to all Isle of Man registered ships, regardless of type or size. The revised recommendations are intended to support safe operations involving:

- Shipowners, managers and operators;
- Masters and seafarers; and
- Shore personnel, including port and terminal workers, when engaged in shipboard operations under the ship's safety management arrangements.

3. Status of the Guidelines

The revised recommendations do not introduce new mandatory requirements. They provide recommendatory guidance intended to support the effective implementation of existing international safety obligations.

However, the preamble to the resolution explicitly links the revised recommendations to established mandatory SOLAS and ISM Code provisions, including:

- SOLAS regulation III/19.3.6 concerning enclosed space entry and rescue drills, which are to be conducted taking into account IMO guidance;

- SOLAS regulation XI-1/7 requiring ships to carry atmosphere-testing instruments for enclosed spaces; and
- SOLAS chapter IX and the International Safety Management (ISM) Code, which require safety management systems to address risks to personnel and the safe operation of ships.

Given this context, we strongly encourage shipowners and operators to implement the revised recommendations in full, as they represent the latest IMO-endorsed best practice developed specifically in response to continuing fatalities during enclosed space entry. Aligning shipboard procedures and Safety Management Systems with the revised recommendations will support compliance with existing mandatory requirements and provide a clear benchmark for demonstrating effective risk control during audits, inspections, and investigations. When applying the recommendations becomes impracticable, every endeavour should be made to observe the intent of the recommendations, and attention should be paid to the hazards that may be involved in the specific entry and mitigations required to reduce the associated risks to an acceptable level.

4. Key Updates from A.1050(27)

4.1 Definitions and Scope

The revised recommendations introduce clearer and more comprehensive definitions intended to improve hazard identification during enclosed space entry. In particular, it recognises that hazardous atmospheres may originate in, or migrate from, connected or adjacent spaces, rather than being confined to a single location.

New definitions introduced include:

- Connected space and adjacent space;
- Trapped hazardous atmosphere;
- Enclosed Space Register; and
- Competent/Responsible Person

These clarifications support a more thorough and ship-specific approach to risk assessment. Masters and Officers are therefore advised to apply appropriate judgement to assessing spaces not traditionally viewed as hazardous, where atmospheric migration is reasonably foreseeable.

4.2 Safety Management

The revised recommendations place greater emphasis on organisational responsibility and leadership, both ashore and onboard. Safe enclosed space entry is no longer presented as solely a procedural or individual responsibility but as a core element of the vessel's safety management framework.

Key developments include:

- Clear expectations for management oversight and accountability;
- Explicit empowerment of personnel to stop or refuse entry when conditions are unsafe; and
- Stronger integration of enclosed space controls within the Safety Management System (SMS).

Operators are strongly encouraged to ensure that risks associated with enclosed spaces are addressed in an integrated and systematic manner within the SMS, by inclusion of risk assessments, permit-to-work systems, training, and drills. This must explicitly include cargo hazard assessments and specific mitigations (including for carbon dioxide (CO_2)) where relevant cargoes are to be carried.

The revised recommendations also provide greater clarity on the roles of the responsible person and competent person in the management of enclosed space entry. The revised recommendations emphasise that responsibility for enclosed space safety must be clearly assigned, with defined authority to control entry and stop operations where conditions are unsafe.

The responsible person is expected to have overall control of the enclosed space entry, including ensuring that risk assessments are completed, permits are correctly issued, and appropriate control measures are in place before entry is authorised. This role should be clearly identified within the vessel's SMS and should be supported by appropriate training and authority.

In addition, atmospheric testing and the evaluation of conditions within the space should be carried out or verified by a competent person, who has the necessary knowledge, training, and experience to assess the hazards present and interpret test results correctly. The competent person should be satisfied that conditions are safe for entry and remain so for the duration of the work.

By clearly defining these roles and responsibilities within the SMS, operators can help ensure effective oversight of enclosed space entry, reduce ambiguity during operations, and support the empowerment of personnel to delay or stop entry where safety cannot be assured.

A competent person should make an assessment of any potential hazards in the space to be entered, taking into account the characteristics of the previous and current cargo carried with Safety Data Sheets (SDS) and cargo information, ventilation of the space, coating of the space and other relevant factors.

4.3 Enclosed Space Register

A key enhancement introduced by the revised recommendations is the requirement for a ship-specific Enclosed Space Register. This represents a significant development from previous guidance, which did not explicitly require a structured, vessel-specific identification of enclosed spaces. The revised recommendations recognise that effective control of enclosed space risks depends on identification, documentation, and active management of such spaces over the life of the vessel.

The Enclosed Space Register should:

- Identify and document all spaces onboard that meet the enclosed space definition, including spaces not traditionally regarded as hazardous;
- Reflect the vessel's specific design, layout, access arrangements, ventilation characteristics, cargoes carried, and operational profile;
- Capture spaces where hazardous atmospheres may develop, migrate from connected or adjacent spaces, or arise due to changes in use, condition, or cargo residues; and

- Support a consistent and informed approach to risk assessment and decision-making prior to entry.

Operators are expected to establish and maintain the Enclosed Space Register as a ship-specific, living document. This means that it should be reviewed periodically and updated whenever there are changes that could affect enclosed space risks, including but not limited to vessel modifications, changes in trade or cargoes, altered operating patterns, or lessons learned from incidents, drills, or near misses. Responsibility for the accuracy and upkeep of the register should be clearly assigned, and those involved in its development and review should be competent to identify enclosed space hazards.

The Register should not be treated as a static compliance exercise. It is intended to function as an active safety management tool and be integrated into the vessel's SMS. In practice, this includes using the register to support enclosed space risk assessments, permit-to-work systems, voyage and work planning, crew familiarisation, training, and emergency preparedness. Masters and operators should ensure that relevant personnel are aware of the register, understand its purpose, and are able to apply it effectively when planning or authorising entry into enclosed spaces.

4.4 Atmospheric Testing and Equipment

The revised recommendations place greater emphasis on effective atmospheric testing before and during entry into enclosed spaces. This is in response to a number of serious incidents involving carbon dioxide (CO_2), where hazardous conditions were not identified in time.

Key enhancements include:

- The need for gas detection equipment that can measure CO_2, in addition to oxygen, flammable, and toxic gases;
- Clear acceptance criteria before entry, including CO_2 concentrations below 0.5% (5,000 ppm); and
- Recognition that conditions inside enclosed spaces can change, meaning that testing may need to be repeated or carried out continuously during entry.

Operators should ensure that gas detection equipment carried onboard is suitable for the cargoes transported and the specific spaces to be entered. This includes considering whether additional instruments are required where cargoes or residues may generate CO_2 or other hazardous atmospheres.

The minimum number of sets of gas detection equipment, as required by SOLAS Regulation XI-1/7 is now clarified to be two. For ships which may carry a cargo capable of generating hazardous vapours and which requires regular entry into cargo spaces for cleaning or inspection should carry an additional two sets (so four in total). Please see Appendix 1 for Isle of Man Ship Registry interpretations regarding the IMO requirements for gas detectors.

4.5 Entry Procedures and Control Measures

The revised recommendations introduce clearer and more robust entry controls aimed at preventing common failure modes that continue to result in serious accidents and fatalities.

These include:

- Prohibition of single-person entry into enclosed spaces;

- Strengthened requirements for entry permits, including defined validity periods and retesting;
- Clearly defined roles and responsibilities for attendants, supervisors, and rescue personnel; and
- Clarification that Emergency Escape Breathing Devices (EEBDs) are not suitable for enclosed space entry where the atmosphere is known or suspected to be unsafe.

The revised recommendations also place greater emphasis on physical controls to access to enclosed spaces before and during entry. Where reasonably practicable, doors, hatch covers, lids, or other access points to enclosed spaces should be secured to prevent unauthorised or accidental entry. Clear warning signs should be posted at access points to indicate that the space is an enclosed space and that entry is prohibited without proper authorisation. These measures are intended to reinforce permit-to-work controls and reduce the risk of inadvertent or unplanned entry. The importance of this has been highlighted also in recent Casualty Investigations on Isle of Man ships.

Entry procedures should be reviewed to ensure they prevent unplanned, rushed, or commercially pressured entry into enclosed spaces, and that physical controls and warning arrangements are used to support procedural safeguards. Together, these measures help ensure that entry only takes place when risks have been properly assessed, control measures are in place, and all personnel involved understand the hazards.

4.6 Emergency Preparedness and Rescue

The revised recommendations place strong emphasis on planned and deliberate emergency response arrangements, reflecting the high number of secondary fatalities during improvised rescues.

Key enhancements include:

- Ship-specific enclosed space emergency response planning;
- Strong discouragement of unplanned rescue attempts;
- Detailed consideration of working 'at depth' within SMS operational procedures and factoring in the realities of rescue from depth (such as avoiding descent into oxygen-deficient or toxic atmospheres, the necessity of vertical rescue, use of hoists/stretchers, and the specific manpower required to achieve extraction);
- Ensuring that everyone involved in an enclosed space entry is aware of precisely who to contact and where to go for medical/rescue equipment and advice should it be needed; and
- Training and drills that replicate realistic enclosed space scenarios.

Rescue arrangements should prioritise the safety of potential rescuers and avoid reliance on spontaneous intervention.

5. Recommended Action for Isle of Man Ship Operators

Shipowners, managers, and Masters are strongly advised to review their existing arrangements in light of the revised recommendations and, as appropriate, to:

- Review and update SMS, procedures, and risk assessments to ensure enclosed space entry is addressed in a structured, ship-specific and risk-based manner. This must

explicitly consider cargo hazard assessments and specific mitigations (including for carbon dioxide risks) where relevant cargoes are to be carried;

- Establish and maintain an Enclosed Space Register, reflecting the vessel's design, configuration, cargoes, and operating profile, and ensure it is subject to periodic review;
- Verify that portable gas detection equipment carried onboard is suitable for the spaces entered and capable of measuring oxygen (O_2), flammable gases, toxic gases, and carbon dioxide (CO_2), and that the correct number of sets are carried and comply with Appendix 1;
- Review enclosed space entry permits and rescue plans to ensure they are aligned with the revised recommendations and clearly define roles, responsibilities, and control measures; and
- Ensure crew training and drills reflect the revised recommendations and include realistic scenarios relevant to the vessel's enclosed spaces, periodically incorporating the cargo hazard/atmospheric risk assessment methodology (such as the framework provided in TAN 007-19) to build crew awareness of invisible hazards like CO_2.

Implementation of these measures is intended to support effective risk control and demonstrate good practice during audits, inspections, and incident investigations.

Shipowners and operators are therefore encouraged to consider the recommendations as part of their normal SMS review and continuous improvement processes.

Appendix 1 – Isle of Man Requirements for Gas Detectors

Various codes and conventions contain requirements for 'appropriate equipment' for detecting flammable and toxic gases within confined and enclosed spaces to be provided, 'together with detailed instructions for their use'. References to such include:

- **IMSBC Code Section 3**
- **MSC.581(110) –** Revised Recommendations for Entering Enclosed Spaces Aboard Ships
- **SOLAS Chapter VI regulation 3.1** which states – 'when transporting a solid bulk cargo which is liable to emit a toxic or flammable gas or cause oxygen depletion in the cargo space, an appropriate instrument for measuring the concentration of gas or oxygen in the air shall be provided together with detailed instructions for its use. Such an instrument shall be to the satisfaction of the administration'.
- **SOLAS Chapter VI regulation 3.2** which states – 'The administration shall take steps to ensure the that crews of ships are trained in the use of such instruments'.
- **SOLAS Chapter XI regulation 1.7**

Noting the increase in frequency of enclosed space accidents which is documented by various IMO papers, taken together with the findings of recent casualty investigations and bearing in mind the ongoing work at IMO, the Isle of Man Ship Registry has established more detailed interpretations of the gas detection requirements in the relevant codes and conventions. The aim of this is to develop more comprehensive gas detection guidance that we hope will reduce enclosed space accidents, without 'gold-plating' the existing IMO requirements.

The Isle of Man Ship Registry has therefore established the following interpretations:

- Flammable gas detectors, as referred to in SOLAS Chapter VI Regulation 3.1 and IMSBC Code Paragraph 3.4.2, should be interpreted as being of a type still capable of working in an oxygen deficient atmosphere, as flammable gas sensor range readings may be affected by the lack of O_2.
- 'Detailed instructions for its use', also in reference to the requirement in SOLAS Chapter VI Regulation 3.1, should cover at least the following:
    - Correct operation of the specified equipment
    - Correct calibration
    - Span gas compositions required for the calibration and regular bump testing, including of any provided CO2 meters
    - Specific reagent tubes to be used for toxic gases; and
    - Maintenance instructions

  The above bullet points should be comprehensively covered by the company SMS (which may be reviewed at DOC audits). Additionally, vessel planned maintenance

systems should have calibration/testing schedules included to ensure regular inspection of condition and correct operation of the equipment provided.

- 'Vessels provided equipment/arrangement' should, as a minimum, take into account the cargo list and those risks arising from the specific cargos on that list. It should be noted that, to some extent, this point is covered by paragraph 2 of MSC.1/Circ.1477 which states 'given a ship's specific characteristics and operations, additional atmospheric hazards in enclosed spaces may be present that may not be detected by the instrument recommended to be selected by these Guidelines and in such case, if known, **additional appropriate instruments** should be carried'. However, evidence gathered by the Isle of Man Ship Registry, including during casualty investigations, suggests that this is not in all cases being interpreted in the above way for organic cargoes where CO_2 is now understood to be a particular hazard (although this is now explicitly required by MSC.581(110)). Accordingly, a more prescriptive interpretation of 'additional appropriate instruments' is likely to have a more meaningful benefit.
- Lists of Cargoes, such as those appended to the 'Statement of Compliance for the Carriage of Solid Bulk Cargoes', should be filtered by gas detection equipment arranged on board to safely handle them, taking account of the above bullet points – for example, organic and other CO_2 emitting cargoes would need CO_2 detection equipment to be provided on board the vessel to be included on the List of Cargoes (without it then the cargo shouldn't be listed).

Please note - The Isle of Man Ship Registry cannot give legal advice. Where this document provides guidance on the law it should not be regarded as definitive. The way the law applies to any particular case can vary according to circumstances - for example, from vessel to vessel. You should consider seeking independent legal advice if you are unsure of your own legal position.