Report of the 2015 Concentrated Inspection Campaign (CIC) on Crew Familiarization for Enclosed Space Entry

November, 2016

Executive Summary

The member States of the Tokyo Memorandum of Understanding (TMoU) on Port State Control (PSC) have completed a joint Concentrated Inspection Campaign (CIC) focusing on compliance with Crew Familiarization for Enclosed Space Entry. This is in accordance with the decision of the Port State Control Committee at its 25th meeting in Queenstown, New Zealand in 2014. The CIC on Crew Familiarization for Enclosed Space Entry was conducted over the period of September 1 through to November 30, 2015. The CIC was completed alongside similar campaigns conducted by the members States of five other PSC agreements/understandings: The Paris Memorandum of Understanding (PMoU) on PSC; the Viña del Mar Agreement, the Indian Ocean Memorandum of Understanding (IOMoU), the Mediterranean Memorandum of Understanding (MedMoU), and the Black Sea Memorandum of Understanding (BSMoU).

During the campaign 18 TMoU and 27 PMoU member States focussed their efforts on assessing shipboard compliance with Safety of Life At Sea (SOLAS) Chapter III-Regulation 19 requirements concerning Crew Familiarization for Enclosed Space Entry. This report documents results for the TMoU inspection campaign, with the associated results for the PMoU and other PSC regions included in Section 3.3 to allow comparative analysis.

The objective of the CIC was to gauge the shipping industry's level of compliance with the SOLAS Chapter III-Regulation 19 requirements. During the CIC, Port State Control Officers (PSCOs) were requested to use a common questionnaire to allow comparative verification of critical compliance issues related to Crew Familiarization for Enclosed Spaces (as required by SOLAS Chapter III-Regulation 19). An enclosed space entry and rescue drill was performed as part of the questionnaire.

A total of 8,429 PSC inspections were carried out by TMoU member States during the period of the CIC, involving 7,775 individual ships. Of these, 6,826 inspections were conducted with a CIC Questionnaire (81.0%). The overall detention rate for PSC inspections was 2.8% (267 ships). The CIC-related detention rate was 0.7% (48 ships). Of the total PSC detentions, 18.0% were CIC-related when a PSC inspection was conducted.

Ships from 83 Flag States underwent PSC inspections during the CIC, with 75 of those Flag States inspected with a CIC Questionnaire. The Flag State with the highest percentage detention rate (CIC-related) was the United Republic of Tanzania (25.0%), though it should be noted that constituted one detention out of four inspections; while Panama had the largest total number of detentions with 14 from 1961 inspections (0.7%). There were 64 out of 75 (85.0%) Flag States inspected with a CIC Questionnaire that did not have any detentions.

Of the TMoU member states, China conducted the most CIC inspections (1,696), followed by Japan (1,470), Australia (773) and the Philippines (654). The least number of inspections were conducted by Fiji (3), while the Marshall Islands and Vanuatu did not conduct any inspections. The highest rate of detention amongst TMoU members was Hong Kong (3.3%), China (1.5%), and Chile (1.0%).

Heavy load carrier ships had the highest percentage of CIC-related detentions (3.8%), followed by refrigerated cargo vessels (3.1%) and general cargo/multipurpose ships (1.5%). Over two-thirds (63.0% - 15 of 24) of ship types had no CIC-related detentions.

Newer ships (ship age 0-5 years) had the lowest percentage CIC-related detention rate (0.1%), whilst ships aged 30-34 years had the highest percent detention rate (3.2%). The rate increased steadily in correlation to ship age.

High-risk ships comprised the largest percentage of ships with CIC-related detentions (1.6%), which was consistent with the risk profiling methodology of TMoU.

The format of the CIC Questionnaire featured potential “YES”, “NO”, and “N/A” (NOT APPLICABLE) responses: “YES” generally indicating a satisfactory response, “NO” generally indicating an unsatisfactory response, with deficiencies assigned where appropriate. The most satisfactory results were reported for Question 8, which asked whether crew members responsible for enclosed space entry were aware of the associated risks. The least satisfactory results were for Question 5, which queried the availability of training manuals on board and whether the contents were complete and customized to the ship.

A key recommendation to the TMoU members is to continue to monitor crew familiarization for enclosed space entry during normal PSC inspections. It was also recommended that emphasis be placed on the CIC Question 9 – about conducting enclosed space entry and rescue drills that comply with the requirements of SOLAS Chapter III, Regulation 19.3.6.

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Introduction

1.1 Purpose of this Report

The purpose of this report is to present the results of the CIC on Crew Familiarization for Enclosed Space Entry within the TMoU.

1.2 Objective of the CIC

The objective of the CIC was to establish whether effective procedures and measures are in place to safeguard seafarers on board ships when entering and working in enclosed spaces, and to check compliance with the applicable requirements of the SOLAS Convention.

1.3 Scope of the CIC

The CIC was undertaken on all ships targeted for PSC inspection within the TMoU region between 1 September 2015 and 30 November 2015.

1.4 General Considerations

General considerations include:

- For the purpose of this report, a detention is a PSC inspection containing at least one deficiency that is considered grounds for detention.
- Except for Table 1, the tables contained in this report take into account the total number of PSC inspections conducted during the period of the CIC - those conducted with a CIC Questionnaire and those conducted without. Therefore the analysis relates to the total number of PSC inspections, not just those that were conducted with a CIC Questionnaire. In order to facilitate comparison with the CIC results from the PMoU, an additional row has been added to each table (as appropriate) which reports separately (summary results only) the number of PSC inspections which were conducted with CIC Questionnaires and the associated detention rates.

Summary, Conclusions and Recommendations

2.1 Summary

The following summarizes the CIC results:

- A total of 8,429 PSC inspections were conducted on 7,775 individual ships during the period of the CIC by TMoU members. Of these, 6,826 inspections were conducted with a CIC Questionnaire (81.0%).
- Forty-eight detentions were issued as a result of CIC inspections (0.7%). A further 143 ships subject to CIC inspections were detained for other reasons.
- The most satisfactory results (that is, the lowest proportion of unsatisfactory responses) were for Question 8, which queried whether crew members responsible for enclosed space entry were aware of the associated risks. (163 "NO"s were recorded, just 2.4%).
- The least satisfactory results (that is, the highest proportion of unsatisfactory responses) were for Question 5, which asked if the training manual on board and its contents were customised to the ship. (914 "NO"s were recorded, or 13.4%). For this question, "NO" was not necessarily an unsatisfactory response in all cases, as there is no specific requirement in SOLAS that the training manual should cover enclosed space entry. However, it is not unreasonable to expect it to be included as part of compliance with the International Safety Management (ISM) Code.
- For Question 9, the PSCO was asked to observe an enclosed space entry and rescue drill and assess whether it complied with the SOLAS requirements for such drills (Chapter III, Regulation 19). A total 4,487 drills were completed, with 92.9% of these conducted to a satisfactory standard. Where a drill was not carried out, "N/A" was recorded (2339 or 34.3% of all responses). This is significant, as it means that in over one-third of CIC inspections PSCOs could not ascertain whether the crew were able to carry out a satisfactory drill.
- Deficiency 11131 (Question 5 – training manual on board, contents complete and customized to ship) accounted for the most number of reported inspection deficiencies at 31.0% of the total. This was followed by Deficiency 04108 (Question 4 – are crew members responsible for enclosed space emergency duties, familiar with those duties), with 16.0% of the total reported deficiencies.
- Deficiency 04118 (Question 8 – are crew members responsible for enclosed space entry aware of the associated risks) had the least number of reported inspection deficiencies (5.5%) of the total reported deficiencies.
- Heavy load carrier ships had the highest CIC-related detention rate (3.9%) by ship type, followed by refrigerated cargo vessels (3.1%) and general cargo/multipurpose ships (1.5%). Sixty-three per cent (15 out of 24) of ships inspected with the CIC Questionnaire did not have any CIC-related detentions.
- By ship age, newer ships (0-4 years old) had the lowest detention rate (0.3%), while older ships (aged 30-34) had the highest detention rate (3.9%). The rate increased steadily in relation to the age of the ship; however ships in the age range of 30-34 had almost double the detention rate of the next ship age range, which were vessels over 35 years old.

- The CIC Questionnaire was intended to only be applied to an individual ship once during the campaign. The results showed that no ship was inspected using the CIC Questionnaire more than once.
- The Flag State with the highest per cent of ships with CIC-related detentions was the United Republic of Tanzania (one detention from four CIC inspections), followed by Luxembourg (one detention from 10 CIC inspections) and Togo (5.3% - one detention from 19 CIC inspections). The remaining Flag States had a detention rate under 5.0% and 64 of the 75 Flag States (85.0%) did not have any detentions.
- The Flag States with the highest number of CIC-related detentions were Panama (0.7% - 14 detentions from 1961 inspections) and Cambodia (4.2% - nine detentions from 213 inspections).
- For general detentions and CIC-related detentions, ships considered 'high risk' comprised the largest per cent (1.6%) of ships detained per inspection. 'standard risk' ships accounted for the second most detained ships (0.5%), followed by 'low risk' ships (0.1%). The CIC results were consistent with what would be expected in accordance with the risk profiling methodology used by the TMoU.
- Of the TMoU member States, China conducted the most CIC inspections (1,696), followed by Japan (1,470) and Australia (773). Fiji carried out the least number of CIC inspections (3) and the Marshall Islands and Vanuatu did not perform any CIC inspections.
- With respect to TMoU CIC-related detentions, Hong Kong had the highest per cent of detentions (3.3%), followed by China (1.5%) and Chile (1.0%). The Republic of Korea, Australia, Singapore, Japan, and Viet Nam had detention rates that were less than 1.0%. Eleven member states did not detain any vessels for CIC-related deficiencies.
- The analysis also revealed there are inconsistencies between the questionnaire data and the deficiency and detention data.
- Independently and/or taken together, both results provide valuable information to TMoU member States as to the industry's level of compliance with specific aspects of SOLAS Chapter III-Regulation 19 on Crew Familiarization for Enclosed Space Entry.

2.2 Conclusions

The purpose of this CIC was to gauge the industry's level of compliance with SOLAS Chapter III-Regulation 19 on Crew Familiarization for Enclosed Space Entry, and raise awareness among ships' crew of the risks from enclosed spaces. It was also the intent of the CIC to ensure effective procedures and measures are in place to safeguard the seafarers on board ships who are required to enter enclosed spaces.

The overall detention rate for this CIC (CIC-related) was 0.7%, which if considered in isolation suggests that the industry is largely complying with SOLAS Chapter III-Regulation 19 requirements. This compared favourably with the 2014 CIC STCW Hours of Rest campaign (0.3% CIC-related detention rate) and the 2013 CIC on Propulsion and Auxiliary Machinery (0.7% CIC-related detention rate). However, it should be noted that detention was not always the most appropriate action in the case of this CIC. Conversely, the direct consequences of unsatisfactory performance in this CIC are arguably greater than that for the previous CICs.

The potentially fatal consequences of not having acceptable procedures and understanding among crew, concerning enclosed space entry, are a major concern. Efforts need to continue to highlight to crews and port workers engaged on ships:

- the dangers of enclosed spaces on board ships
- the lethal hazards present
- how best to reduce the risks involved
- inform people of the hazards of poorly planned rescue attempts
- the need to perform exercises/drills that reinforce the requirements.

When the CIC-related detention rates were compared with the results of the broader TMoU inspection regime reported for 2015 (0.7% vs. 3.7%)[1], it suggests in the TMoU region that industry is complying with the specific provisions of SOLAS Chapter III-Regulation 19.3.3 and 19.3.6. However, considering that more than one-third of the vessels subject to a CIC inspection did not participate in the drill (Question 9), it is difficult to ascertain how well the industry is actually performing in this critical safety area.

While it was anticipated that it would not be possible, for a range of valid reasons, to observe a drill during every CIC inspection, the relatively low number of drills carried out may be indicative of other issues.

The way that the CIC questions and answers are coded limits any ability to analyse the data in-depth and gain a clear picture of industry's performance on enclosed space entry. This is due, in part, to how deficiency codes were applied when developing the CICs – including the use of the same codes for CIC questions and general inspections in some cases, as well as not having unique codes for each CIC question.

2.3 Recommendations

The following recommendations are offered for consideration:

1. It is recommended that PSCOs continue to inspect for compliance with Crew Familiarization for Enclosed Space Entry during PSC inspections, and take appropriate action.
2. The TMoU member States continue, during normal PSC inspections, to put emphasis on the specific areas covered by the CIC that had the least satisfactory results – in particular ensuring that enclosed entry and rescue drills are conducted.

[1] 2015 TMoU Annual Report on Port State Control in the Asia-Pacific Region

CIC Questionnaire Results

3.1 Responses to CIC Questionnaire

QUESTION NUMBER	CIC CREW FAMILIARIZATION AND ENTRY OF ENCLOSED SPACES QUESTIONS	MEASURED OVER ONLY "YES" AND "NO" ANSWERS				MEASURED OVER TOTAL CIC INSPECTIONS ANSWERS			
		"YES"(1)		"NO"(1)		"N/A"(2)		BLANK(2)	
		#	%	#	%	#	%	#	%
Q1	Are there measures in place to test the atmosphere of an enclosed space to confirm it is safe to enter?	6,652	97.6%	174	2.4%			0	0.0%
Q2	Are crew members responsible for testing the atmosphere in enclosed spaces trained in the use of the equipment referred to in Question 1?	6,576	97.5%	170	2.5%	80	1.2%	0	0.0%
Q3	Are the crew members familiar with the arrangements of the ship, as well as the location and operation of any on board safety systems or appliances that they may be called upon to use for enclosed space entry?	6,608	96.8%	218	3.2%			0	0.0%
Q4	Are crew members responsible for enclosed space emergency duties familiar with those duties?	6,342	92.9%	484	7.1%			0	0.0%
Q5	Is the training manual on board and its contents customised to the ship?	5,912	86.6%	914	13.4%			0	0.0%
Q6	Is there evidence on board that enclosed space entry and rescue drills are conducted in accordance with SOLAS Chapter III, Regulation 19?	6,545	95.9%	281	4.1%			0	0.0%
Q7	Have the ship's crew participated in an enclosed space entry and rescue drill aboard the ship at least once every two months in accordance with SOLAS Chapter III, Regulation 19.3.3?	6,585	96.5%	241	3.5%			0	0.0%
Q8	Are crew members responsible for enclosed space entry aware of the associated risks?	6,663	97.6%	163	2.4%			0	0.0%
Q9	During the CIC, the PSCO is to observe an enclosed space entry and rescue drill. Did the drill comply with the requirements of SOLAS Chapter III, Regulation 19.3.6?	4,170	92.9%	317	7.1%	2,339	34.3%	0	0.0%
Q10	Is the ship detained as a result of a "NO" answer to any of the questions?	36	0.5%	6,790	99.5%			0	0.0%

Table 1 CIC Questionnaire results

(1) The percentages were calculated using the total number of inspections where the answer was "YES" or "NO" only.

(2) The percentages were calculated using the total number of inspections.

3.1.2 Analysis of answers to CIC Questionnaire in relation to detention

During the period of this CIC a total of 6,826 inspections were carried out using the CIC Questionnaire (Table 1).

Annex 3 was developed to assist in the analysis of the CIC results by providing additional interpretation of the responses to the questionnaire. For each question it details what is considered to be an **unsatisfactory response** from a safety perspective. A brief commentary on the results for each question is provided below:

Question 1 asked whether measures were in place to test atmosphere in an enclosed space to confirm that it is safe to enter. Having no arrangements in place was considered unsatisfactory - 2.6% of responses were "NO".

Question 2 asked whether crew members responsible for testing atmospheres were trained in the use of testing equipment (where available). As testing equipment is not yet mandatory under SOLAS, the answers were contingent on the response to Question 1. If such equipment was not available, "N/A" would be a satisfactory response. The low number of "N/A" responses (1.2%) suggests that testing equipment is widely available and crew are trained in its use. A "NO" would indicate a serious concern, in that lives may directly depend on the correct use of testing equipment. There were 170 "NO" responses.

Question 3 asked if crew members were familiar with the arrangements of the ship and the location and operation of on board safety systems and appliances that may be used for enclosed space entry. "NO" was considered to be an unsatisfactory response and was recorded in 3.2% of cases. Detention was an option if lack of familiarity with the location and operation of on board safety systems and appliances that may be used for enclosed space entry was considered to pose a danger to ship's personnel. It was not able to ascertain how many ships were detained in relation to this question.

Question 4 asked if crew members responsible for enclosed space entry emergency duties were familiar with those duties. "NO" was considered to be an unsatisfactory response and was recorded in 7.1% of cases (1 inspection in every 14). This relatively high level is of concern. Detention was an option in this case, but, again, it was unable to be ascertained how many ships were detained in relation to this question.

Question 5 asked if the training manual was on board and if its contents were customised to the ship. A "YES" would mean that: the manual is available; it fully addresses the SOLAS requirements; crew know where it is located; and it covers procedures for enclosed space entry. A "YES" was recorded in 86.0% of inspections, which at face value indicates an unsatisfactory result. However a "NO" is not necessarily unsatisfactory, in that there is no mandatory requirement at present for the training manual to address enclosed space entry. Despite it not being mandatory, it would be preferable for manuals to be widely available.

Question 6 asked if drills were being conducted in accordance with SOLAS requirements. That is, planned and conducted in a safe manner, based on available evidence. "NO" was considered to be an unsatisfactory response and was recorded in 4.1% of cases (1 inspection in every 27), which is of concern. Detention was an option in this case, but again it is unable to be determined how many ships were detained in relation to this

question. This question was also linked to the observation of a drill in Question 9. While almost 96.0% of responses indicated “YES”, a drill (as required at Question 9) was carried out in only two-thirds of those cases.

Question 7 asked if drills had been conducted once every two months in accordance with SOLAS requirements. “NO” was considered to be an unsatisfactory response and was recorded in 3.5% of cases.

Question 8 asked if crew members responsible for enclosed space entry were aware of the associated risks. “NO” was considered to be an unsatisfactory response and was recorded in 2.4% of cases. While this question had the highest proportion of satisfactory responses across the whole questionnaire, even at this level there is cause for concern as poor awareness among crew responsible for enclosed space entry could be placing the lives of others at risk. Detention was an option in this case, but again it was unable to be determined how many ships were detained in relation to this question.

Question 9 required the PSCO to observe the conduct of a drill. This was perhaps the most valuable part of the CIC as it provided clear observable evidence of the crew’s ability to safely conduct enclosed space entry and emergency response. ”NO” was considered to be an unsatisfactory response, and means the crew were unable to plan or conduct a drill competently and in a safe manner, or actions taken during the drill were considered to be unsafe. “NO” was recorded in 7.1% of cases, which is cause for concern. Detention was an option in this case.

Where a drill could not be undertaken for whatever reason, this was recorded as “N/A”. While it was recognised during the CIC planning that there may be legitimate reasons, a drill was only conducted for two out of every three CIC inspections (66.0%). The relatively low rate of observed drills limits the usefulness of the CIC results.

Question 10 asked if the ship was detained as a result of the CIC. There were 48 detentions in total (around 0.7%). Unfortunately the particular reason for the detention (i.e. which of the five questions it was related to) was not able to be determined.

However, of the 48 detentions for the CIC Questionnaire, more than half had an unsatisfactory drill.

The most satisfactory results were for Question 8, which questioned whether crew members responsible for enclosed space entry were aware of the associated risks – 163 unsatisfactory responses were recorded representing 2.4% “NO” responses for CIC inspections. Question 2, which asked if crew members responsible for testing the atmosphere in enclosed spaces were trained in the use of the equipment referred to in Question 1, reported the next most satisfactory results with 170 “NO” responses (2.5%).

Question number	Total "NO"	Total "YES"	Total "N/A"	Total CIC inspections	Per cent "NO" of total CIC inspections	Per cent "NO" adjusted[2]
Q1	174	6,652	0	6,826	2.6%	2.4%
Q2	170	6,576	80	6,826	2.5% 2.5% (ex "N/A")	2.3% 2.3% (ex "N/A")
Q3	218	6,608	0	6,826	3.2%	3.0%
Q4	484	6,342	0	6,826	7.1%	6.8%
Q5	914	5,912	0	6,826	13.4%	13.2%
Q6	281	6,545	0	6,826	4.1%	3.9%
Q7	241	6,585	0	6,826	3.5%	3.3%
Q8	163	6,663	0	6,826	2.4%	2.1%
Q9	317	4,170	2,339	6,826	4.6% 7.1% (ex "N/A")	4.4% 6.6% (ex "N/A")

Table 2 CIC Questionnaire results

3.1.3 Analysis of CIC-related deficiencies (ISM deficiencies)

The deficiency codes are not unique to the questions for this CIC. Therefore, it is unlikely that a meaningful analysis of deficiencies can be made, as it cannot be determined if the deficiency code was recorded due to a CIC-related issue or not.

3.1.4 Number of inspections and number of ships in CIC

	Individual ships inspected by PSC during CIC	Number of PSC inspections conducted during CIC	Number of PSC inspections performed with a CIC Questionnaire	Number of PSC inspections without a CIC Questionnaire
Detentions	267	267	191	76
Detentions with CIC-related deficiencies	48	48	48	N/A
Total	**7,775**	**8,429**	**6,826**	**1,603**

Table 3 Detention and inspections

A total of 8,429 inspections were conducted during the CIC, of which a majority were performed with the CIC Questionnaire (6,826 or 81.0%). A total of 267 ships were detained during PSC inspections. Ships inspected with a CIC Questionnaire had 191 total detentions, where 48 detentions were CIC-related. CIC-related deficiencies accounted for 25.1% of all ships detained that were subject to a CIC inspection. The detention rate for CIC-related deficiencies was 0.7%.

[2] Based on total PSC inspections for the period of the CIC

3.1.5 Analysis of CIC-related deficiencies

As noted in Section 3.1.3, deficiency codes are not unique to the CIC questions. Therefore it is unlikely that a meaningful analysis of deficiencies can be made, as it cannot be determined if the deficiency code was recorded due to a CIC-related issue or not.

3.1.6 Number of ships to number of inspections in CIC

The CIC Questionnaire was intended to only be applied to any individual ship once during the campaign and the results show that no ship was inspected more than once using the CIC Questionnaire.

3.1.7 Number of inspected ships per Ship Risk Profile

SRP	Individual ships with PSC inspection	PSC inspections	PSC detentions	Detentions as per cent of PSC inspections	CIC inspections	Detentions CIC-related	Detentions CIC-related as per cent of CIC
High Risk Ship (HRS)	2,246	2,609	145	5.6%	1,921	31	1.6%
Standard Risk Ship (SRS)	3,312	3,499	90	2.6%	2,937	15	0.5%
Low Risk Ship (LRS)	2,204	2,308	30	1.3%	1,921	2	0.1%
SRP unknown	13	13	2	14.3%	3	0	0.0%
Total	**7,775**	**8,429**	**267**	**3.2%**	**6,826**	**48**	**0.7%**

Table 4 Number of inspected ships per Ship Risk Profile

The number and per cent of ship detentions in each Ship Risk Profile (SRP) category is presented in Table 4. The results are consistent with what would be expected in accordance with normal Asia/Pacific Computerised Information System (APCIS) target profiling, serving to support the continued validity of the risk profiling methodology. For general detentions and CIC-related detentions, ships classified as a High Risk Ship (HRS) had the highest rate of detention, followed by Standard Risk Ship (SRS) and Low Risk Ship (LRS) respectively.

3.1.8 Number of inspected ships and detentions per ship type

Ship type	Number of individual ships in PSC	PSC inspections	PSC detentions	Detentions as a per cent of PSC inspections	CIC inspections	Detentions CIC-related	Detentions CIC-related as per cent of CIC inspections
Bulk Carrier	2,809	3,058	73	2.4%	2,459	8	0.3%
Chemical Tanker	580	612	7	1.1%	467	2	0.4%
Combination Carrier	8	8	1	12.5%	7	0	0.0%
Container Ship	1,286	1,335	36	2.7%	1,219	6	0.5%
Factory Ship	1	1	0	0.0%	0	0	0.0%
Gas Carrier	194	202	6	3.0%	166	1	0.6%
General Cargo / Multi-Purpose Ship	1,572	1,821	98	5.4%	1,394	21	1.5%
Heavy Load Carrier	27	28	1	3.6%	26	1	3.9%
High Speed Cargo Craft	0	0	0	0.0%	0	0	0.0%
High Speed Passenger Craft	7	7	0	0.0%	1	0	0.0%
Livestock Carrier	15	15	0	0.0%	13	0	0.0%
Modu Or Fpso	0	0	0	0.0%	0	0	0.0%
Nls Tanker	16	17	0	0.0%	16	0	0.0%
Offshore Service Vessel	41	42	1	2.4%	30	0	0.0%
Oil Tanker	485	501	14	2.8%	411	3	0.7%
Passenger Ship	54	66	1	1.5%	44	0	0.0%
Refrigerated Cargo Vessel	153	156	8	5.1%	130	4	3.1%
Ro-Ro Cargo Ship	22	29	1	3.5%	16	0	0.0%
Ro-Ro Passenger Ship	19	23	1	4.4%	17	0	0.0%
Special Purpose Ship	17	17	0	0.0%	14	0	0.0%
Tugboat	56	56	2	3.6%	36	0	0.0%
Vehicle Carrier	260	274	11	4.0%	236	2	0.9%
Wood-Chip Carrier	76	80	1	1.3%	71	0	0.0%
Other types of ships	77	81	5	6.2%	53	0	0.0%
Total	**7,775**	**8,429**	**267**	**3.2%**	**6,826**	**48**	**0.7%**

Table 5 Ship inspections and detentions per ship type

Bulk carriers, tankers (including oil and chemical tankers), container and general cargo ships are the four main categories of ships covering 85.0% of all CIC inspections and 83.0% of detentions. Fifteen out of the 24 ship categories (63.0%) did not have any CIC-related detentions.

Heavy load carriers (3.9%), refrigerated cargo vessels (3.1%) and general cargo/multipurpose ships (1.5%) had the highest per cent of CIC-related detentions.

It is important to note that the sample size (the number of CIC inspections) of the two ship types with the highest percentage detention rate (heavy load carriers and refrigerated cargo vessels) is quite small. While these smaller sample sizes do not invalidate the results, they do provide less statistical validity concerning how widespread a finding may be regarding a specific ship type. If available, comparing the data in Table 5, with the total number of ships that comprise the overall convention ship fleet by ship type, would help improve this uncertainty and bring more precision to the analysis.

3.1.9 Inspections and detentions per Flag State

The table in Annex 1.4 presents the number of inspections, as well as the number and per cent of ships detained during the CIC by Flag State. Ships from 83 Flag States underwent PSC inspections, during the period of the CIC, with 75 Flag States subject to a CIC inspection (90.4%).

The Flag States with the highest percentage CIC-related detention rates were the United Republic of Tanzania (25.0%), Luxembourg (10.0%), and Togo (5.3%). The remaining Flag States had CIC-related detention rates under 5.0%. Of the Flag States that carried out inspections with the CIC Questionnaire, 75.0% (56 of 75) Flag States did not have any CIC-related detentions.

The three Flag States with the highest per cent of CIC-related detentions had markedly smaller sample sizes compared to most of the other Flag States. As previously noted smaller sample sizes do not make the results any less valid but rather reduce the certainty as to how widespread a finding may be; and in this case, as it may pertain to a Flag State.

Including the number of ships that comprise each flag's convention fleet in the Annex 1.4 table would help improve this uncertainty and bring more precision to the results.

3.1.10 Inspections and detentions per Recognized Organization

There were no CIC-related detentions for organisations that had Recognized Organization (RO) responsibility. In total there were 18 RO responsible detainable deficiencies found on PSC inspections during the CIC. However, a unique deficiency code does not exist for these CIC questions. Because the CIC questions did not have unique deficiency codes, if one of the codes used by CIC had appeared it would not have been possible to conclusively identify it as being CIC-related.

3.1.11 Ship age overview

SHIP AGE (YEARS)	NUMBER OF INDIVIDUAL SHIPS	NUMBER Of PSC INSPECTIONS	PSC DETENTIONS	DETENTION AS A PER CENT OF INSPECTIONS	CIC INSPECTIONS	DETENTIONS CIC-TOPIC RELATED	DETENTIONS CIC-RELATED AS A PER CENT OF INSPECTIONS
0-5	2,071	2,199	38	1.7%	1,823	5	0.3%
6-10	2,188	2,364	63	2.7%	1,938	10	0.5%
11-15	1,440	1,573	54	3.4%	1,305	11	0.8%
16-20	935	1,010	36	3.6%	823	4	0.5%
21-24	473	527	27	5.1%	414	6	1.5%
25-29	388	446	30	6.9%	314	5	1.6%
30-34	207	233	13	5.6%	154	6	3.9%
35+	73	77	6	7.8%	55	1	1.8%
Total	**7,775**	**8,429**	**267**	**3.2%**	**6,826**	**48**	**0.7%**

Table 6 Ship age overview

A breakdown of the CIC results by ship age (years) is presented in Table 6. The data shows that the rate of ship detention per inspection increased with ship age (albeit ships aged 16-20 years did show a decrease in detentions of over 60.0% compared to ships aged 0-15 years). For ships less than 21 years old, the rate of detention was under 1.0%, while the detention rate steadily increased to an average detention rate of 2.9% for ships over 30 years old.

3.2 Previous CIC results on the same subject matter

Not applicable – this is the first CIC for this subject matter.

3.3 Results from other CIC participants

	TMoU	PMoU	Other Participants
CIC inspections	6,826	3,776	
Total CIC detentions	191	140	
Detention per cent	2.8%	3.7%	
Detentions with CIC-related deficiencies	48	53	
Detentions with CIC-related deficiencies per cent of CIC inspections	0.7%	1.4%	
Detentions with CIC-related deficiencies per cent of total PSC detentions where a CIC Questionnaire was completed	25.1%	37.9%	
Number of enclosed space entry drills conducted	4,170	3,033	
Per cent of enclosed space entry drills conducted as a proportion of CIC inspections	61.1%	80.6%	

Table 7 Comparison of CIC results with other participants

3.4 TMoU CIC results summary

	TMoU
PSC inspections	8,429
PSC detentions	267
Detentions as a per cent of inspections	3.2%
CIC inspections	6,826
CIC-related deficiencies	1,584
CIC-related detentions	48
CIC-related detentions as a per cent of inspections	0.7%
CIC question reporting the most satisfactory answers	Q8
CIC question reporting the least satisfactory answers[3]	Q5
Ship type reporting the most satisfactory results (lowest unsatisfactory CIC question per cent)	NLS tanker (<100 inspections) Oil Tanker (>100 inspections)
Ship type reporting the most satisfactory answers (lowest CIC-related deficiency rate)	High speed passenger craft (<100 insp) Vehicle carrier (>100 inspections)
Ship type reporting the least satisfactory answers (highest unsatisfactory CIC question per cent)	Tug boat (<100 inspections) Refrigerated cargo (>100 inspections)
Ship type reporting the least satisfactory answers (highest CIC-related deficiency rate)	Tugboat (<100 inspections) Refrigerated cargo (>100 inspections)
Ship type reporting the least satisfactory answers (highest CIC-related detention per cent)	Heavy load cargo (<100 inspections) Refrigerated cargo (>100 inspections)
Ship age reporting the most satisfactory answers (lowest unsatisfactory CIC question per cent)	0-5 years old
Ship age reporting the most satisfactory answers (lowest CIC-related deficiency rate)	0-5 years old
Ship age reporting the most satisfactory answers (lowest CIC-related detention per cent)	0-5 years old
Ship age reporting the least satisfactory answers (highest unsatisfactory CIC question per cent)	30-34 years old
Ship age reporting the least satisfactory answers (highest CIC-related deficiency rate)	30-34 years old
Ship age reporting the least satisfactory answers (highest CIC-related detention per cent)	30-34 years old
Number of RO responsibility ship inspections during CIC	6,652 (total CIC inspections minus "No Class", "Withdrawn", and "Undefined")
RO ships detention rate for CIC-related detentions	0

Table 8 Summary of TMoU CIC results

[3] See comment in section 3.1.2 about unsatisfactory responses to this question

Annex 1 CIC Questionnaire

Annex 1.1 CIC Questionnaire Form

Inspection Authority:			
Ship Name:		**IMO Number:**	
Date of Inspection		**Inspection Port:**	

No.	Item	Yes	No	N/A
Q.1 Note 1	Are there measures in place to test the atmosphere of an enclosed space to confirm it is safe to enter?	❒	❒	
Q.2 Note 1	Are crew members responsible for testing the atmosphere in enclosed spaces trained in the use of the equipment referred to in Question 1?	❒	❒	❒
Q.3 *	Are the crew members familiar with the arrangements of the ship, as well as the location and operation of any on-board safety systems or appliances that they may be called upon to use for enclosed space entry?	❒	❒	
Q.4 *	Are crew members responsible for enclosed space emergency duties, familiar with those duties?	❒	❒	
Q.5	Is the training manual available on board and its contents complete and customized to the ship?	❒	❒	
Q.6 *	Is there evidence on board that enclosed space entry and rescue drills are conducted in accordance with SOLAS Chapter III, Regulation 19?	❒	❒	
Q.7	Have the ship's crew participated in an enclosed space entry and rescue drill on board the ship at least once every two months in accordance with SOLAS Chapter III, Regulation 19.3.3?	❒	❒	
Q.8 *	Are crew members responsible for enclosed space entry aware of the associated risks?	❒	❒	
Q.9 *	During the CIC, the PSCO is to observe an enclosed space entry and rescue drill. Did the drill comply with the requirements of SOLAS Chapter III, Regulation 19.3.6?	❒	❒	❒
Q.10	Is the ship detained as a result of a "NO" answer to any of the questions?	❒	❒	

Note 1: For PMoU, questions 1 and 2 are for information purposes only.

Note 2: For TMoU all questions apply.

Note 3: Each question should be answered and only one box ticked for that question.

Note 4: Questions with an asterisk indicate a Code 30 may be issued.

Annex 1.2 Additional instructions for the CIC

The purpose of the Crew Familiarization for Enclosed Space Entry Concentrated Inspection Campaign (CIC) is to ensure effective procedures and measures are in place to safeguard the seafarers who are serving on board ships. The CIC questions relate to Safety of Life At Sea (SOLAS); however the International Safety Management Code (ISM), Chapter 9 of SOLAS is referred to in the guidance notes.

The ISM means the International Management Code for the Safe Operation of Ships and for Pollution Prevention as adopted by the Assembly, as may be amended by the Organization.

The 2015 CIC applies to ALL ships.

These guidelines have been prepared to assist Port State Control Officers (PSCOs) in conducting their inspections under this CIC. It is expected that the PSCO should already be familiar with the relevant sections of the applicable conventions and International Maritime Organisation (IMO) recommendations.

The guidelines are not intended to be a definitive check list. The PSCO should also use his or her professional judgment, and knowledge of the convention requirements in conducting the inspection and eliciting responses to the questions.

A ship should only be subject to one inspection under this CIC during the period of the campaign (1 September to 30 November 2015). PSCOs should check Port State Control (PSC) records within Asia/Pacific Computerised Information System (APCIS) to determine whether the CIC has been previously conducted on the ship during the CIC period.

Purpose

The purpose of this CIC is to get a detailed insight of compliance with the relevant conventions/regulations as applicable. It is strongly recommended that PSCOs read the guidance notes.

The following guidance is provided to assist the PSCOs in checking all aspects of compliance with the questions on Crew Familiarization for Enclosed Space entry during a PSC Inspection. In addition to the guidance, PSCOs should refer to the following documents:

- SOLAS (including SOLAS 2013 Amendment/Chapter III/Regulation 19, effective implementation date 01/01/2015).
- MARPOL
- STCW

In arriving at a “YES” or “NO” answer to each of the 10 questions the following point needs to be considered:

- should a “NO” be answered, a deficiency using the appropriate deficiency code as listed on the checklist shall be issued on Form B for the PSC inspection, unless indicated in this guidance.

Objective

The objective of this CIC is to:

- ensure that there is compliance with the requirements of the SOLAS and STCW Conventions as applicable
- ensure that the Master, Officers and Crew are familiar with relevant equipment and have received training in carrying out their duties

- raise safety awareness among the crew serving on board
- ensure that ship's crew identify and understand the hazards associated with entry into enclosed spaces.

Annex 1.3 Explanatory notes for the CIC Questionnaire

Question 1
Are there measures in place to test the atmosphere of an enclosed space to confirm it is safe to enter?

There is no mandatory requirement *at present* for all ships to carry instruments for measuring the atmosphere in enclosed spaces (Note 1). However where such equipment is provided the crew should be familiar with its use.

If on board testing equipment IS provided, the instruments must:

a) Be suitable for measuring the specific gases and vapours expected to be encountered in the appropriate concentration ranges.
b) Be in good working order and correctly calibrated.
c) Be serviced in accordance with the manufacturer's instructions.

The PSCO should:

a) Verify by inspection that the equipment is available.

b) Verify by questioning and inspection that the testing equipment is suitable for determining the acceptable levels of oxygen, and flammable or toxic gases, i.e. it is capable of measuring these particular gases in the required ranges.

c) Verify from inspection of records that the instruments have been calibrated for the correct ranges and that the calibration is current, and that the instruments have been serviced in accordance with the manufacturer's instructions.

d) Verify by demonstration that the instruments are in working order.

If the testing equipment is unsuitable, is not working or not correctly calibrated, or has not been serviced as required, then the question should be answered with a "NO", <u>but no deficiency should be issued</u>.

If on board equipment is NOT provided, the PSCO should check that other suitable measures are in place before enclosed spaces are entered. These could include, for example:

- Use of shore-based personnel for testing atmosphere in enclosed spaces.
- On board procedures that all entries are only undertaken by personnel wearing suitable breathing equipment.

The PSCO should look for evidence of such measures being implemented and assess their adequacy. If no measures are in place or inadequate then a deficiency may be issued under the ISM Code.

Note 1:

The requirement for ships to carry atmosphere testing instruments for enclosed spaces will become mandatory from 1 July 2016 (Chapter XI-1, new regulation 7). Circular

MSC.1/Circ. 1477 provides guidance on selection of such instruments.	
Convention Reference:	SOLAS Chapter III, Regulation 19.3.6.2.3
Deficiency Code:	15109
Nature of Defect:	Instruments not available or otherwise not meeting requirements
Suggested Action Taken Code:	18 (only for Tokyo MoU)

Question 2

Are crew members responsible for testing the atmosphere in enclosed spaces trained in the use of the equipment referred to in Question 1?

Where on board equipment is NOT provided for use by crew to test atmospheres in enclosed spaces, this question should be answered as "N/A" (NOT APPLICABLE).

Where on board equipment IS provided and used by crew to test atmospheres in enclosed spaces, the crew members responsible for testing should be trained in the correct use and the limitations of the testing equipment and be able to demonstrate that they can use it competently. In particular they should be aware that oxygen, flammable or toxic gas or vapour concentrations may not be uniform throughout the space and it may not be possible to measure concentrations throughout the entire space prior to entry.

The PSCO should:

1. Verify who are the persons responsible for determining that it is safe to enter enclosed spaces on the ship.
2. Verify, by questioning and inspection of records, whether those persons have been trained in the use of the testing equipment.
3. Verify, by questioning and demonstration, that those persons know how to use the equipment properly including any calibration prior to use.
4. Verify, by questioning, that those persons are aware of the particular hazards associated with the type of ship or cargo being carried e.g. oxygen-depleting cargoes and materials, and so are using the appropriate testing equipment and sampling techniques to determine whether the enclosed space is safe.
5. Verify by inspection that manufacturer's instructions are available for the testing equipment and by questioning that the persons responsible for using the equipment are familiar with those instructions.
6. Verify by inspection that the ship's procedures for enclosed space entry cover the use of testing equipment.
7. Verify by questioning that those persons are aware of the limitations of testing equipment and testing procedures when determining whether the atmosphere in

the enclosed space and any adjacent space is safe for entry, and continues to be safe while any person is in that space.[4]	
Convention Reference:	SOLAS Chapter III, Regulation 19.4.2.5
Deficiency Code:	12106
Nature of Defect:	Crew responsible for testing atmosphere not trained in accordance with requirements.
Suggested Action Taken Code:	17 (only for Tokyo MoU)

Question 3

Are the crew members familiar with the arrangements of the ship, as well as the location and operation of any on board safety systems or appliances that they may be called upon to use for enclosed space entry?

Items to check:

Check that crew members:

a) Are aware of which spaces on the ship are identified as enclosed spaces for the purposes of entry as described in the on board safety management system required under the International Safety Management Code - *all crew.*

b) Are aware of the procedures for enclosed space entry that operate on the ship and are familiar with the entry permit system for access to such spaces. This should include communications procedures used when enclosed space entry is being undertaken - *all crew.*

c) Are familiar with the location and use of safety equipment that may be used for enclosed space entry and rescue, such as ventilation, lifting and other personnel rescue equipment that may be required in an emergency, first aid and resuscitation equipment, gas testing equipment, fire extinguishers, breathing apparatus etc - *specifically designated crew.*

d) Can carry out checks on breathing apparatus and correctly don the equipment – *specifically designated crew.*

As there is the potential for fire or serious injury to occur during enclosed space operations, crew need to be familiar with the ship-wide emergency systems and equipment.

In order to test safety systems and appliances that may be used in enclosed space entry, crew should have knowledge of both the location and operation of the equipment. Any lack of familiarity may indicate that testing has not been carried out or that onboard

[4] Revised recommendations for entering enclosed spaces aboard ships – Resolution A.1050(27) adopted 30 November 2011

familiarization training (STCW Regulation I/14) has been ineffective or that drills have not been carried out.	
Convention Reference:	SOLAS, Chapter II-2/Regulation 15.2.2
Deficiency Code:	07123
Nature of Defect:	Lack of familiarity
Suggested Action Taken Code:	17 Code 30 (detention) may be considered if the lack of familiarity can pose a danger to ship's personnel An ISM-related deficiency may be recorded

Question 4

Are crew members responsible for enclosed space emergency duties familiar with those duties?

Crew members with assigned emergency duties are required to be familiar with those duties before the voyage begins. The PSCO should consult the muster list required by SOLAS Chapter III/Regulation 37 which should show the duties assigned to different members of the crew in emergency situations.

Individual crew members may be questioned on their assigned duties on the muster list and requested to demonstrate them to the PSCO. On a vessel with a large crew a sampling process may be undertaken.

The PSCO should also identify those crew members with enclosed space emergency duties and confirm they are familiar with them. SOLAS does not specifically require enclosed space emergencies to be identified on the muster list but duties in the event of such an emergency should also be clearly assigned.

1. Where emergency duties are not fully assigned on the muster list in accordance with SOLAS Chapter III/Regulation 37 or crew members are not familiar with their assigned duties, the question should be answered "NO" and a deficiency may be considered.

2. Where enclosed space emergency duties are not assigned on the muster list, the question should also be answered "NO" but no deficiency should be issued.

Convention Reference:	SOLAS 2013 Amendment Chapter III/Regulation 19
Deficiency Code:	04108
Nature of Defect:	Lack of familiarity
Suggested Action Taken	17

Code:	Code 30 (detention) may be considered if the lack of familiarity can pose a danger to ship's personnel An ISM-related deficiency may be recorded

Question 5

Is the training manual available on board and its contents complete and customized to the ship?

Crew members should be able to state where the training manual is located. The PSCO should be aware that the training manuals must be located in the following locations on board:

a) crew mess rooms
b) recreation rooms, or
c) in each crew cabin.

The training manual, which may comprise several volumes, shall contain instructions and information, in easily understood terms and illustrated wherever possible, on safety equipment provided in the ship (ship specific) and should specifically address enclosed space entry. Any part of such information may be provided in the form of audio-visual aids in lieu of the manual.

SOLAS does not specifically require the training manual to include instructions on enclosed space entry and emergencies, however it is anticipated that the training manual will address these matters.

The training manual must be in the working language of the ship.

1. Where the training manual does not fully address the requirements of SOLAS Chapter III/Regulation 35, or crew members do not know the location of the manual, the question should be answered "NO" and a deficiency may be considered.

2. Where the training manual does not include instructions on enclosed space entry and emergencies, the question should be answered "NO", but no deficiency should be issued.

Convention Reference:	SOLAS 2006 Amendment Chapter III/Regulation 35
Deficiency Code:	11131
Nature of Defect:	Missing instructions, missing manual Not as required
Suggested Action Taken Code:	17 An ISM-related deficiency may be recorded

Question 6

Is there evidence on board that enclosed space entry and rescue drills are conducted in

accordance with SOLAS Chapter III, Regulation 19?[5]

A drill should be carried out (refer to Question 9) and the outcome of this question should be linked to the outcome of the drill. If the drill is not conducted in a safe manner (e.g. atmosphere not checked or personal protective equipment not used) and there are clear grounds for believing that drills are not planned and conducted in a safe manner, then a deficiency should be recorded.

Enclosed space entry and rescue drills must include, as a minimum, all of the requirements specified in the referenced regulation.

During the drill required by Question 9 the PSCO should verify that:

a) Personal protective equipment required for entry was checked and used.
b) Communication equipment and procedures were checked and used.
c) Instruments for measuring the atmosphere in enclosed spaces were checked and used.
d) Rescue equipment and procedures were checked and used.
e) Instructions in first aid and resuscitation techniques were provided.

A sample enclosed space entry permit is shown and completion of the permit prior to entry would provide evidence that pre-entry checks were carried out.[1]

Convention Reference:	SOLAS Chapter III/Regulation 19.3.6.1, 19.3.6.2, 19.5
Deficiency Code:	04118.
Nature of Defect:	Lack of training, not as required
Suggested Action Taken Code:	17 Code 30 (detention) may be considered if the lack of training can pose a danger to ship's personnel. An ISM-related deficiency may be recorded

Question 7

Have the ship's crew participated in an enclosed space entry and rescue drill on board the ship at least once every two months in accordance with SOLAS Chapter III, Regulation 19.3.3?

The frequency of drills for those with enclosed space entry responsibilities is specified as once every two months as a minimum. Dates when enclosed space entry and rescue drills are held are required to be recorded in the log, as is the case for musters, abandon ship and other emergency drills. When drills are not held at the appointed time, an entry shall be made in the log book stating why the drill was not conducted.

The PSCO should:

[5] Revised recommendations for entering enclosed spaces aboard ships – Resolution A.1050(27) adopted 30 November 2011

a) Request records and review them to verify that enclosed space entry and rescue drills have been carried out as scheduled.

b) Confirm who has assigned responsibilities for enclosed space entry and rescue drills (see question 2). They should confirm that those crew members have taken part in the drills conducted at the required frequency both by reference to the records and verifying directly with the crew members concerned.[6]

Convention Reference:	SOLAS 2013 Amendment Chapter III/Regulation 19
Deficiency Code:	04118
Nature of Defect:	Insufficient frequency, no recorded drills
Suggested Action Taken Code:	17 An ISM-related deficiency may be recorded

Question 8

Are crew members responsible for enclosed space entry aware of the associated risks?

The atmosphere in any enclosed space may be oxygen-deficient or oxygen-enriched, and/or contain flammable and/or toxic gases or vapours. Such unsafe atmospheres could also subsequently occur in a space previously found to be safe. Unsafe atmospheres may also be present in spaces adjacent to those spaces where a hazard is known to be present.

Crew members responsible for enclosed space entry should know what the safe levels for oxygen, flammable and toxic vapours are. They should also be aware of the limitations of any testing that is carried out to verify safe conditions exist in the enclosed space and the need to continue to monitor the conditions for the duration of the entry[7].

In addition every crew member should have been given instruction on the risks associated with entry into enclosed spaces.

Crew members should be able to identify areas on board that might normally be considered to be enclosed spaces such as tanks, cargo hatches, cargo access ways, void spaces, engine crankcases, scavenge spaces etc. and be aware of the need to implement safe entry procedures according to the on board practices.

The PSCO should:

1. Verify that information on enclosed space entry for crew members with responsibilities for enclosed space entry and rescue is provided.

2. Verify that crew members with responsibilities for enclosed space entry and rescue are aware of what spaces have been identified as enclosed spaces and the risks

[6] Revised recommendations for entering enclosed spaces aboard ships – Resolution A.1050(27) adopted 30 November 2011

[7] Revised recommendations for entering enclosed spaces aboard ships – Resolution A.1050(27) adopted 30 November 2011

associated with entry into those spaces (hazards may be different for different spaces).

3. Verify that crew members with responsibilities for enclosed space entry and rescue are aware that there is a procedure for safe entry into enclosed spaces.

4. Verify that crew members with responsibilities for enclosed space entry and rescue are familiar with the atmospheric limitations required to be confirmed prior to entry.

5. Verify that crew members with responsibilities for enclosed space entry and rescue are aware of factors that may result in oxygen deficiency in the enclosed spaces on their particular ship such as the internal structure of the space, the nature of cargo in the space, the effects of cargo residues and tank coatings.

6. Verify that crew members with responsibilities for enclosed space entry and rescue are aware that there may be a need to test for specific toxic contaminants such as benzene or hydrogen sulphide in some circumstances.

7. Verify that crew members with responsibilities for enclosed space entry and rescue are aware that unsafe atmospheres may also occur in spaces adjacent to those spaces where a hazard is known to be present and that this needs to be reflected in the procedures.

Convention Reference:	SOLAS 2013 Amendment/Chapter III/Regulation 19
Deficiency Code:	04118
Nature of Defect:	Lack of familiarity, lack of training.
Suggested Action Taken Code:	17 Code 30 (detention) may be considered if the lack of training or familiarity can pose a danger to ship's personnel. An ISM-related deficiency may be recorded.[8]

Question 9

During the CIC, the PSCO is to observe an enclosed space entry and rescue drill. Did the drill comply with the requirements of SOLAS Chapter III, Regulation 19.3.6?

The PSCO is to request that a drill be conducted during the CIC. The purpose of the drill is to:

a) demonstrate that the crew are familiar with the procedures for enclosed space entry and rescue
b) verify that crew are able to conduct enclosed space entry and rescue drills competently and in a safe manner, in accordance with the recommendations of the IMO
c) verify that crew can communicate effectively during both a planned entry and

[8] Revised recommendations for entering enclosed spaces aboard ships – Resolution A.1050(27) adopted 30 November 2011

in an emergency situation.

The drill will serve to further confirm that the requirements for familiarization, training and instruction have been met. The drill is to be conducted in a safe area on the ship and in a safe manner.

IT MUST NOT BE IN AN ENCLOSED SPACE or any space which has been designated as such.

It is anticipated that the drill will take no longer than 20 minutes.

Prior to the drill being undertaken, a scenario for a planned enclosed space entry and subsequent rescue should be proposed by the crew and agreed with the PSCO that is specific to the ship. The scenario should reflect a designated enclosed space on the ship, and the hazards associated with entry into that particular space.

The PSCO should:

1. Verify that the proposed drill scenario is credible and realistic in relation to the ship in question.

2. Verify that those responsible for the drill can identify the specific hazards of the enclosed space, including but not limited to:

    - the atmosphere in the enclosed space
    - what testing is needed to confirm that entry is safe and will remain safe
    - any limitations on the ability to confirm that conditions are safe
    - any difficulties with access, or matters that may impede quick and effective rescue.

3. Verify that documented procedures are being followed, the prescribed safety briefings are given, and the required authorisations (permits) are completed and sign-offs are obtained. Those taking part should be identified on the appropriate checklists and authorisations.

4. Verify that personal protective equipment is available and correctly worn.

5. Verify that communications equipment is available and working correctly, and that communications procedures, including emergency signals, are agreed and tested prior to entry. This should include stationing a crew member at the entry point for the duration of the entry, confirmation of entry, monitoring of persons in the space and confirmation of exit.

6. Verify that equipment for testing the atmosphere is available and working, is suitable for the purpose for which it is being used, is correctly calibrated and has been serviced in accordance with the manufacturer's instructions (see also Question 1).

7. Verify that those crew members responsible for testing understand how to use the equipment and any limitations of the equipment (see also Question 2).

8. Verify what steps are taken to make the space safe if testing indicates that the atmosphere is not safe to enter.

9. Verify that rescue equipment is in place, in good order and ready for use, and

that those who have designated rescue responsibilities are trained in its use. 10. Verify that at the end of the drill all the necessary records are completed and the 'enclosed space' secured.	
Convention Reference:	SOLAS 2012 Amendment/Chapter V/Regulation 14 SOLAS 2013 Amendment/Chapter III/Regulation 19
Deficiency Code:	04118
Nature of Defect:	Drill not conducted in accordance with the requirements of SOLAS
Suggested Action Taken Code:	17 Code 30 (detention) may be considered if the crew could not successfully conduct the drill or if there were significant failures identified during the drill that could pose a danger to persons during enclosed space entry. An ISM-related deficiency may be recorded
Question 10	
Is the ship detained as a result of a "NO" answer to any of the questions?	
If the box "NO" is ticked off for questions marked with an * the ship may be considered for detention. The detail of any deficiencies should be appropriately entered on the PSC Report of Inspection – Form B and include the deficiency code as indicated in these guidelines.	

Annex 1.4 Inspections and detentions per Flag State

Flag State	Number of individual ships with PSC inspections	PSC inspections	PSC detentions	Detentions as per cent of PSC inspections	CIC inspections	Detentions CIC-related	Detentions CIC-related as a per cent of inspections	BGW List*
Antigua and Barbuda	112	115	9	7.8%	104	2	1.9%	Grey
Bahamas	187	195	4	2.1%	165	1	0.6%	White
Bangladesh	13	13	1	7.7%	11	0	0.0%	Black
Barbados	1	1	0	0.0%	1	0	0.0%	Grey
Belgium	4	4	0	0.0%	3	0	0.0%	White
Belize	112	150	14	9.3%	102	3	2.9%	Black
Bermuda (GB)	16	17	0	0.0%	16	0	0.0%	White
Brunei Darussalam	1	1	1	100.0%	0	0	0.0%	Nil
Cambodia	247	313	35	11.2%	213	9	4.2%	Black
Canada	1	1	0	0.0%	1	0	0.0%	Nil
Cayman Islands (GB)	27	27	0	0.0%	23	0	0.0%	White
Chile	2	2	0	0.0%	2	0	0.0%	Nil
China	238	249	1	0.4%	191	0	0.0%	White
Cook Islands	7	7	1	14.3%	4	0	0.0%	Grey
Croatia	7	8	0	0.0%	6	0	0.0%	White
Curacao	6	6	0	0.0%	5	0	0.0%	White
Cyprus	113	121	3	2.5%	104	0	0.0%	White
Denmark	46	46	1	2.2%	40	0	0.0%	White
Dominica	4	4	0	0.0%	2	0	0.0%	Grey

Flag State	Number of individual ships with PSC inspections	PSC inspections	PSC detentions	Detentions as per cent of PSC inspections	CIC inspections	Detentions CIC-related	Detentions CIC-related as a per cent of inspections	BGW List*
Egypt	1	1	0	0.0%	0	0	0.0%	Black
Ethiopia	2	2	0	0.0%	2	0	0.0%	Nil
Falkland Islands (GB)	1	1	0	0.0%	1	0	0.0%	Nil
France	11	11	0	0.0%	11	0	0.0%	White
Germany	24	24	2	8.3%	22	0	0.0%	White
Gibraltar (GB)	20	21	0	0.0%	18	0	0.0%	White
Greece	92	95	1	1.2%	88	0	0.0%	White
Honduras	1	1	0	0.0%	1	0	0.0%	Nil
Hong Kong, China	818	878	6	0.7%	744	0	0.0%	White
India	17	18	0	0.0%	12	0	0.0%	Grey
Indonesia	38	44	7	15.9%	26	1	3.9%	Black
Iran, Islamic Republic of	12	12	0	0.0%	12	0	0.0%	Grey
Isle of Man (GB)	45	48	0	0.0%	42	0	0.0%	White
Israel	3	3	0	0.0%	3	0	0.0%	Nil
Italy	25	26	3	11.5%	22	0	0.0%	Nil
Jamaica	9	9	0	0.0%	8	0	0.0%	Grey
Japan	52	54	1	1.9%	44	1	2.3%	White
Kiribati	41	54	2	3.7%	35	0	0.0%	Black
Korea, Democratic People's Republic of	60	67	2	3.0%	37	1	2.7%	Black
Korea, Republic of	375	401	3	0.8%	350	1	0.3%	White
Kuwait	2	2	0	0.0%	2	0	0.0%	Grey

Flag State	Number of individual ships with PSC inspections	PSC inspections	PSC detentions	Detention as per cent of PSC inspections	CIC inspections	Detentions CIC-related	Detentions CIC-related as a per cent of inspections	BGW List*
Liberia	584	618	23	3.7%	529	3	0.6%	White
Luxembourg	11	11	1	9.1%	10	1	10.0%	Grey
Malaysia	51	52	1	1.9%	41	0	0.0%	White
Maldives	1	1	0	0.0%	1	0	0.0%	Nil
Malta	232	250	12	4.8%	190	2	1.1%	White
Marshall Islands	537	570	12	2.1%	457	0	0.0%	White
Mongolia	32	36	4	11.1%	16	0	0.0%	Black
Myanmar	1	1	0	0.0%	1	0	0.0%	Nil
Netherlands	29	31	0	0.0%	25	0	0.0%	White
New Zealand	2	2	1	50.0%	0	0	0.0%	Nil
Niue	11	13	3	23.1%	7	0	0.0%	Black
Norway	51	51	1	2.0%	40	0	0.0%	White
Pakistan	1	1	0	0.0%	1	0	0.0%	Nil
Palau	7	7	2	28.6%	5	0	0.0%	Nil
Panama	2,157	2,361	63	2.7%	1,961	14	0.7%	White
Papua New Guinea	2	2	0	0.0%	1	0	0.0%	Black
Peru	1	1	0	0.0%	0	0	0.0%	Nil
Philippines	53	56	5	9.0%	46	1	2.2%	Grey
Portugal	25	26	0	0.0%	22	0	0.0%	Grey
Russian Federation	68	70	3	4.3%	59	2	3.4%	Nil
Saint Kitts and Nevis	8	10	1	10.0%	7	0	0.0%	Grey

Flag State	Number of individual ships with PSC inspections	PSC inspections	PSC detentions	Detentions as per cent of PSC inspections	CIC inspections	Detentions CIC-related	Detentions CIC-related as a per cent of inspections	BGW List*
Saint Vincent and the Grenadines	17	19	0	0.0%	13	0	0.0%	White
Saudi Arabia	9	9	0	0.0%	8	0	0.0%	White
Sierra Leone	63	81	15	18.5%	46	2	4.4%	Black
Singapore	601	627	9	1.4%	521	1	0.2%	White
Solomon Islands	1	1	0	0.0%	0	0	0.0%	Nil
South Africa	1	1	0	0.0%	0	0	0.0%	Nil
Sri Lanka	1	1	0	0.0%	0	0	0.0%	Nil
Sweden	2	2	0	0.0%	1	0	0.0%	Grey
Switzerland	8	8	0	0.0%	7	0	0.0%	Grey
Taiwan, China	32	35	0	0.0%	29	0	0.0%	Nil
Tanzania, United Republic of	4	4	1	25.0%	4	1	25.0%	Black
Thailand	64	69	1	1.5%	45	0	0.0%	Grey
Togo	22	30	4	13.3%	19	1	5.3%	Grey
Tonga	1	1	0	0.0%	1	0	0.0%	Nil
Turkey	13	13	0	0.0%	8	0	0.0%	Grey
Tuvalu	17	21	1	4.8%	14	0	0.0%	Grey
Ukraine	2	2	0	0.0%	0	0	0.0%	Nil
United Arab Emirates	1	1	0	0.0%	1	0	0.0%	Nil
United Kingdom	49	50	2	4.0%	41	0	0.0%	White
United States	13	13	0	0.0%	12	0	0.0%	White
Vanuatu	22	23	0	0.0%	22	0	0.0%	Grey

Flag State	Number of individual ships with PSC inspections	PSC inspections	PSC detentions	Detentions as per cent of PSC inspections	CIC inspections	Detentions CIC-related	Detentions CIC-related as a per cent of inspections	BGW List*
Viet Nam	175	196	5	2.6%	142	1	0.7%	Nil
Total	**7,775**	**8,429**	**267**	**3.2%**	**6,826**	**48**	**0.7%**	

Table Annex 1.4 Inspections and detentions per Flag State

Annex 2 Interpretation of CIC Questionnaire answers

Annex 2.1 Expanded explanation of CIC Questionnaire and answers

1. Are there measures in place to test the atmosphere of an enclosed space to confirm it is safe to enter?

"YES" means:

a) On board testing equipment is available, suitable for its intended purpose, correctly calibrated and maintained; OR

b) On board testing equipment is not available but adequate alternative measures are in place before enclosed spaces are entered.

"NO" means:

c) On board testing equipment is available, but is unsuitable for its intended purpose, not correctly calibrated or not properly maintained; OR

d) On board test equipment is not available, and no alternative arrangements are in place.

For (c), a deficiency should not have been issued, as there is no mandatory requirement to have testing equipment at this time (though it is not a good situation if they are relying on it).

For (d), a deficiency should have been issued (deficiency code 15109).

Note that the deficiency code description "Instruments not available or otherwise not meeting requirements" is probably not an adequate description of the circumstances under which a deficiency should be issued.

An unsatisfactory answer (i.e. the required standard is not met) is "NO".

2. Are crew members responsible for testing the atmosphere in enclosed spaces trained in the use of the equipment referred to in Question 1?

"YES" means:

a) On board testing equipment is available, personnel are trained in its use and calibration and can demonstrate how to use it correctly, and understand what it is telling them.

"NO" means:

b) On board testing equipment is available, but personnel do not know how to use it. A deficiency may have been issued (deficiency code 12106).

"N/A" means:

c) On board testing equipment is not available. The answer to Question 1 may be "YES" or "NO".

An unsatisfactory answer is "NO".

3. Are the crew members familiar with the arrangements of the ship, as well as the location and operation of any on board safety systems or appliances that they may be called upon to use for enclosed space entry?

"YES" means:

a) All crew members are aware of which spaces on the ship are enclosed spaces for the purposes of entry, and are aware of the procedures and any permit system for entry. Designated crew members are familiar with the location and use of safety equipment that may be used for enclosed space entry and can check and use breathing apparatus.

"NO" means:

b) Crew are not aware of enclosed spaces or procedures for entry; OR

c) Designated crew are not familiar with the safety equipment for entry or rescue, or the use of breathing apparatus.

A "NO" may indicate that on-board familiarization has not been carried out, or that drills have not been conducted. In such case, a deficiency may have been issued (deficiency code 07123). Alternatively, an ISM-related deficiency may have been issued. If the deficiency is of sufficient seriousness to pose a significant danger to crew members, then the ship may be detained.

An unsatisfactory answer is "NO".

4. Are crew members responsible for enclosed space emergency duties familiar with those duties?

"YES" means:

a) Emergency duties are fully assigned on the muster list and the crew members are familiar with their assigned duties. Enclosed space emergency duties are assigned on the muster list.

"NO" means:

b) Emergency duties are fully assigned on the muster list and the crew members are familiar with their assigned duties, but enclosed space emergency duties are not assigned on the muster list; OR

c) Emergency duties are not fully assigned on the muster list or crew members are not familiar with their assigned duties; OR

For (b) a deficiency should not have been issued.

For (c), a deficiency may have been issued (deficiency 04108). Alternatively, an ISM-related deficiency may have been issued. If the deficiency is of sufficient seriousness to pose a significant danger to crew members, then the ship may be detained.

An unsatisfactory answer is “NO”.

5. Is the training manual on board and its contents customised to the ship?

“YES” means:

a) The training manual is available, it fully addresses the SOLAS requirements, crew members know where it is located and it covers procedures for enclosed space entry.

“NO” means:

b) The training manual is available, it fully addresses the SOLAS requirements, crew members know where it is located but it doesn’t cover procedures for enclosed space entry; OR

c) The training manual is not available, or it doesn’t fully address the SOLAS requirements, or crew members don’t know where it is located.

There is no specific requirement in SOLAS that the training manual should include enclosed space entry, however, it is not unreasonable to expect it to be included as part of compliance with the ISM Code.

For (c), a deficiency may have been issued (deficiency code 11131). Alternatively, an ISM-related deficiency may have been issued.

“NO” is clearly an unsatisfactory answer in case (c) but not necessarily for (b). Hence “NO” should not be considered an unsatisfactory answer for this question.

6. Is there evidence on board that enclosed space entry and rescue drills are conducted in accordance with SOLAS Chapter III, regulation 19?

This question is linked to Question 9, which requires an actual drill to be conducted, and which will provide additional evidence to answer the question. The responses to questions 6 and 9 should be consistent.

“YES” means:

a) There is evidence that drills are planned and conducted in a safe manner.

“NO” means:

b) There are clear grounds for believing that drills are not planned or conducted in a safe manner.

For (b) a deficiency may be issued (deficiency code 04118). Alternatively, an ISM-related deficiency may have been issued. If the deficiency is of sufficient seriousness to pose a significant danger to crew members, then the ship may have been detained.

An unsatisfactory answer is “NO”.

7. Have the ship’s crew participated in an enclosed space entry and rescue drill aboard the ship at least once every two months in accordance with SOLAS regulation Chapter III, regulation 19.3.3?

"YES" means:

a) there are records of drills having been conducted at least once every two months (with entries in the ship's log) and there is evidence that crew members with assigned responsibilities for enclosed space entry and rescue have participated in those drills.

"NO" means:

b) there are no records of drills having been conducted, or drills have not been conducted at the required frequency; OR

c) where a drill was not conducted as scheduled, there is no record or explanation; OR

d) there is evidence that crew members with assigned responsibilities for enclosed space entry and rescue have not taken part as required.

For (b) or (c) a deficiency may have been issued (deficiency code 04118). A deficiency may also have been issued for (d). Alternatively, an ISM-related deficiency may have been issued.

An unsatisfactory answer is "NO".

8. Are crew members responsible for enclosed space entry aware of the associated risks?

"YES" means:

a) Crew members with enclosed space entry responsibilities:

i) Know which spaces on the ship are considered to be enclosed spaces

ii) are aware of the procedures for entry

iii) are aware of the atmospheric limitations for safe entry, including oxygen deficiency and the possible causes, and the possible need to test for specific toxic gases

iv) know that adjacent spaces may also be hazardous.

"NO" means:

b) Crew members with enclosed space entry responsibilities have not demonstrated the expected level of knowledge or awareness of the risks.

For (b), a deficiency may be issued (deficiency code 04118).

An unsatisfactory answer is "NO".

9. During the CIC, the PSCO is to observe an enclosed space entry and rescue drill. Did the drill comply with the requirements of SOLAS Chapter III, regulation 19.3.6?

"YES" means:

a) A realistic scenario for the drill that is specific to the ship, was proposed by the crew and planned accordingly; AND

b) The crew:

i) were familiar with the procedures for enclosed space entry and rescue

ii) showed they were able to conduct enclosed space entry drills competently and in a safe manner in accordance with IMO recommendations;

iii) showed they were able to communicate effectively during both a planned entry or an emergency situation.

“NO” means:

c) the crew were unable to plan and conduct a drill competently and in a safe manner;

d) actions taken during the drill were considered to be unsafe.

For (c) or (d) a deficiency may be issued (deficiency code 04118). Alternatively, an ISM-related deficiency may have been issued. If the deficiency is of sufficient seriousness to pose a significant danger to crew members, then the ship may have been detained.

An unsatisfactory answer is “NO”.

10. Is the ship detained as a result of a “NO” answer to any of the questions?

“YES” means:

a) The ship was detained as a result of the CIC. It should only have been detained if there was a “NO” answer to one or more of questions 3, 4, 8 and 9. This would indicate that shortcomings were of a serious nature that could pose a danger to ships’ personnel.

“NO” means:

b) The ship was not detained as a result of the CIC.