

# **FINAL REPORT**

## **CREW MISSING AT SEA FROM THE CONTAINER SHIP CEZANNE ON 15 JANUARY 2019**

**MIB/MAI/CAS.059**

**Transport Safety Investigation Bureau  
Ministry of Transport  
Singapore**

**8 April 2020**

## **The Transport Safety Investigation Bureau of Singapore**

*The Transport Safety Investigation Bureau (TSIB) is the air and marine accidents and incidents investigation authority in Singapore. Its mission is to promote aviation and marine safety through the conduct of independent investigations into air and marine accidents and incidents.*

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## **SYNOPSIS**

On 15 January 2019, at 2020H, the Singapore registered container ship, Cezanne, was underway passing south-west coast of Sri Lanka enroute to the port of Tanjung Pelepas, Malaysia.

When the Third Officer did not report at the bridge to relieve the Chief Officer for a scheduled navigational watch, a full muster was carried out followed by search on board. Cezanne was turned to head on a reciprocal course towards the last known location when the Third Officer had been seen.

Under the coordination by MRCC Colombo, search efforts spanned over nearly three days by ships in the vicinity to no avail.

The Transport Safety Investigation Bureau classified the occurrence as Very Serious Marine Casualty and launched a marine safety investigation.

The investigation revealed that the Third Officer was working alone in or near the ship's port lifeboat and had likely fallen overboard while performing inspection or cleaning jobs at the outboard side after changing the faded retro-reflective strips. It was also deemed probable that the Third Officer had not been wearing a personal floatation device. The investigation noted that there were lack of proper follow-up actions and guidance on the renewal of faded retro-reflective strips on the lifeboat which had been outstanding for several months.

The investigation also revealed that the Company's SMS on daily work planning on board the ships was implemented differently, as most of the tasks captured in the planner were directly under the purview of the head of the department, in contrast with the requirement that all the tasks were to be included in the planner. Additionally, working in or near the lifeboat, which posed a risk of falling overboard, was not deemed as an activity requiring a permit to work.

## DETAILS OF THE SHIP

Name	Cezanne
IMO Number	9697416
Flag	Singapore
Classification society	Nippon Kaiji Kyokai (ClassNK) <sup>1</sup>
Ship type	Container ship
Hull	Steel
Delivery	5 January 2015
Owners	Argosy Pte. Ltd.
Operators / ISM <sup>2</sup> Managers	Synergy Marine Pte. Ltd.
Gross tonnage	94730
Length overall	299.92m
Moulded breadth	48.20m
Moulded depth	24.80m
Summer draft	15.021m
Cargo onboard	4901 containers (8248 TEU)



Cezanne  
(Photo source: the ISM Manager)

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<sup>1</sup> ClassNK was for carrying out ISM audit and issuance of ISM related certificates, in addition, ClassNK was also for survey and issuance of other statutory certificates.

<sup>2</sup> International management code for the safe operation of ships and for pollution prevention.

# 1 **FACTUAL INFORMATION**

All times used in this report are ship's mean time (SMT) of Cezanne. SMT was changed from six hours ahead of the UTC (UTC + 6H) to seven hours ahead of the UTC (UTC + 7H) after the clocks were advanced<sup>3</sup> by one hour at 1300H on 15 January 2019, i.e. 1300H became 1400H.

## 1.1 **Sequence of events**

- 1.1.1 On 15 January 2019, at 2020H, Cezanne was underway at a sea speed of about 20 knots passing south-west coast<sup>4</sup> of Sri Lanka at about 60 nautical miles. The Chief Officer on navigational watch on the bridge, was to be relieved<sup>5</sup> by the Third Officer. However, the Third Officer did not go to the bridge as expected.
- 1.1.2 The Chief Officer instructed the Deck Cadet (DC) who was keeping the same watch, to call the Third Officer's cabin using the ship's internal phone, but there was no answer.
- 1.1.3 About five minutes later, when the Third Officer was still not up on the bridge, the Chief Officer found this unusual, considering that the Third Officer was always on time, the Chief Officer sent the same DC to physically check the Third Officer's cabin. At the same time, the Chief Officer made an announcement on the ship's public addressing system calling the Third Officer to report to the bridge.
- 1.1.4 The DC reported back to the Chief Officer that the Third Officer was not inside the cabin. The Chief Officer then instructed the DC to look for the Third Officer within the accommodation in common spaces, e.g. ship's office, smoking room and dining saloon, etc.
- 1.1.5 The DC reported back that the Third Officer could not be found in those spaces. The Chief Officer made another announcement. After hearing the second announcement, the Master of Cezanne called the bridge enquiring what had happened and why the Third Officer had not come up for the bridge watch.

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<sup>3</sup> Ship's clock system is usually adjusted by retarding or advancing the clocks to align with the zone time where the ship is within.

<sup>4</sup> The ship's passage was in open sea in Indian Ocean in an approximate position Latitude 05°30.5'N and Longitude 079°51.4'E.

<sup>5</sup> The normal handing over of bridge navigational watch was at 2000H. On the occurrence day, the Chief Officer was to be relieved at 2020H due to advancing ship's clocks one hour in the afternoon.

- 1.1.6 The Master called for all crew to be mustered on the bridge.
- 1.1.7 By about 2030H, all crew were gathered on the bridge. The Master enquired from the crew to establish Third Officer's last known / seen location. The Oiler recalled seeing the Third Officer walking on the starboard side main deck towards aft near funnel area at about 1530H<sup>6</sup>. There were no witness accounts to indicate the Third Officer's whereabouts after this. The ship's Trainee Electrical Officer recalled seeing the entrance door for the port side lifeboat in an open condition at about 1700H.
- 1.1.8 The Master then initiated a thorough search at 2035H on board to look for the missing Third Officer. Teams were formed to cover all possible areas where the Third Officer could have been working on that day.
- 1.1.9 At about 2040H, one of the search teams reported that both entrance doors for the port side lifeboat were found in open position. The outboard entrance door had been latched on the underside of the ceiling using a metal chain meant for that purpose, while the inboard door was hanging in open position, i.e. not latched (see **Figure 1**). The safety chains on the railings at the inboard entrance were found removed.



Figure 1 – View of both doors, photo taken by the search team  
(Photo source: the ISM Manager)

- 1.1.10 Another search team reported that the Third Officer's casual shoes were still inside the changing locker located at the ship's A-deck and that the Third Officer's safety shoes were not in the locker.
- 1.1.11 At about 2046H, the Master called the Company (ISM Manager) informing about the missing Third Officer. In consultation with the Company, the Master

<sup>6</sup> After the clocks had been advanced by one hour.

turned the ship back to the location where the Third Officer was last seen and reported the situation to the Maritime Rescue Co-ordination Centre (MRCC) in Colombo.

- 1.1.12 The on board search continued as the Master started to prepare the ship for manoeuvring along the past track. Receiving no response from the MRCC Colombo, the Master then called MRCC India (Vizhinjam Coast Guard). Indian Coast Guard acknowledged the report regarding the missing person and advised the Master that they would inform all other concerned parties<sup>7</sup> accordingly.
- 1.1.13 At about 2110H, Cezanne was sailing on a reciprocal course. Distress messages were also sent out at about 2124H and 2128H through VHF, MF/HF and Inmarsat-C<sup>8</sup> about the missing crew on board Cezanne.
- 1.1.14 By about 2136H, the on board search was completed to no avail. A second search with a different set of crew combination was again initiated as per Company's advice at about 2241H. The search continued on board till about 2315H without any positive results.
- 1.1.15 At about 2350H, MRCC Mumbai informed the Master that the distress message had been relayed to the Director General Operations of Sri Lankan Navy, Director General of Shipping, India and MRCC Colombo.
- 1.1.16 At about midnight, the Master noted that MRCC Colombo<sup>9</sup> had started requesting commercial ships in the vicinity to look for the missing person at the last position given by the Master.
- 1.1.17 At about 0050H, on 16 January 2019, Cezanne arrived the search zone as planned by MRCC Colombo and joined the search<sup>10</sup> with other commercial

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<sup>7</sup> The messages were relayed to Sri Lankan navy and MRCC Colombo.

<sup>8</sup> Equipment of the Global Maritime Distress and Safety System installed onboard for radio communication with external and consisting of various type of equipment to cover different range based on ship's trading areas. Cezanne had Very High Frequency (VHF), Medium Frequency (MF), High Frequency (HF) and Inmarsat-C for satellite transmission.

<sup>9</sup> A maritime rescue co-ordination centre, an operational facility responsible for promoting efficient organisation of search and rescue (SAR) services and for co-ordinating the conduct of SAR operations within a search and rescue region (SRR). At the time of the Third Officer being reported missing, Cezanne was within the MRCC Colombo's SRR, as per IMO Global SAR Plan.

<sup>10</sup> Parallel Track Search (PTS) and Expanding Square Search (ESS) were being used as guided by the International Aeronautical and Maritime Search and Rescue manual (IAMSAR). PTS is used to search a large area when the survivor location is uncertain and most effective over water. ESS is most effective when the location of the search object is known within relatively close limits.



ships<sup>11</sup>, in addition to merchant ships being requisitioned to assist in the surface search, MRCC Colombo also requested fishing vessels in the vicinity to look out for the missing crew.

- 1.1.18 The search effort was carried out till the sunset on the next day, i.e. 16 January 2019. In consultation with the Master of Cezanne, considering the hours of darkness, MRCC Colombo advised to call off<sup>12</sup> the search at about 2000H. After seeking advice from the Company and updating MRCC Colombo, the Master of Cezanne resumed the ship's voyage to the next port.
- 1.1.19 Till 1800H on 18 January 2019, MRCC Colombo continued to broadcast requests, for commercial ships passing through the search area to keep a lookout.

## 1.2 The ship

- 1.2.1 Cezanne was a cellular container carrier with a maximum carrying capacity of 9971 TEU (twenty-foot equivalent units). She was on a trade route between the US east coast and the far east region. At the time of occurrence, she was en-route from the port of Newark, USA, via Suez Canal bound for Tanjung Pelepas, Malaysia, and subsequent call at Chiwan, China, via South China Sea<sup>13</sup>.
- 1.2.2 Cezanne had two superstructures, the forward one was the accommodation where the living quarters were located at, and the aft was the engine room. Both lifeboats were stowed at the port and starboard sides of the forward superstructure (see **Figure 2**). The distance from the port lifeboat to the ship's stern was approximately about 174m.

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<sup>11</sup> Blue Sky 1, El Karshah, Belatlantic, BW Siene, Nanyang Star, CMA CGM Vasco Degama, RT Oden, Stella Kosan.

<sup>12</sup> In MRCC Colombo's opinion communicated to Cezanne, if a person wearing a Type-I lifejacket (SOLAS approved), the person could remain afloat around 24 hours. Without wearing a lifejacket, the time duration which the person could survive will depend on the person's ability to swim/float, medical condition, and condition of the sea and weather. At the time of occurrence, there was no evidence to suggest that the Third Officer was wearing a lifejacket while inside or working near the lifeboat.

<sup>13</sup> South China Sea and Eastern Archipelago are affected by the northeast monsoon (November to March). During this period, northerly to north-easterly winds (Beaufort force 4-6) and widespread moderate to heavy rain are expected.

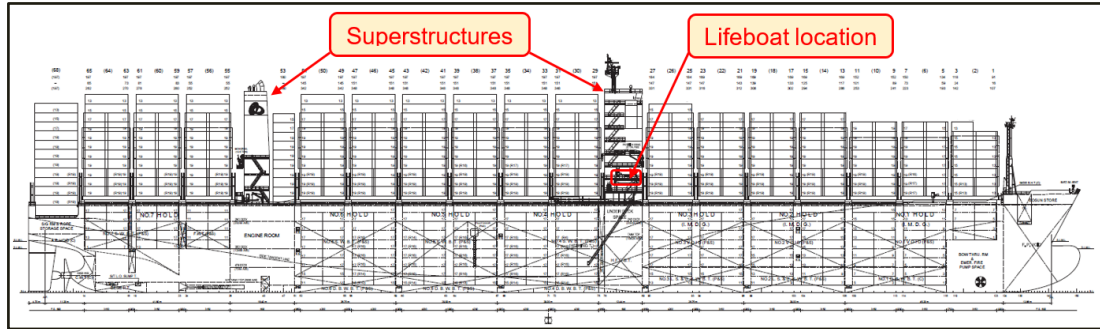


Figure 2 - General arrangement plan of Cezanne (annotated by TSIB)  
(Source: the ISM Manager)

1.2.3 At the time of occurrence, Cezanne was drawing a draught of 10.0m forward and 11.1m at aft, with a stern trim of 1.1m which was common practice as other similar type of ships. The calculated ship's GM<sup>14</sup> was about 3.4m.

1.2.4 Cezanne was manned by 25 Indian nationals including the Master.

### 1.3 About the Third Officer

1.3.1 The Third Officer, age 39, started a sailing career as an Ordinary Seaman in 2004. The Third Officer had in in-rank experience with the Company since 2016, Cezanne being the third vessel. Prior to that, the Third Officer had also sailed in the same rank with another Company for about seven months. The Third Officer had been on board Cezanne for less than five months, having signed-on together with the Chief Officer at the port of Hong Kong on 31 August 2018.

1.3.2 The Third Officer held a Certificate of Competency to work in the capacity of Officer of the Watch (OOW) Deck<sup>15</sup> issued by the government of United Kingdom which was valid till 22 October 2022, in addition to holding a valid Certificate of Endorsement issued by the Maritime and Port Authority of Singapore (MPA)<sup>16</sup> and other mandatory training certificates as required by the STCW<sup>17</sup> Convention to serve on Singapore-registered ships.

<sup>14</sup> Metacentric height, a measurement of ship's stability which is calculated as the distance between the centre of gravity of a ship and its metacenter. A larger GM implies greater initial stability against overturning, but it also influences a shorter natural period of roll of a ship which would be stiff and fast. In this case, the calculated GM 3.40m was relatively on the higher side.

<sup>15</sup> Qualified to serve as an Officer of Watch (deck) according to STCW II/1, no limitations applying to the Certificate.

<sup>16</sup> MPA was the Flag Administration of Cezanne at the time of occurrence.

<sup>17</sup> The International Convention on Standards of Training, Certification and Watch keeping for Seafarers, 1978 and its amendments set qualification standards for masters, officers and watch personnel on seagoing merchant ships.

- 1.3.3 The Third Officer's whose height was 171cm, and was declared medically fit for service at sea by a medical centre in India dated 21 August 2018, which was valid till 20 August 2020, without any medical restrictions.
- 1.3.4 The medical report also indicated that the Third Officer did not have any known medical history and was not under any prescribed medication. The Third Officer had not been issued with any medication since the time of joining as per the ship's medical log.
- 1.3.5 According to the Company's training records for the Third Officer, in addition to the safety familiarisation training upon joining the Cezanne as per Company's Safety Management System (SMS), the Third Officer had also undergone Officers Safety Training, Shipboard Safety Operation and Maintenance course conducted in-house by the Company in 2016 and 2017.
- 1.3.6 According to Cezanne's work/rest hour records, maintained electronically, the Third Officer had 14 hours of rest on the previous day (14 January 2019). After keeping four hours of bridge watch in the morning, the Third Officer started maintenance work<sup>18</sup> after lunch in the afternoon on the day of the occurrence. The Third Officer also had 100 hours of rest in the last 7-day period (8 January 2019 to 14 January 2019), indicating compliance with the STCW and MLC Convention's requirements concerning the hours of work and rest<sup>19</sup>.
- 1.3.7 According to information obtained from the Company and the ship's crew, it was established that the Third Officer was known to be a hardworking officer, had a positive working attitude and well appraised for his work performance.

#### 1.4 **Role of the Third Officer**

- 1.4.1 According to the ship's watchkeeping schedule and the Company's SMS procedures, the Third Officer was primarily responsible for safe keeping a navigational watch at sea for the periods of 0800H-1200H and 2000H-2400H and cargo watches in port. The Third Officer was also directly responsible to the Chief Officer for up-keeping and ensuring the readiness of life-saving

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<sup>18</sup> Third Officer had not discussed the work for the day with anyone. Details of Third Officer's routine work is detailed in section 1.6.3.

<sup>19</sup> STCW Chapter VIII and MLC, Reg 2.3 with regards to rest hour - Minimum hours of rest shall not be less than i) ten hours in any 24-hour period; and ii) 77 hours in any seven-day period. Hours of rest may be divided into no more than two periods, one of which shall be at least six hours in length, and the interval between consecutive periods of rest shall not exceed 14 hours.

appliances (LSA) and fire-fighting equipment (FFE) on board<sup>20</sup>. Other ad-hoc tasks could also be assigned by the Master or the Chief Officer.

1.4.2 According to the records of hours of work and rest, the Third Officer's typical routine on board was to carry out inspection and maintenance work on LSA/FFE items for a period of two hours after the morning navigational watch. The Third Officer would typically go for rest at about 1500H.

1.4.3 The Third Officer was also the designated deputy Safety Officer on board, assisting the Safety Officer (Chief Officer) to conduct safety familiarisation training for all on-signing crew.

## 1.5 The lifeboats on board

1.5.1 Cezanne had two fully enclosed type of lifeboats<sup>21</sup> installed one each on port and starboard sides of the accommodation since the ship was delivered, in accordance with SOLAS requirements for a ship of its size. Both lifeboats were secured by gravity type davits, and stowed above the A-deck close to the B-deck level at a height of about 22m from the water level (at the typical operating draught of the ship).

1.5.2 Each lifeboat was marked with retro-reflective materials<sup>22</sup> which was pasted in the form of 38 strips from aft to forward on both sides, as well on top (see **Figure 3**).

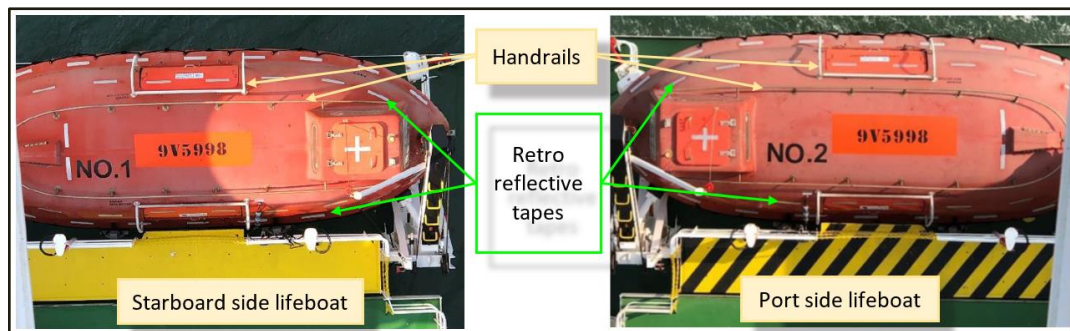


Figure 3 – View of lifeboats showing location of retro-reflective strips and handrails  
(Photo source: the ISM Manager)

<sup>20</sup> Except the life-saving appliances and fire-fighting equipment located in the engine room, those were under the responsibilities of the Fourth Engineer on board.

<sup>21</sup> Capacity of 28 persons.

<sup>22</sup> Life-Saving Appliances Code (LSA Code) require life-saving appliances on all ships to be fitted with retro-reflective material where it will assist in detection and in accordance with the recommendations (see Paragraph 1.8).

1.5.3 The operational readiness, maintenance and inspection of the LSA was carried out on a regular basis in accordance with the SOLAS requirements<sup>23</sup> and documented as per the SMS. In addition to a weekly tests and inspections<sup>24</sup>, the last inspection (monthly) on the lifeboat was carried out by the Third Officer on 12 January 2019. The condition of the outer body of both lifeboats was documented as satisfactory in the records maintained.

1.5.4 Each lifeboat was also provided with handrail<sup>25</sup> fixed on the upper side, running from one side near the coxswain's<sup>26</sup> position at the aft, towards forward and back to the aft on the other side. Another set of side rails were also fixed at the entrance doors on both sides to aid persons in entering the boat. (see **Figure 4**).

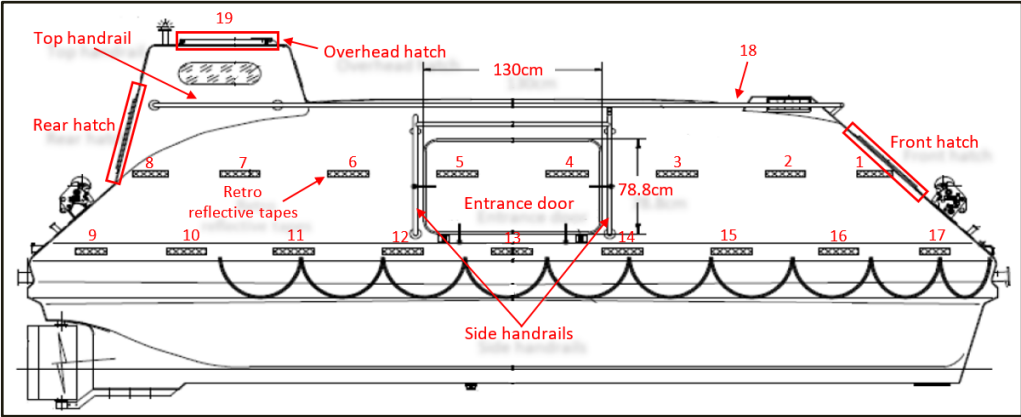


Figure 4 – Starboard side view of the port side lifeboat with annotations made by TSIB (Source: ISM Manager)

1.5.5 Each lifeboat had five openings comprising two main entrance doors and three hatches. The two main entrance doors, located on each side of the lifeboat, had the same dimensions of 78.8cm (height) x 130cm (width). The inboard entrance door (facing the accommodation) was used to enter the lifeboat when in stowed position. Both entrance doors could be opened inwards and hooked on the underside of the ceiling of the lifeboat using designated metal chains.

1.5.6 At each main entrance door, there was a sill of 48cm in height between the lower opening of the entrance door and the seat. The purpose of the sill was to

<sup>23</sup> Chapter III, regulation 20 of SOLAS Convention 1974, and its latest amendments.  
<sup>24</sup> Visual inspection to all survival craft, rescue boats and launching appliances to ensure that they are ready for use, test all boats’ engines, etc.  
<sup>25</sup> As per LSA Code 4.6.2.9 – A handrail for a secure handhold for persons moving about the exterior of the lifeboat and aid embarkation and disembarkation.  
<sup>26</sup> The person who steers the boat.

prevent water ingress when the boat was waterborne. The height between the floor of the lifeboat to the hooked-up door was about 1.7m (see **Figure 5**).

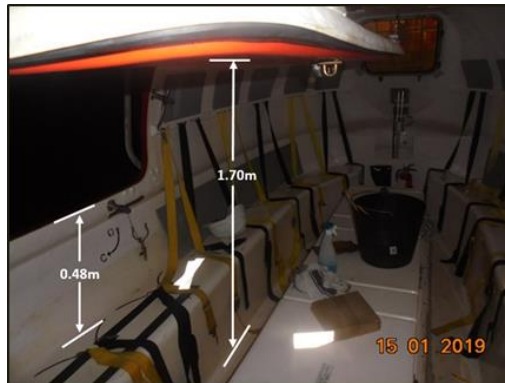


Figure 5 – Port side lifeboat internal height measurement  
(Photo source: the ISM Manager)

1.5.7 Of the three hatches, one was located above the coxswain’s seat, closer to the aft of the lifeboat, could also be opened from either inside or outside of the lifeboat. The remaining two hatches located at the forward and aft of the lifeboat, were for accessing the hooks used for hoisting operations or for maintenance. These two hatches could only be opened internally. At the time of occurrence, these three hatches were found closed and secured by the manual locking handles.

1.5.8 With the information provided by the Company, the investigation team gathered that, in order to replace the retro-reflective strips<sup>27</sup> on the body of the lifeboat, access from various parts of the lifeboat was required, which offered varying levels of difficulty to a person of an average height, as indicated in the table below.

Location of the retro-reflective strips on the lifeboat (annotated with number)	The nearest opening could be used for retro-reflective strips replacement	Accessibility by hand for replacement of retro-reflective strips (provided by the Company)  (Scale of 1 – 10, where 1 is the easiest, and 10 is the most difficult)
No.1 and No. 17	Front hatch	No.1 - 3 / No.17 - 8

<sup>27</sup> The outboard side of the lifeboat had strips in a similar position to that shown in Figure 4.

No.2 and No. 16	Front hatch	No.2 - 10 / No.16 - 10
No.3, 6, 11 and 15	Side entrance doors	No.3 and No.6 - 7 / No.11 and No.15 - 10
No. 4, 5, 12, 13 and 14	Side entrance doors	All - 2
No.7 and No.10	Rear hatch	No.7 – 10 / No.10 - 10
No.8 and No.9	Rear hatch	No.8 – 3 / No.10 - 8
Top forward No.18 (refer to figure 4)	Front hatch	10
Top aft No.19 (refer to figure 4)	Overhead hatch	10

1.5.9 Records of past maintenance of both lifeboats indicated that some of the retro-reflective strips (inboard) were changed in April 2018. The Company also provided with additional evidence of attempts to replace the retro-reflective strips on the outboard upper row of the starboard lifeboat in May 2018. To do so, the crew member had to lay prone on top of the lifeboat while wearing a safety harness securing to a strong point (see **Figure 6**). At that time only some strips were replaced successfully, and according to the Company this was done under the supervision of the ship's senior officers.

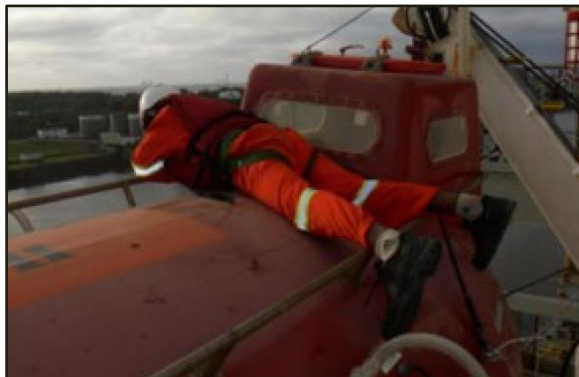


Figure 6 - Ship's crew replacing outboard retro-reflective strips in May 2018 in port  
(Photo source: the ISM Manager)

## 1.6 Additional information

### 1.6.1 On the morning of the occurrence day

- 1.6.1.1 After taking over the morning watch from the Chief Officer at about 0805H, the Third Officer shared the work planned with the Chief Officer, which covered port papers<sup>28</sup> for the next port, updating of Manager Instructions, Fleet Alerts and Circulars<sup>29</sup> received from the Company. The Chief Officer reminded the Third Officer regarding the new requirements relating to the Third Officer's responsibility, e.g. relating to FFE, shipboard portable walkie-talkies for fire fighters and audible alarm for self-contained breathing apparatus. The Chief Officer mentioned there was no discussion between the two on work relating to the renewal of the retro-reflective strips on the lifeboat or an inspection of the lifeboat.
- 1.6.1.2 The Chief Officer took the opportunity to inform the Third Officer about the monthly drills that had been planned for the day, which included an abandon ship drill<sup>30</sup>.
- 1.6.1.3 During the Third Officer's bridge watch, when the Master came up to the bridge twice, the Master recalled that Third Officer looked usual and happy as observed in the conversation over a period of about 15 minutes.
- 1.6.1.4 The Chief Officer made a phone call to the Third Officer at about 1020H to inform that the drills had been postponed<sup>31</sup> to the next day, and that ship's clocks would be advanced by one hour at 1300H on the day. A while later, the Chief Officer came up to the bridge and passed the printout of Manager Instructions for reference and necessary filing.
- 1.6.1.5 The Third Officer informed the Second Officer during navigational watch handover about advancing ship's clocks and made an announcement accordingly. The Third Officer requested all ship's staff to sign their allotment and cash advance request, which were kept on the bridge.
- 1.6.1.6 By about 1240H, many crew had signed the forms and did not notice anything unusual regarding the Third Officer, who then left the bridge for lunch and was

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<sup>28</sup> Documents required to be prepared for port arrival clearance by immigration, customs, etc. The task was assigned by the Master.

<sup>29</sup> ISM Managers' instructions, fleet alerts, circulars, issued to the ship's for compliance relating to safety, security and other matters. It was kept by the Master and the Chief Engineer, the relevant contents would be discussed with all ship's crew on board.

<sup>30</sup> SOLAS Convention, Chapter III, regulation 19.3.4.1, abandon ship drill.

<sup>31</sup> The Master had decided to postpone the drills after noting the weather condition deteriorated (ship's log shown the swell height was from 1m to 1.5m, wind force was from 3 to 5) on 15 January 2019 as well as considering that it was a local holiday in South India (Pongal).



noted to have a casual chat with the Chief Cook at the officer's mess room.

## 1.6.2 **On the afternoon of the occurrence day**

- 1.6.2.1 At about 1255H, the Bosun and an Able Seafarer Deck (ASD) met the Third Officer in the crew changing room, greeting each other. The Bosun recalled being congratulated by the Third Officer for winning the third prize in LARP32 card. The Third Officer asked them what work was being done by them and also shared that the drills had been postponed to the next day.
- 1.6.2.2 At about 1450H<sup>33</sup>, the Bosun, on the way back to the accommodation for tea met the Third Officer (who was collecting some tools) in the accommodation deck store. The Bosun recalled inviting the Third Officer to go for tea break, and the Third Officer responded with the intention to do so after some time.
- 1.6.2.3 Between 1455H - 1500H, the ASD and other two deck crew met the Third Officer near the port side gangway area and recalled the Third Officer asking them the whereabouts of the Trainee Ordinary Seaman (TOS).
- 1.6.2.4 At about 1505H, while on the way to the crew mess room for tea, the TOS recalled meeting the Third Officer, who was working on a computer in the ship's office. Both greeted each other, and the TOS recalled the Third Officer asking why the TOS was late for the tea break.
- 1.6.2.5 At about 1510H, a Deck Cadet recalled meeting the Third Officer at the A-deck in the accommodation, being told to take rest for the bridge watch. The Third Officer was then seen walking towards the starboard side exit of the accommodation.
- 1.6.2.6 At about 1530H, the Oiler, before entering the engine casing, recalled seeing the Third Officer walking on the starboard side passageway towards the aft. This was the last witness that the investigation team could corroborate the Third Officer's movement on board.
- 1.6.2.7 The Third Officer's cabin was sealed after the disappearance was reported in accordance with Company's SMS, and later re-opened for packing the belongings. The cabin was noted to be in a normal habitable condition and

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<sup>32</sup> LARP was a short term of Look, Act, Report and Prevent system practiced on board ships in the company's SMS. The LARP was to encourage crew members to report any unsafe acts or conditions by filling up a pre-described LARP card. The purpose of the system was to improve safety behaviours and prevent accidents.

<sup>33</sup> The ship's clocks had been advanced at 1300H as planned. This time and hereafter reflects the ship's time after advancing the clocks (ship's time = UTC + 7H).

nothing abnormal was noticed by the Master in the presence of witnesses.

### 1.6.3 Retro-reflective strips and other information

- 1.6.3.1 In August 2018, the Master (at that time) had, via the Company's LARP system noted that the retro-reflective strips on both lifeboats were faded. This was further discussed and recorded during the ship's monthly safety meeting and recorded for follow up actions<sup>34</sup>.
- 1.6.3.2 Following-up on the actions recorded in the shipboard monthly safety meeting minutes, the Third Officer replaced some faded inboard retro-reflective strips for both lifeboats before the next meeting in September 2018<sup>35</sup>.
- 1.6.3.3 The Third Officer's portable radio (normally carried for work) was on the bridge, and the officer of the watch was not aware of any work being performed at / near the lifeboat. All deck crew were involved in other maintenance work, and there was no work related to the lifeboat to the knowledge of the Chief Officer.
- 1.6.3.4 An inspection of the port lifeboat by the officers and crew after the occurrence revealed that a safety harness was lying near the inboard entrance door. In addition, the Third Officer's pair of gloves, safety helmet and pocket diary were found inside the lifeboat together with a bucket of tools containing two brushes, a can of half-filled white paint, a small can of grease and some cotton rags, a bottle of glass cleaner and an opened box of retro-reflective. There were also two pieces of the reflective strip which had been cut into lengths of about 30cm<sup>36</sup> each (see **Figure 7**).

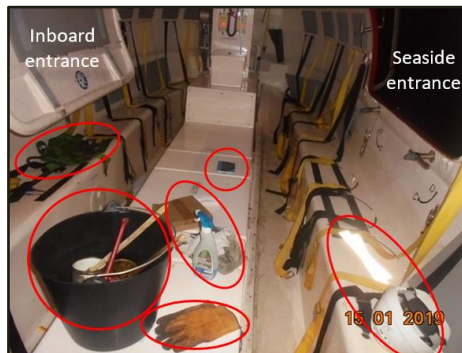


Figure 7 - Port side lifeboat internal view taken from the forward part of the lifeboat  
(Photo source: the ISM Manager)

<sup>34</sup> There was no specific action plan on who was to carry out this task. It was documented as a task to be completed.

<sup>35</sup> The shipboard safety meeting minutes in September 2018 captured the work done by the Third Officer. It was not clear whether any discussions took place on how and when the strips on the outboard side and on top of the boats was to be carried out.

<sup>36</sup> Same length as those newly pasted on the gunwale (lower side of lifeboat body) of outboard side lifeboat.

- 1.6.3.5 The Third Officer's pocket diary, contained handwritten entries for random dates relating to the Third Officer's jobs for the period of 3 September 2018 till the occurrence day. The entries related to various tasks including LSA and FFE maintenance, arrival port papers, and other miscellaneous items. The investigation team understands that the tasks that had been struck off were completed.
- 1.6.3.6 The entry relating to replacement of lifeboat retro-reflective (abbreviated as 'R/R' in the pocket diary) strips had been made three times, in September 2018, on 23 October 2018 and the last record being in the beginning of January 2019. The diary also contained some other tasks, i.e. tapes, cleaning and lifeboat seaside inspection.
- 1.6.3.7 The investigation team became aware<sup>37</sup> that on the canopy of port lifeboat, footprint marks (similar size to the casual shoes found in the changing locker) could be seen. All 17 retro-reflective strips of the outboard part of the lifeboat looked new. The inboard side existing strips were relatively older.
- 1.6.3.8 All lifejackets and personal floatation devices were accounted for on board Cezanne.
- 1.6.3.9 The investigation team also became aware that the Third Officer would normally relieve the Chief Officer for dinner at about 1930H (instead of typical 1730H routine on most ships) while the ship was at sea. This arrangement was considered acceptable by the Chief Officer, so that the Third Officer could have a longer rest period after the afternoon maintenance work. The galley staff recalled that the Third Officer would normally come late for dinner around 1900H. By the time, other officers would have finished dinner.
- 1.6.3.10 On the day of the occurrence, the Second Officer came to the bridge for some work and relieved<sup>38</sup> the Chief Officer at about 1845H for dinner. None of the officers who had dinner in the officer's mess room recalled noticing the safety chains of the portside life boat was removed or the entrance door of the port side lifeboat was open<sup>39</sup>.

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<sup>37</sup> China Maritime Safety Administration gathered evidence on behalf of TSIB when Cezanne was berthed at the port of Shekou, China on 25 January 2019.

<sup>38</sup> It was not unusual for the Second Officer to relieve the Chief Officer especially when clocks were advanced.

<sup>39</sup> The port side lifeboat entrance door was in visual line of sight of the officer's mess room located on B-deck, that had two portholes which were covered by curtains, that had been drawn in the evening. The duty mess room was located aft of the officer's mess room. The porthole for this mess room faced aft.

## 1.7 The Company's SMS

- 1.7.1 The ISM Manager managed a fleet of bulk carriers, oil tankers, chemical tankers, gas carriers and other cargo ships including container carriers.
- 1.7.2 A short-term Document of Compliance certificate was issued to the ISM Manager by ClassNK on 8 January 2019<sup>40</sup> and it was valid until 7 June 2019, pending issuance of final certificate by its head office. The last verification audit for this issuance was carried out on 21 March 2018.
- 1.7.3 An interim<sup>41</sup> Safety Management certificate (SMC) was issued to Cezanne on 12 August 2018 and was valid until 11 February 2019.
- 1.7.4 The Safety Equipment Certificate was issued to Cezanne on 5 January 2015 and valid until 4 January 2020. The ship's last annual survey was carried out on 8 November 2018, endorsing that the ship's safety equipment listed in the certificate met the SOLAS requirements including the lifeboats.
- 1.7.5 The last Port State Control inspection on Cezanne was in December 2018 at New York by U.S. Coast Guard, and no deficiency was issued.
- 1.7.6 According to the Company's SMS procedures, the implementation of a permit to work system on board was the responsibility of the Master, as supported by the Chief Engineer and Chief Officer. Records for the permits issued to be retained on board for a period of two years in order to be audited by ship's technical or marine superintendents during internal audit or inspection of the ship.
- 1.7.7 The permit to work covered various activities, such as working overside and near to the ship side<sup>42</sup>, maintenance of the lifeboat hooks as well as when the lifeboat/rescue boat were to be waterborne (as a part of three monthly requirements under SOLAS). There was no permit to work issued when the retro-reflective strips were changed prior to this occurrence.
- 1.7.8 According to the SMS, if working overside was needed, such task would only be proceeded with permission from the Master, after taking all necessary safety precautions and completion of a related checklist. In addition, a thorough risk assessment was required to be performed and a responsible officer was to be

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<sup>40</sup> This certificate was issued to include a branch office in Cochin in the certificate.

<sup>41</sup> This certificate was issued because of change in the ship's flag from Panama to Singapore.

<sup>42</sup> Personnel working overside or within 2 meters of an unfenced deck-edge must wear a work vest / lifejacket, in addition to fall-arrest gear or a lifeline which is monitored by a responsible person dedicated for it.

dedicated to supervise the task. Personnel involving the task were required to wear a work vest or lifejacket and a fall-arrestor, a lifebuoy with buoyant line was to be kept ready for immediate use. The SMS stated that any overside task was to be avoided when the ship rolled more than 5 degrees.

- 1.7.9 As per the Company's SMS on daily work planning, the ship's management team<sup>43</sup> would discuss all routine / non-routine jobs<sup>44</sup> to be carried out on board on the following day. These discussions were meant to enable jobs to be planned without conflicts, assessed for risks and if relevant work permits were required to be issued before execution. The SMS was intended for the ship's management team to have an oversight of the entire work being planned. The jobs being discussed were to be recorded in a "daily work planner" logbook<sup>45</sup>.
- 1.7.10 Copies of the daily work planner on board Cezanne for the past three months since August 2018 were provided to the investigation team. Similarly, random records from other ships managed by the Company were also sampled by the investigation team. The records sampled for the deck department of Cezanne largely<sup>46</sup> contained entries relating to the tasks directly under the Chief Officer's purview but not for the tasks carried out by the junior officers. For example, the lifeboat maintenance work that had been completed by the Third Officer, indicated as struck off in the pocket diary (refer to paragraphs 1.6.3.5 and 1.6.3.6), was not recorded in the daily work planner.
- 1.7.11 The Company's procedures also required its fleet of ships to conduct a safety meeting every month. The records of the safety meeting minutes on board Cezanne, for the past few months (September, October, November and December – usually end of the month) in 2018 had recorded an outstanding item which was "faded retro-reflective tapes changed for inboard sides of L/B. Need to replace for outer seaside." The Third Officer had attended safety meetings for September and October, but the Third Officer was on bridge watch at the time when the meeting was carried out in the months of November and

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<sup>43</sup> Comprised of the Master, the Chief Officer, the Chief Engineer and the Second Engineer.

<sup>44</sup> This included work being performed by junior officers for their respective areas of responsibility such as maintenance of LSA, FFE, engine room matters.

<sup>45</sup> Two sets of the logbook maintained on board, one for the deck department to record all work under the Chief Officer and other junior deck officer's responsible areas. Another for engine department covered all machinery related work.

<sup>46</sup> Some entries related to LSA and FFE were tasks performed by the deck crew, e.g. painting of lifeboat davit, de-rusting of the fire hose box to name a few. Maintenance of the navigational equipment under the Second Officer's in-charge was captured in the logbook.

December, and was made aware<sup>47</sup> of the contents of the minutes.

1.7.12 The Company's response to those minutes on that outstanding item was recorded as "Request to rectify the outstanding defect at the earliest convenience" for the months of September to November in 2018. In December 2018, the Company replied with a "noted" on the same item.

## 1.8 **Retro-reflective materials used on LSA**

1.8.1 The IMO had adopted a Resolution A.658(16)<sup>48</sup> which recommends Contracting Governments to the SOLAS Convention to make arrangements to ensure that LSA are fitted with retro-reflective material or to be of substantially equivalent materials.

1.8.2 The retro-reflective strips on both lifeboats on board Cezanne were in compliance with Annex 1 of this Resolution which recommended that the retro-reflective material should be spaced at suitable intervals and locations for detection by horizontal and vertical light beams.

1.8.3 Both lifeboats were installed at the time of Cezanne's delivery four years ago, the type II<sup>49</sup> retro-reflective strips on both boats had been (as with most ships) exposed to weather conditions and the materials were seen to be getting faded. Typically, the strips would be replaced when the lifeboats were sent ashore for servicing (in dry-dock<sup>50</sup>). The specification<sup>51</sup> of the retro-reflective materials was set in Annex 2 of the Resolution.

1.8.4 There was no specific international guidance/best practice on how retro-reflective strips on lifeboats were to be replaced when they became faded. The Company's SMS did not contain guidance to that effect.

1.8.5 The Company opined that there should be alternative technology or innovative materials for use on LSA that would allow for a prolonged usage without having to change it frequently and putting personnel safety at risk.

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<sup>47</sup> The Chief Officer had briefed the Third Officer on the meeting agenda of the two meetings that Third Officer had not attended.

<sup>48</sup> The Resolution was adopted on 19 October 1989 on use and fitting of retro-reflective materials on life-saving appliances.

<sup>49</sup> Highly weather-resistant material for continuous outdoor exposure, as classified under Annex 2 of the Resolution.

<sup>50</sup> Cezanne was not due for dry-docking at the time of occurrence.

<sup>51</sup> The specification covers the area of performance and photometric requirements, accelerated weathering, seawater immersion, flexibility, tensile and adhesive strength, blocking, salt spray resistance, temperature resistance, fungus and abrasion resistance, soil resistance and cleanability.

## 1.9 Environmental condition

1.9.1 From 1500H to 2000H on 15 January 2019, the ship's logs indicated that there was northerly wind (blowing from Cezanne's port side) at speed of about 19-24 knots (Beaufort scale, force 5-6), the swell height was at about 1.5m (see **Figure 8**), overcast sky throughout the period, the visibility was good approximate at about 6-12 nautical miles.

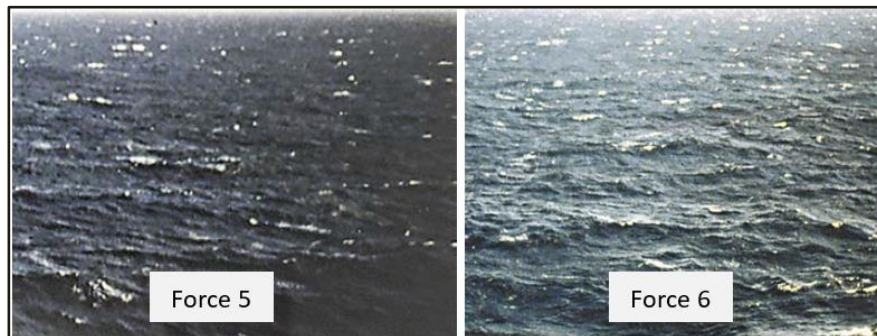


Figure 8 - Illustration of sea state at Beaufort scale of wind force  
(Source: The Mariner's Handbook, NP100)

1.9.2 The ship's heading had been maintained at about 117°(T) from 1500H to 1900H and travelled about 85 nautical miles (an average speed at about 21 knots), then changed to about 107° (T), and further to 084°(T) at 2000H as per pre-planned passage plan.

## 2 ANALYSIS

### 2.1 Likely cause of disappearance

2.1.1 There was no witness account to the disappearance of the Third Officer which was only discovered when the Third Officer did not report to the bridge for the evening navigation watch.

2.1.2 The Third Officer had interacted with many crew on the day of occurrence who did not notice anything unusual about the Third Officer. The Third Officer was known to be a happy and diligent worker, praised by ship mates and superiors alike as someone with a positive and hardworking attitude<sup>52</sup>.

2.1.3 The investigation team opined that the Third Officer was likely working alone in or near the port side lifeboat prior to the disappearance which could have taken place any time after 1530H (Oiler was the last person who saw the Third Officer) based on the following:

- the repeated entries in Third Officer's pocket diary, seem to suggest that the Third Officer had, on the day of the occurrence planned to replace the faded retro-reflective strips, amongst other jobs;
- the retro-reflective strips on the outboard side of the port lifeboat (from No. 1 to No. 17) were new, and that the canopy had footprint marks;
- the belongings of the Third Officer such as pocket diary, safety helmet were found in the port lifeboat, correlating the evidence inside the lifeboat like the cut into sizes retro-reflective strips meant for the canopy and relevant tools (including a safety harness) for carrying out maintenance in a lifeboat; etc.

2.1.4 The investigation team believes that the Third Officer, at some point after changing the strips on the outboard side (possibly from top of the canopy), had entered the lifeboat and removed the safety harness. With the seaside entrance door latched in open position (equivalent to an unfenced deck edge as per the Company's SMS), it is possible that Third Officer had fallen out while performing jobs such as inspection or cleaning at the outboard side.

2.1.5 As all the floatation devices were accounted for on board Cezanne, it is likely that the Third Officer was not wearing personal flotation device while working in or near the lifeboat. In the absence of a personal flotation device, the chances of survival would be reduced, especially in the prevailing

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<sup>52</sup> There was no evidence to support the possibility that the Third Officer had taken a drastic step intentionally.



circumstances and environmental conditions.

2.1.6 The lifeboat was located at a distance of about 174m from the stern where the propeller was running and generating an average speed of 21kts. At that speed, when an object falls into the water, it would be near the propeller in less than a minute (where generally there is a vacuum created). A fall from a height of 22m into the water with a running propeller could result in serious injuries.

## 2.2 **Dealing with outstanding tasks**

2.2.1 The task on the “faded retro-reflective strips of the outboard side of the lifeboats” had been outstanding for several months since August to December 2018 at the shipboard safety meeting (see Paragraph 1.7.11). However, there were no proper follow-up on actions on how this outstanding task was to be closed. For example, when the replacement or renewal of the faded retro-reflective strips were to take place, who was to perform the task and how the task was to be done. Instead, the issue was left to be taken upon by the Third Officer as the officer in-charge of LSA.

2.2.2 While there was no evidence that the Third Officer was pressured to complete the task, it was expected (see Paragraph 1.7.12) to be rectified at the earliest convenience.

2.2.3 Furthermore, since the abandonship drills had been postponed till the next day, it was possible that Third Officer, being a diligent worker, wanted to get the retro-reflective strips replaced prior to the drills so as to avoid being reminded during the monthly drills or at the next shipboard safety meeting which would have been due by end of January 2020.

2.2.4 The investigation team opined that had there been proper follow-up actions to close the outstanding task on the faded retro-reflective strips, consideration could have been given to the levels of difficulty in replacing the retro-reflective strips at the outboard side of the lifeboat (see Paragraph 1.5.8). That would have triggered the need to conduct a risk assessment for the job. This risk assessment might have identified the risks involved in working near the ship side or overside of the lifeboat and the appropriate level of safety measures would have been included. The risk assessment might also have resulted in the need to have a work permit for the task or more than one person was required for the job.

2.2.5 The lack of proper follow-up actions on the outstanding issue had missed the

opportunity to address the risks involved in replacing the retro-reflective strips on the outboard side of the lifeboat.

## 2.3 **The Company's SMS**

2.3.1 The Company's SMS required permit to work to be issued for tasks that were oversee and near the ship side. These procedures required personal floatation devices and fall arrester to be worn when working within two meters of an unfenced deck edge. However, works such as inspection, cleaning and renewal of retro-reflective strips of the lifeboat were not clearly defined to come under the scope of this permit.

2.3.2 When the strips were last changed in April and May 2018, although the task was reportedly supervised by the ship's senior officers, there was no record showing that a permit to work was issued. The investigation team held the view that working in or near the lifeboat poses a risk of personnel falling overboard, especially when the seaside door of the lifeboat is opened, as was in this case. Thus, there was no administrative control of such tasks, where there was a risk to falling overboard while working in or near a lifeboat (see **Figure 6** and paragraph 1.5.9).

2.3.3 It would have been desirable for the Company to prepare a safe and systematic procedure to clearly define the scope of permit to work, where there is a risk of falling overboard to ensure personnel safety.

2.3.4 The Company's SMS required all tasks (routine or non-routine) to be discussed by the ship's management team. This included the tasks that the junior officer would carry out and required the ship's management team to proactively seek information from the junior officers on the work that was to be done. It is evident that this requirement was not met as the task of lifeboat retro-reflective strip renewal and cleaning/inspection of the lifeboat were recorded and not known to the ship's management team.

2.3.5 In view of the above, the incident highlighted that there was a gap between the practice on board the ship and the SMS requirement.

## 2.4 **Materials used on LSA**

2.4.1 Since there is no typical international industry guidance on the frequency of and how the retro-reflective strips on lifeboats have to be changed, the investigation team opined that clear and documented procedures must be in

place in the Company's SMS to address how the strips would be replaced.

- 2.4.2 The retro-reflective strips pasted on the lifeboats on Cezanne were in compliance with IMO's requirements. While it is not known whether the strips were in compliance with Annex 2 of the Resolution (see footnote 49), they visually appeared to have been faded, in the professional judgement of the Master, and thus required to be replaced.
- 2.4.3 In view of the expected operating environmental conditions, the investigation team noted views from the Company on alternative technology or innovative materials for use on LSA. It must be noted that this would require a detailed study on the availability and usage of such materials, which should meet the specification as set out in the Resolution A.658(16).
- 2.4.4 However, in the interim, the Company should provide clear instructions on how the retro-reflective strips are to be replaced after carrying out proper risk assessments and issuance of permits to work. It would be desirable for the Company to consider replacement of such strips when the lifeboats are sent for servicing or when the vessel is anchored to reduce the risk of falling overboard and subsequently missing at sea.

## 2.5 **Search efforts**

- 2.5.1 On being made aware of the Third Officer's disappearance, the Master arranged for thorough searches with combination of different crew.
- 2.5.2 In consultation with the Company, the Master turned the ship around and sailed on a reciprocal course along the past track to look for the Third Officer. Concurrently, MRCCs were notified in accordance with established procedures to seek assistance from ships in the vicinity to join the search.
- 2.5.3 Despite the unknown time and location of the man overboard took place and the low survivability situation<sup>53</sup>, numerous ships were involved in the surface search under guidance by MRCC Colombo. While the investigation team notes that MRCC Colombo as MRCC had fulfilled its role in coordinating SAR efforts, considering the large area to be searched, aerial assets could have been used to supplement the SAR efforts by surface assets.

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<sup>53</sup> Prevailing sea condition and not wearing floatation device

### 3 CONCLUSIONS

*From the information gathered, the following findings, which should not be read as apportioning blame or determining liability to any particular organisation or individual, are made.*

- 3.1 The Third Officer was working alone in or near the port lifeboat and had likely fallen overboard while performing inspection or cleaning jobs at the outboard side after changing the faded retro-reflective strips. The Third Officer was not wearing a personal flotation device.
- 3.2 There were lack of proper follow-up actions on the outstanding task of faded retro-reflective strips which had been discussed in several shipboard safety meetings.
- 3.3 Although the Company's SMS procedures had a permit to work system that covered working overside and near the ship side, works in or near the lifeboat had not been taken into account within the scope of this permit.
- 3.4 The Company's SMS on daily work planning on board the ships was not implemented effectively as not all the tasks performed were captured in the daily work planner.
- 3.5 The Company's SMS procedures did not provide guidance on how the renewal of retro-reflective strips for lifeboats was to be carried out.

## 4 SAFETY ACTIONS

*During the course of the investigation and through discussions with the investigation team, the following safety actions were initiated by the Company.*

### 4.1 Actions taken by the ISM Managers

#### 4.1.1 The following safety actions had been taken or in the process to address the gaps for preventing similar recurrence:

- a) a Fleet Safety Alert was sent out to its ships to review the anticipating hazards of renewal retro-reflective strips for ship's lifeboat/rescue boat.
- b) To conduct an exclusive hazard identification and risk management campaign, to address the oversight tasks on board ships. The campaign was also to address the DO's and DON'T's for the hazardous activities.
- c) To review the SMS procedures on lifeboat maintenance and consider preventing below scenarios:
  - One-man maintenance task in lifeboat
  - Entering lifeboat without informing the bridge duty officer
  - Opening lifeboat outboard door without proper authorisation
- d) Revised the Company's SMS on Planned Maintenance System (PMS) procedures, the retro-reflective tapes on lifeboats is to be renewed at every ship dry-docking, and further renewal by manufacturer or Maker during annual safety equipment survey if needed based on the condition. A generic risk assessment template is developed for the same for its fleet of ships.
- e) Revised the procedures and introduced a new flow chart to assist technical and marine superintendents to analyse the scope of (planned/pending) works reported from ships, and identifying tasks recorded in the monthly safety meeting minutes which are of high risk activities so to guide the individual ship accordingly, taking into account the training received<sup>54</sup> on human factors.

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<sup>54</sup> Human factor specialists were engaged to provide training to shore personnel and to shipboard senior officers while on leave.

## 5 SAFETY RECOMMENDATIONS

*A safety recommendation is for the purpose of preventive action and shall in no case create a presumption of blame or liability.*

### 5.1 Synergy Marine Pte. Ltd. (the Operators / ISM Managers)

5.1.1 To identify the tasks on board which fall within the scope of the permit to work system in the Company's SMS where there is a risk of personnel falling into water. **[TSIB-RM-2020-015]**

5.1.2 To review its shipboard operations relating to daily work planning to ensure effective implementation of its SMS requirement. **[TSIB-RM-2020-016]**

- End of Report -