

# **Final Report**

## **MAN OVERBOARD (LOSS OF LIFE) FROM THE BUNKER TANKER VENUS AT ANCHORAGE IN THE PORT OF SINGAPORE ON 16 FEBRUARY 2021**

TIB/MAI/CAS.103

Transport Safety Investigation Bureau  
Ministry of Transport  
Singapore

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

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

*TSIB conducts marine safety investigations in accordance with the Casualty Investigation Code under SOLAS Regulation XI-1/6 adopted by the International Maritime Organization (IMO) Resolution MSC 255(84).*

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## **SYNOPSIS**

On 16 February 2021, at about 2246H, the Singapore registered bunker tanker, Venus was alongside the Saudi Arabia registered chemical tanker NCC Amal (Amal) anchored at the Eastern Special Purpose Alpha anchorage in the Port of Singapore.

A shore technician (ST), after completing servicing of the oily water separator onboard Amal, instead of utilising the combination ladder to disembark, crossed over to Venus for disembarking to a supply boat. While descending from the pilot ladder of Venus, the ST fell into the water. Efforts to bring the ST out of the water by a bunker surveyor and the skipper of the supply boat were to no avail. The ST was eventually brought out of the water by the port authority patrol boat which responded to the man overboard call. The ST was unconscious when rescued from the water and subsequently passed away in hospital.

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

There was no witness account on how the ST fell into the water. The investigation deduced that the ST had either lost his balance or felt dizzy while descending the pilot ladder of Venus that caused him to fall into the water. The lifejacket worn by the ST was only suitable for sheltered or calm water and was not meant for a non-swimmer. The ST was a non-swimmer and the weather condition at the time occurrence was Beaufort Force scale 3 with swell of less than 2m. While the ST was in the water, sea swells were seen covering his face resulting in sea water entering his airway and eventually being swallowed.

The investigation also noted that the crew of Amal and Venus did not object to the ST's request to cross over from Amal to Venus using an unsafe means of transfer. The transfer from Amal to Venus involved rigging a pilot ladder at a non-designated location onboard Amal and landing on the safety railing of Venus both of which were deemed as unsafe work practices.

## VIEW OF THE SHIPS



Venus  
(Seen alongside NCC Amal)



York 90



NCC Amal, Venus and York 90

## DETAILS OF THE SHIPS

<b>Name</b>	Venus	York 90	NCC Amal
<b>IMO Number</b>	9661455	-	9411317
<b>Flag</b>	Singapore	-	Saudi Arabia
<b>Harbour craft licence No.</b>	SB 0764J	SC 4462A	-
<b>Classification society</b>	China Classification Society <sup>1</sup>	-	DNV
<b>Ship type</b>	Bunker tanker	Supply vessel <sup>2</sup>	Oil / chemical tanker
<b>Hull</b>	Double hull, steel	Fibre glass	Double hull, steel
<b>Delivery</b>	24 December 2013	23 August 2011	15 June 2011
<b>Owner</b>	Venus M Shipping Pte Ltd	York Launch Services Pte Ltd	National Chemical Carriers Ltd
<b>ISM<sup>3</sup> Managers (Company)</b>	Straits Bunkering Pte Ltd	N. A <sup>4</sup>	Mideast Ship Management Limited JLT
<b>Gross tonnage</b>	4374	26.0	29168
<b>Length overall</b>	93.0m	13.5m	183.0m
<b>Moulded breadth</b>	88.2m	3.8m	32.2m
<b>Moulded depth</b>	9.0m	1.8m	18.93m
<b>Draught</b>	4.5m	0.5m	7.5m
<b>Freeboard<sup>5</sup></b>	4.5m	1.3m	11.5m

<sup>1</sup> CCS was for conducting survey and ISM audit and issuing statutory and ISM related certificates respectively.

<sup>2</sup> The harbour craft licence was issued by the Maritime and Port Authority of Singapore (MPA), for the conveyance of dry or packaged general cargo and passengers not more than 12.

<sup>3</sup> International management code for the safe operation of ships and for pollution prevention.

<sup>4</sup> The ISM Code is not applicable to the harbour craft. However, the owner of the craft is responsible for the safe operation of the craft according to the requirements of the authority of the port.

<sup>5</sup> The height of the deck above the waterline.

# 1 **FACTUAL INFORMATION**

All times used in this report are Singapore local time. which is eight hours ahead the UTC (UTC + 8H), unless otherwise stated.

## 1.1 **Sequence of events**

- 1.1.1 On 16 February 2021, at about 2030H, NCC Amal (Amal), a tanker registered in Saudi Arabia, anchored at the Eastern Special Purpose Alpha anchorage, in the port of Singapore. At about 2100H, the Pilot who brought the ship into the anchorage, disembarked from a combination ladder<sup>6</sup> rigged at the port side.
- 1.1.2 At about 2106H, a barge for supplying lubricating oil (LO) came alongside Amal's starboard side close to the accommodation and was moored.
- 1.1.3 At about 2110H, a shore technician<sup>7</sup> (ST) engaged by the Company of Amal (Company-A) boarded Amal using the same combination ladder (as used by the Pilot) at the port side, for servicing of the oily water separator (OWS) in the engine room. The combination ladder was subsequently secured back on deck by the deck crew.
- 1.1.4 By about 2115H, a transfer hose from the LO barge was connected to Amal and 45 minutes later the LO bunkering commenced.
- 1.1.5 At about 2130H, the supply boat, York 90 (Y90) left Marina South Pier (MSP) to convey a bunker surveyor<sup>8</sup> to Amal. The skipper of Y90 was also assigned to subsequently pick up the ST from Amal on the return trip.
- 1.1.6 By about 2200H, a Singapore registered bunker barge, Venus, arrived and came starboard alongside Amal's port side, for supplying marine low sulphur fuel oil to Amal and was moored.
- 1.1.7 After being moored to Amal, the Bosun (BSN-V) and an Able Seafarer Deck (ASD-V) of Venus were preparing bunkering hose on deck, for it to be lifted over to Amal.

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<sup>6</sup> An accommodation ladder and a pilot ladder rigged at shipside for embarkation and disembarkation when the ship's freeboard is more than 9m.

<sup>7</sup> Typical scope of work can include maintain, calibrate, troubleshoot and repair electrical and mechanical systems onboard ships.

<sup>8</sup> For carrying out independent checks to determine the quantity of fuel delivered by the bunker barge and received by the ship and to address reasons for the discrepancy, if any.

- 1.1.8 By about 2210H, Y90 arrived at Amal's starboard side, drifted in the vicinity, while waiting for the crew of Amal to prepare the embarkation arrangement<sup>9</sup> for the bunker surveyor to embark and for the ST to disembark.
- 1.1.9 At about 2215H, the ST came on deck after servicing the OWS. An Able Seafarer Deck (ASD-A) and an Ordinary Seaman (OS-A) saw the ST who told them that the servicing work of the OWS had been completed. The duo brought the ST to the starboard side<sup>10</sup> for disembarking. However, according to the two crew, the ST led them to the port side.
- 1.1.10 The duo recalled the ST communicated with a person standing on the bridge wing of Venus (later identified to be the Chief Officer<sup>11</sup>). The ST introduced himself and sought permission to transfer to Venus and disembark from Venus to the supply boat (Y90).
- 1.1.11 The duo further stated that the Chief Officer (CO-V) replied<sup>12</sup> with "No problem to come over" and asked, "How you want to come over – using ladder or ship's crane with net". The ST responded with "anything, whatever the ship's crew can prepare for me to go over to the (bunker) barge". The CO-V then asked the ST to seek the CO-V's permission (again) before transferring to Venus<sup>13</sup>. The CO-V also pointed Amal's deck crew to a location onboard Amal where a ladder (pilot ladder) could be rigged<sup>14</sup> for the ST to transfer to Venus. Thereafter, the CO-V left the bridge wing and went down to the cargo control room to prepare for the bunkering operation.
- 1.1.12 The ASD-A reported the ST's request, through portable radio, to Amal's officer of the watch (Junior Deck Officer<sup>15</sup> - JDO) and sought the JDO's permission to prepare the ladder in the location suggested by the CO-V for the ST to disembark. While the ASD-A and OS-A were shifting<sup>16</sup> the pilot ladder, the ST

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<sup>9</sup> According to the bunker surveyor who sat inside the cabin of Y90, there was an accommodation ladder rigged at the starboard side but kept at the deck level near the midship of Amal.

<sup>10</sup> The intention was to rig the pilot ladder and lower the accommodation ladder for the ST to disembark.

<sup>11</sup> Kept same watch period as the ASD-V.

<sup>12</sup> The ASD-A and OS-A were standing next to the ST at the time. The investigation team verified the account of the ASD-A and OS-A with the CO-V.

<sup>13</sup> The CO-V informed the investigation team that specific instructions were given to the ST to seek his permission before transferring to Venus.

<sup>14</sup> The location was next to the poop deck of Venus which was deemed as lesser height to climb down as compared to other locations on Venus.

<sup>15</sup> Keeping watch between 2000H and 2400H at sea and at anchor. The JDO was on the bridge together with the Chief Officer of Amal (CO-A) at the time when the ASD-A reported on portable radio.

<sup>16</sup> The deck crew had to shift the pilot ladder from its designated pilot station at the port side to the location suggested by the CO-V.



went to the starboard side of Amal and signalled<sup>17</sup> to the skipper of Y90 to proceed to the port side of Amal (where Venus was moored).

- 1.1.13 Upon seeing the hand signals from the ST, the skipper of Y90 manoeuvred the craft towards Amal's port side from its stern.
- 1.1.14 At about 2227H, when the pilot ladder had been rigged (on top of Amal's shipside safety railing) by the ASD-A and OS-A, the ST climbed down<sup>18</sup> to Venus. Both crew recalled that the ST was wearing a lifejacket (also referred to as a personal flotation device) and carrying a backpack on the shoulders.
- 1.1.15 After transferring over to Venus, three boxes<sup>19</sup>, belonging to the ST, were lowered from Amal to Venus and received by the ST. The ASD-V assisted the ST to shift these three boxes to the port side disembarkation location. Thereafter, the ASD-V rigged a pilot ladder with the assistance of the ST. Neither the CO-V nor the Master of Venus (Master-V) were aware of the ST's presence onboard.
- 1.1.16 According to the ASD-V, the ST started to descend the pilot ladder while Y90 was approaching Venus. Soon, the bow of Y90 touched the hull of Venus lightly (see **figure 1**), but the stern was not parallel alongside yet, i.e. there was still a gap<sup>20</sup>.

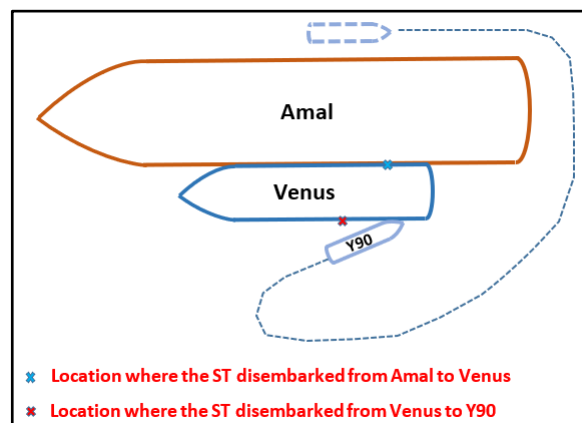


Figure 1 – Illustration of Y90's approach to Venus (not to scale)

- 1.1.17 At about 2246H, the ASD-V who was preparing for the boxes to be lowered to

<sup>17</sup> By shouting and waving hands.

<sup>18</sup> The ST's action was captured on a closed-circuit television camera (CCTV) fitted on Amal's bridge wing.

<sup>19</sup> The contents were mainly spare parts of the OWS. The ST did not inform the CO-V of these three boxes when he sought permission to cross over to Venus.

<sup>20</sup> Although the ASD-V could not recall the exact distance, it was estimated to be more than 2m from the stern of Y90.

Y90, recalled that while the skipper of Y90 was positioning the boat alongside Venus, he heard a scream from the ST (who had last been on the pilot ladder) and looked over the shipside and saw the ST in the water. The ASD-V reported man overboard (MOB) using the portable radio.

- 1.1.18 Hearing the scream of the ST, the bunker surveyor rushed out of the cabin of Y90 and saw the ST in the water with his lifejacket inflated and struggling to stay afloat. The skipper of Y90 stopped the engine and came out of the cabin to push the boat away from Venus using his hands. Meanwhile, the bunker surveyor tried reaching out to the ST.
- 1.1.19 After hearing the MOB report from the ASD-V, the CO-V who was in the cargo control room, came out to the poop deck. The Master-V, overhearing the conversation, went out from the bridge to the port wing. The ST could be seen in the water at Venus' port quarter and was in the process of being rescued by the skipper of Y90 and the bunker surveyor.
- 1.1.20 The Master-V notified the Singapore Port Operation Control Centre (POCC), the Marine Safety Control Centre (MSCC)<sup>21</sup> and the Company of the MOB. The MSCC immediately dispatched a patrol boat (MPA-I) to the incident site.
- 1.1.21 The bunker surveyor lay down on the deck of Y90 and held on to the collar of the ST with his left hand while holding on to the handrails with his right hand. The skipper too attempted to assist the bunker surveyor to pull up the ST from water but was unsuccessful.
- 1.1.22 The ASD-V and the CO-V were observing the attempts by the two persons from Y90 to rescue the ST. There was no lifebuoy thrown into the water from Venus. Due to the current and effect of the wind, the ST together with Y90 drifted towards southwest, away from Venus' stern.
- 1.1.23 The skipper left the controls of the Y90 and secured a portable ladder to the stern of Y90<sup>22</sup> using a rope. The other end of the rope was looped under the ST's armpits to shift him from the port side to the stern of Y90. There was no lifebuoy thrown into the water from Y90.
- 1.1.24 The bunker surveyor, observing that the ST was still conscious but in a weak condition holding to the ladder at the stern, removed some of his clothes, donned his lifejacket and entered the water. While in the water, the bunker

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<sup>21</sup> Both the POCC and the MSCC were operated by the MPA and provided 24/7 services.

<sup>22</sup> The stern of Y90 had a provision for securing the portable ladder.

surveyor removed the backpack<sup>23</sup> carried by the ST and attempted to push the ST upwards while the skipper pulled the ST up from deck but were unsuccessful. By about 2300H, assessing the difficulties in getting the ST out of the water, the bunker surveyor told the skipper to call for help. The skipper returned to the Y90's conning position and called Singapore Police Coast Guard (PCG) for help on 999<sup>24</sup>.

- 1.1.25 While waiting for aid to arrive, the bunker surveyor kept the ST's head out of the water with one hand and leg, while holding on to the portable ladder onboard Y90 with the other hand and leg. Despite the efforts in keeping the ST's head above water, the swells were seen flushing repeatedly over the ST's face. The ST lost consciousness after a while.
- 1.1.26 By about 2312 hours, MPA-I arrived at Y90's location, with the assistance of the crew from MPA-I, the ST was brought up on deck of MPA-I. To do so, the ST's lifejacket<sup>25</sup> had to be removed and it was lost in the sea during this process. As ST was unconscious, CPR<sup>26</sup> was administered. A while later a PCG craft also arrived on site.
- 1.1.27 MPA-I left the location for the ST to get medical treatment while CPR was continuously provided to the ST. Subsequently on arriving MSP at about 2350H, the ST was conveyed to the nearest hospital by ambulance. The ST was pronounced dead on 17 February 2021 at 0039H.

## 1.2 Information about the ships involved

- 1.2.1 Amal arrived Singapore on 16 February 2021. The purpose of this call was for taking bunkers, some routine equipment repairs and underwater hull inspection.
- 1.2.2 Venus is a bunker tanker managed by Straits Bunkering Pte Ltd (Company-V) since 6 March 2020. At the time of occurrence, the transfer of marine fuel to Amal had not commenced. The pilot ladder rigged by the ASD-V was about 1.3m above<sup>27</sup> the waterline. The disembarkation location was illuminated using

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<sup>23</sup> While doing so, the ST's lifejacket briefly came off from his neck. Thereafter, the bunker surveyor put back the lifejacket so that the ST could stay afloat.

<sup>24</sup> Emergency hotline for the Singapore Police Force. The call was then diverted to the PCG to respond.

<sup>25</sup> The model and type of lifejacket could not be established as it was not retrieved from the water.

<sup>26</sup> Cardiopulmonary Resuscitation – A lifesaving technique combining chest compressions and ventilation, especially considered useful when drowning is suspected.

<sup>27</sup> Referring to the last rubber step. Typically, pilot ladders have four rubber steps.

deck lights on the bridge wing and main deck.

- 1.2.3 A swing light was installed at the port and starboard poop deck (about 15m away from the disembarkation location) for lighting over seaside of Venus. At the time of the ST’s disembarkation, the port side rotatable light was swung out (see **figure 2**). At the material time, the crew of Venus confirmed the deck was well lit.

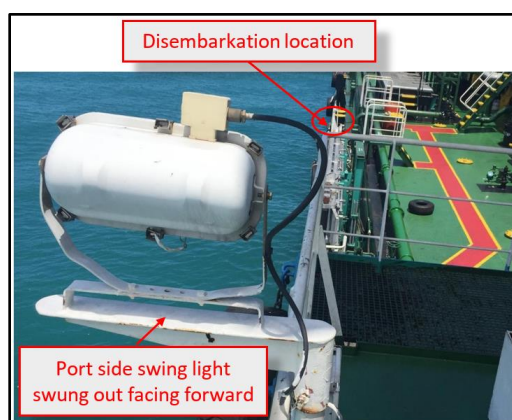


Figure 2 – Swing light installed at port side poop deck on Venus – photograph taken during daylight hours after the occurrence

(Source: Venus)

### 1.3 Information of the crew involved

#### 1.3.1 The tanker - NCC Amal

- 1.3.1.1 Onboard Amal, there were 22 crew (including the Master) of seven nationalities. The working language onboard was English. The information relating to the Master, relevant officers and crew members is in table-1:

Designation Onboard	Nationality	Age	Certificate of competency	Duration on board (month)	In rank service (Year)	Service in Company-A (Year)
Master-A	Ukraine	59	Master / STCW II/2	2.7	11.3	5
Chief Officer (CO-A)	Indian	38	Master / STCW II/2	3.4	2.1	8
Junior Deck Officer	Egyptian	27	2 <sup>nd</sup> Officer / STCW II/1	6.7	0.7	0.7
Bosun (BSN-A)	Filipino	46	Rating / STCW II/5	2.7	10	1.8
ASD-A	Filipino	28	Rating / STCW II/5	3.4	4	4

OS-A	Filipino	30	Rating / STCW II/5	3.4	1.2	1.2
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Table-1

1.3.1.2 The CO-A was designated as the safety officer onboard Amal. When the ASD-A reported for rigging the pilot ladder at the port side for the ST to disembark, the CO-A was on the bridge together with the JDO. There was no further communication between the two officers and the ASD-A, and the CO-A left the bridge before the ST disembarked to Venus.

1.3.1.3 The Master of Amal (Master-A) was not aware of the disembarkation arrangement of the ST via Venus. None of the officers nor crew onboard Amal were aware of the MOB occurrence until being notified by the local agent on the next day, i.e. 17 February 2021.

1.3.2 Bunker tanker - Venus

1.3.2.1 Onboard Venus, there were ten crew including the Master-V. The Master and ratings were from Indonesia whereas the other officers were from the Philippines. The CO-V was the designated safety officer onboard Venus. The information relating to the Master, relevant officers and crew members is in table-2:

Designation onboard	Nationality	Age	Certificate of competency	Duration onboard (month)	In rank service (Year)	Service with Company-V (Year)
Master-V	Indonesian	52	Master / STCW II/2 and others <sup>28</sup>	16.1 <sup>29</sup>	18	0.8
Chief Officer (CO-V)	Filipino	36	Master / STCW II/2	12.9	4	0.8
ASD-V	Indonesian	39	Rating / STCW II/5	1.6	10	0.1

Table-2

1.3.3 Supply vessel - York 90

1.3.3.1 Y90 is used for conveyance of passengers and dry or packaged general cargo. Y90 has safety railings along the aft deck behind the cabin, beyond which there are gaps on both sides to facilitate transfer of persons.

<sup>28</sup> The Port Limit Tanker Master Certificate and Certificate of Pilotage Exemption were issued by the MPA.

<sup>29</sup> During the COVID-19 period, the Company-V had difficulties replacing the Master-V and CO-V with required qualifications. However, the Company-V had provided relevant support for maintaining their health and wellbeing such as placing exercise equipment onboard and often videocall and conducting ship visit.

- 1.3.3.2 Y90 was manned solely by the skipper, a 63 years old Singaporean, who had been working with the launch company since 2017. He held a Singapore Harbour Craft Manning Licence as a steersman issued by the MPA on 10 January 2011.
- 1.3.4 Most supply boats like Y90 in Singapore are operated by a single person, and that an additional deckhand is only present if the client (the ship or its agent or the Company) requested for such a person. There was no such person during this trip. When asked on why neither of the two lifebuoys onboard Y90 fitted for use in a MOB situation were deployed, the skipper responded that the ST was already being held by the bunker surveyor and the priority at the time was to recover him on to Y90.
- 1.3.5 The work/rest hour records of the Masters and the crew maintained electronically onboard Amal and Venus, indicated compliance (as documented) with the requirements of Maritime Labour Convention and Merchant Shipping (Maritime Labour Convention) Act 2014 respectively concerning the hours of work and rest<sup>30</sup>. The skipper of Y90 was on a two-day work routine (with a rotating shift partner) each day working about six to eight hours and the incident occurred on his first workday after an off day prior to the work. The skipper confirmed he was well rested.

#### 1.4 **About the shore technician**

- 1.4.1 The ST was a 52 years old Singapore national. He was a self-employed freelance marine service engineer. At the time of occurrence, the ST was engaged by a marine services company (AMS)<sup>31</sup> to service the OWS onboard Amal. AMS had been engaged by Company-A.
- 1.4.2 According to AMS, the ST had an experience<sup>32</sup> of over 25 years' in carrying out repairs on hydraulic, automation and control systems onboard ships in Singapore. As a freelancer, the ST was also engaged by other marine service companies. AMS further clarified that the ST was not its employee and the Company had no control of the jobs that the ST did for other companies. AMS'

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<sup>30</sup> The Act, Reg 16 and Convention, 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.

<sup>31</sup> Atlas Marine Services Pte Ltd, provided a range of services including supply, service and repair of marine safety and instrumentation products, such as 15 ppm bilge alarms and gas sampling systems.

<sup>32</sup> There were no professional certificates, training records and health examination reports made available to the investigation team.

instructions to the ST were purely on the scope of the work. Prior to the occurrence day, the last job carried out by the ST for AMS was also at an anchorage in the port of Singapore on 3 February 2021, for another ship.

- 1.4.3 AMS added that there was no formal contract with the ST, and that any job assignment was based on the ST's availability. AMS would communicate with the ST using telephone calls and messages when there was a need<sup>33</sup> to engage the ST.
- 1.4.4 According to the next of kin (NOK) of the ST, the ST had a heart attack<sup>34</sup> in 2014, and since then, he was under regular medication<sup>35</sup> including controlling diabetes mellitus prescribed by a medical doctor in Singapore. The NOK further added that the ST normally accepted three to four job orders in a week, i.e. one in the morning, the next job would be in the late afternoon or evening on next day, to take rest in between jobs. Prior to going onboard Amal, the ST was off work for the day.
- 1.4.5 According to the autopsy report, the ST was about 1.8m tall and weighed approximately 82kg.

## 1.5 **Personal flotation device (PFD) and related standards**

- 1.5.1 As a freelance marine service engineer, the ST procured his own personal protective equipment (PPE)<sup>36</sup>, which included the lifejacket. The NOK shared a picture of the lifejacket<sup>37</sup> with the PCG which was possibly the one worn by the ST on the day of the occurrence (see **figure 3**).

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<sup>33</sup> This was particularly so when the engineers in AMS were busy servicing other ships or not familiar with the equipment onboard the ship to be serviced.

<sup>34</sup> Ischaemic heart disease.

<sup>35</sup> Prescribed medicines to be taken in the morning: Lisinopril, Empagliflozin, AML Odipine Besilate, Ferrous Gluconate Co, Omeprazole, Bisoprolol Fumarate and Aspirin; in the afternoon: Metformin HCL; before breakfast and dinner: Glipizide; in the evening: Atorvastatin,

<sup>36</sup> PPE was to be worn for going onboard ships, such as helmet, safety boot, goggle and lifejacket.

<sup>37</sup> Type A with model of Marine Vest KK-51 - manufactured by a Japanese company Koa Kako. It is manufactured to conform to relevant Japanese regulations – Regulations for Equipment of Ships, Article 311 - 20 (lifesaving clothing for on-weathered-deck or fishing tasks) and 21; Safety Regulation for Small Craft, Article 53 (lifejacket for a small ship); Regulations for Small Fishing Vessels, Article 25-2 (lifesaving equipment) and Regulations for Labor Safety and Health of Seafarers. There were no requirements to indicate the weight or height of the person which the lifejacket could keep afloat in water.



Figure 3 – Photo of the lifejacket provided by the NOK

- 1.5.2 According to the User Manual<sup>38</sup> of the lifejacket obtained from the maker, the lifejacket weighed about 660g and was described as a compact marine vest for use onboard ships. This type of lifejacket is capable of auto-activation by a CO<sub>2</sub> cartridge when immersed in the water or can be inflated manually by pulling a string. It provides a buoyancy of about 10kg<sup>39</sup>. Under the instructions (in Japanese) concerning safety, the Manual highlighted that this type of lifejacket should not be used by a person who cannot swim. According to the service instruction, the lifejacket is to be checked and maintained every six-month or if there are any abnormalities, the lifejacket should be brought to the purchased shop or the maker for repair.
- 1.5.3 Requirements for lifejackets onboard merchant ships typically used by seafarers are regulated by the IMO under the SOLAS Convention. A lifejacket marked as SOLAS type-approved indicates that the lifejacket meets the relevant requirements<sup>40</sup> including the marking on the lifejacket with size (infant, child or adult) and either weight or height or both weight and height of the user, for example, 43kg or more, 155cm or more.
- 1.5.4 The ISO 12402<sup>41</sup> provides standards for the design and application of personal flotation devices (PFDs) for persons<sup>42</sup> (typically non-seafarers) engaged in activities in relation to their work or leisure in or near water. The PFDs manufactured, selected, and maintained in accordance with these standards should give a reasonable level of safety against drowning of a person in water. The ISO 12402 also serves as a guide for manufacturers, purchasers and users of such safety equipment in ensuring that the equipment provides an

<sup>38</sup> The investigation team was able to retrieve a Japanese version of the manual online. An English version was requested through TSIB's counterparts, the Japan Transportation Safety Board (JTSB) from the maker of the lifejacket.

<sup>39</sup> Open source research suggests that the 10kg could equate to approximately 100 Newtons (N). A 100N is a basic lifejacket that keeps a person afloat in sheltered / calm waters.

<sup>40</sup> SOLAS Convention, Chapter III, Regulation 7.2 and the International Life-Saving Appliance Code, Chapter II, Regulation 2.2.

<sup>41</sup> The ISO 12402 (edition 2020) does not cover lifesaving appliances on merchant ships which are regulated by the IMO under the SOLAS Convention.

<sup>42</sup> Refers to personnel not serving on merchant ships.



effective standard of performance. These standards also state that high wind speeds and steeper waves increase the likelihood of water or splash entering the airways, even waves of only 30cm height can threaten an unprotected airway and a spray hood becomes necessary unless in an area of inland waters.

1.5.5 The ISO 12402 covers several performance levels, which require a suitable type of buoyancy, activation methods for inflatable devices and auxiliary items like location aids. In addition, the standards also indicate that the selection of PFDs should be based on a risk evaluation considering the activation methods which will affect the user’s probability of survival. The performance level also indicates which situations are applicable for their use and associated clothing that is expected under the environmental conditions (see table-3).

PFDs’ performance level	Applicable	Clothing required	Turning ability when fully inflated
275	Primarily for offshore use under severe weather or sea conditions, also for a user requires a high level of buoyance such as carrying heavy objects	Special protective clothing	Capable of turning an unconscious user into a position with the mouth and nose clear of water
150	For general, offshore and rough water use	Heavy weather clothing	Capable of turning an unconscious user into a position with the mouth and nose clear of water
100	For sheltered or calm waters, where users may have to wait for rescue	Light clothing	Has some turning ability to bring the user into a position with the mouth and nose clear of water

Table-3

1.5.6 The ISO 12402 suggests that in locations where rough environment is expected, a lifejacket of a buoyancy of 150N or above is recommended. Some lifejacket manufacturers provide a spray cap as an additional attachment. The attachment fits like a hood when the lifejacket is inflated and minimises the chances of “internal drowning”. There was no evidence to suggest that the lifejacket used by the ST had such an attachment.

## 1.6 Additional information

1.6.1 The CCTV footage from Amal indicated that the ST disembarked by the pilot

ladder rigged on top of the shipside safety railing<sup>43</sup> of Amal that was near the bridge wing of Venus. The footage also revealed that the ST wore a lifejacket, carried a backpack as he crossed over the Amal's safety railing (see **figure 4a**) onto the pilot ladder. Thereafter the ST was seen descending the steps of the pilot ladder before stepping on top of the safety railing of Venus, eventually landing on the poop deck of Venus (see **figure 4b**).



Figure 4a – CCTV footage indicating the ST was half-way crossing over the shipside safety railing of Amal with one leg  
(Source: Company-A)

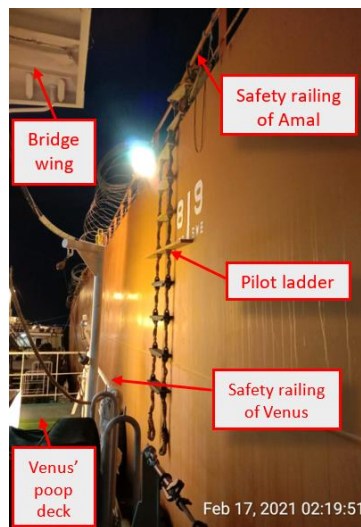


Figure 4b – Pilot ladder rigged at the time the ST disembarked from Amal  
(Source: Company-V)

<sup>43</sup> Company-A informed the investigation team that the pilot ladder was rigged at a non-designated location and rigging the pilot ladder on top of the safety railing was not permitted.

1.6.2 At this location, the spacing between the hull of both ships was estimated by the investigation team to be about 0.5m based on the width of the tyre fenders fixed on Venus. **Figure 5** shows the re-enactment of how the Amal's pilot ladder was rigged for the ST to disembark.

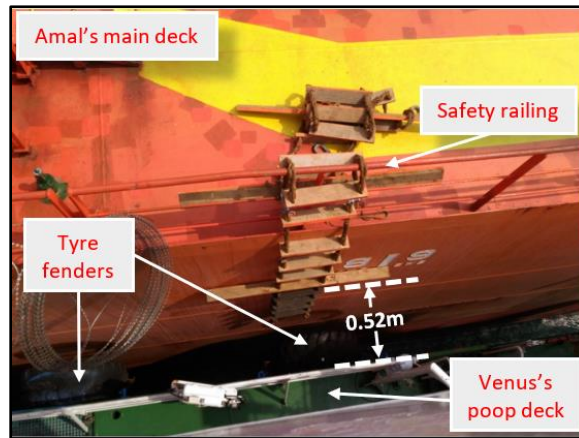


Figure 5 – View of Amal's pilot ladder from Venus – rigged for re-enactment –  
(Source and annotations - TSIB)

1.6.3 There was no CCTV camera installed onboard Venus. According to the ASD-V, he did not witness the ST's fall into the water. Prior to the fall, the ST was last seen standing on the pilot ladder (see **figure 6**) with his head below the main deck level.

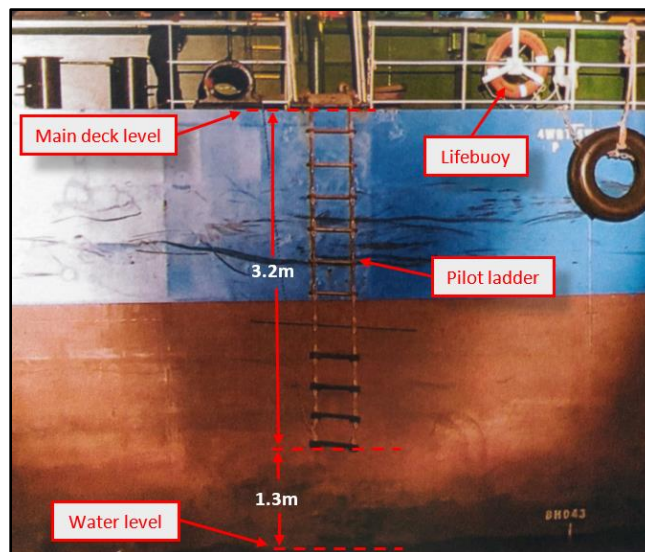


Figure 6 – View of port side pilot ladder rigged for disembarkation  
- annotated by TSIB  
(Source: PCG)

- 1.6.4 The disembarkation of the ST from Amal to Venus and further to Y90 was not pre-planned. Neither the Master-A nor the Master-V were aware of this arrangement for the ST to disembark to Y90 via Venus.
- 1.6.5 According to the recollection of the ASD-A and OS-A, the ST's intention to disembark via Venus was because of its lower freeboard and he was in a hurry as Y90 had been waiting for him. The CO-V also recalled being informed by the ST that it would be easier for him to disembark onto Venus and then to Y90. Neither the CO-V nor the JDO and the other crew of Amal objected to the request of the ST. The ASD-A and OS-A also recalled that the ST was in a jovial mood at the time of disembarkation.
- 1.6.6 The backpack carried by the ST was retrieved by the PCG from Y90. The contents were working tools and personal belongings (see **figure 7**). The bag and its contents together weighed<sup>44</sup> about 8kg.

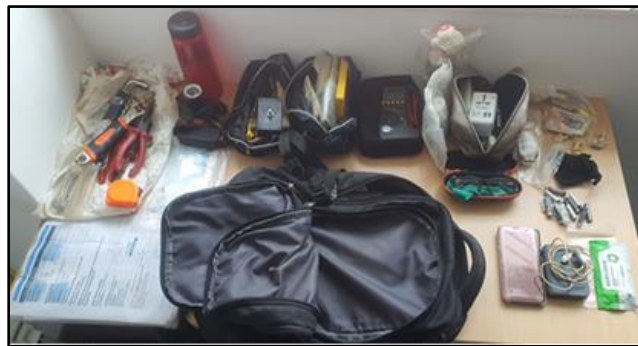


Figure 7 - The tools and personal belongings inside the backpack  
(Source: PCG)

- 1.6.7 The launch boat for the ST was arranged by the local agent of Amal in Singapore. The same agent had also arranged for the launch boat to transfer the bunker surveyor.
- 1.6.8 The bunker surveyor, a 30 years old Singapore national, had been working as a bunker surveyor in the Port of Singapore since 2014. The bunker surveyor, who is a trained first aider and kayaking instructor, did not know the ST prior to the occurrence. The bunker surveyor informed the investigation team that during the rescue effort, he gathered from the ST that the ST was a non-swimmer<sup>45</sup>. The bunker surveyor added that he was constantly calming and

<sup>44</sup> Weighed by PCG at their premises. The crew of Amal also recalled the ST informing them that the bag was not heavy when they offered to lower the bag with a rope.

<sup>45</sup> The investigation team also obtained confirmation from the NOK that the ST was a non-swimmer.

motivating the ST to stay awake and assuring him that help was on the way.

1.6.9 On being asked how the bunker surveyor would have boarded Amal for the job, the bunker surveyor responded that he would board Amal directly using its combination ladder.

## 1.7 **The safety management system (SMS) procedures**

1.7.1 Company-V's guidelines for persons<sup>46</sup> embarking and disembarking from its bunker tankers at anchorage, being exposed to the risk of falling into water, requires lifejacket to be worn and the means to rescue, such as lifebuoy, to be available for immediate use. Persons disembarking by pilot ladder are required to maintain 3-point contact<sup>47</sup>. In addition, a ship's crew is required to be at the disembarkation point to supervise the disembarkation.

1.7.2 Company-V's SMS requires the safety officer (in this case the CO-V) to identify potential hazards with deck operations and advise the Master accordingly. Upon encountering a non-compliance, the safety officer is required to investigate and apply corrective actions agreed by the Master.

1.7.3 Company-A's SMS requires the officer of the watch to ensure that the pilot ladder is secured to strong points on deck with each ladder step resting firmly against shipside, and to ensure proper illumination, clear communication established with bridge and the pilot ladder to be cleared of any discharges over shipside.

1.7.4 The SMS does not permit pilot ladder to be rigged at any non-designated embarkation/disembarkation points. On the day of the occurrence, the location where the pilot ladder that had been rigged by Amal's crew was at a non-designated location. The investigation team noted that Amal's crew rigged the pilot ladder on the safety railing at the CO-V's suggestion, to facilitate the ST's disembarkation from Amal onto Venus.

1.7.5 Amal's records of familiarisation training on the SMS indicated that all the crew had completed this training within 30 days<sup>48</sup> of joining Amal.

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<sup>46</sup> Such persons included, but not limited to ship's crew, harbour pilot, boarding officer, marine surveyor, marine superintendent, repair crew, shore staff and other service personnel who board the ship at anchorage.

<sup>47</sup> When embarking or disembarking from the pilot ladder, it is the basic rule to always maintain contact with one hand and two feet, or two hands and one foot, to minimise the risk of slip and fall.

<sup>48</sup> The JDO did it in July 2020, the Bosun and ASD-2 had completed theirs in November 2020.

## 1.8 **Safe transfer requirements**

- 1.8.1 The IMO Resolution 1045(27)<sup>49</sup> provides recommendations on pilot transfer arrangements relating to pilot ladder, accommodation ladder used in conjunction with pilot ladder, access to deck, etc.
- 1.8.2 The Resolution recommends that means should be provided to ensure safe, convenient and unobstructed passage for any persons disembarking from the ship.
- 1.8.3 The Port Marine Circular (PMC) no. 34 of 2020<sup>50</sup> issued on 7 August 2020 by the MPA provides guidelines for safe transfers of persons between vessels at anchorages in the Port of Singapore. Among others, the Circular highlights that all parties involved in the transfer should keep good situational awareness, exercise extreme caution and be made aware of a risk assessment of the impending transfer operation when conducting the transfer. Appropriate PPE is to be worn including a working SOLAS type-approved lifejacket or a lifejacket meeting ISO 12402 - performance level 100<sup>51</sup>, or higher.
- 1.8.4 The Circular also highlights that persons embarking or disembarking a ship at anchorage should always maintain 3-point contact when embarking or disembarking.
- 1.8.5 There was no evidence of any discussions relating to a risk assessment being conducted onboard either Amal or Venus prior to the ST's disembarkation from the respective ships.

## 1.9 **Autopsy report and findings**

- 1.9.1 The autopsy report issued by the Health Sciences Authority of Singapore (HSA) on 17 February 2021 indicated that the cause of death was drowning.
- 1.9.2 The toxicological report issued by the HSA indicated that the deceased's body had been detected with the following drugs (information in brackets obtained

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<sup>49</sup> A.889(21) which was revoked by IMO Resolution 1045(27) adopted on 30 November 2011.

<sup>50</sup> This Circular is addressed to the harbour craft community and shipping community. The Circular applied to Amal, Venus and Y90. Requirements of this Circular were also applicable to the ST who was involved in a transfer.

<sup>51</sup> The port authority clarified on the rationale of recommending performance level 100 - the minimum performance standard required for a person performing transfer between vessels at anchorages in the Port of Singapore where conditions are, protected waters near shore, where the immediate response/rescue is available. The anchorages within the Singapore port waters are considered as protected waters, for example, the Eastern Special Purpose Alpha anchorage.

from the HSA) –

- Amlodipine (anti-hypertensive)
- Bisoprolol (used to treat heart conditions)
- Metformin (used to lower blood glucose levels)
- Vildagliptin (used to lower blood glucose levels)

1.9.3 According to the HSA, a person with ischaemic heart disease may suffer from cardiac arrhythmias which can cause dizziness. A person with diabetes mellitus may suffer from hypoglycaemia. Low blood glucose levels can also cause dizziness if the glycaemic control is not optimal. The HSA's report also indicated the possibility of the underlying medical conditions of the deceased to cause dizziness.

## 1.10 **Environmental condition**

1.10.1 At the time of occurrence, the logbooks on Amal and Venus indicated that there was north-easterly gentle breeze at the speed of about 7-10kts (Beaufort scale, force 3), a south-westerly current at a rate of about 0.3kt, the sea wave / swell height was less than 2m and the visibility was more than eight nautical miles with cloudy sky.

1.10.2 Although the accident occurred during hours of darkness, based on the information obtained, the ambient lighting at the disembarkation locations on both vessels was sufficient and illuminated by the deck lights.

## 2 ANALYSIS

### 2.1 The likely cause of the fall

2.1.1 The ST's death was the result of drowning, as indicated in the autopsy report. When the ST was in the water, he was conscious and subsequently became unconscious by the time he was recovered. At the time of the occurrence, neither the ASD-V nor the skipper and bunker survey onboard Y90 witnessed how the ST fell into the water from the pilot ladder. Without witness account or other evidence (such as CCTV recording), the investigation team analysed the likely cause of the fall based on the available information. The probability of the fall could be from one or both of the following factors:

- a. Health condition
- b. Losing balance

#### Health condition

2.1.2 The ST had been onboard Amal for about one hour and fifteen minutes (2110H-2227H) between the time of boarding and disembarkation. There was no feedback by him to the crew of Amal of being unwell. He was also observed to be in a jovial mood at the time of disembarkation from Amal. After he had crossed over to Venus, the ST assisted the ASD-V in rigging the pilot ladder, and there was also no complaint of him being unwell onboard Venus and prior to the disembarkation.

2.1.3 However, as the ST had a history of heart disease, albeit consuming medicines regularly to control the heart disease and blood glucose levels, the probability of these underlying medical conditions to cause the ST to feel dizzy while descending the pilot ladder could not be completely ruled out. Similarly, it could not be established whether in assisting the ASD-V to rig the pilot ladder had caused an increase in strenuous activity on the ST which may have affected his existing heart condition.

#### Losing balance

2.1.4 The ST was last seen standing on the pilot ladder with his head below the main deck level. It appears that at this position the ST was half-way down the ladder. From this position, in order to reach the last step of the pilot ladder, the ST



would have to descend about 1.5m<sup>52</sup>. The investigation team considered that the following could have resulted in the ST losing balance during the descent:

- not maintaining three-point contact in the process of descending; or
- rushed descent causing swaying of the pilot ladder and missing a step in the process; or
- inaccurate estimation of the steps remaining as nearing the end of the pilot ladder; or
- distracted by Y90's presence in the vicinity; or
- brief loss of situational awareness.

## 2.2 The PFD in use

2.2.1 Witnesses' accounts confirmed that the PFD (lifejacket) worn by the ST had inflated when the ST fell into water. The PFD was removed during the process of lifting the ST from the water and could not be recovered and hence the actual model of the PFD in use, could not be verified. However, based on the picture shared by the NOK there was a likelihood that the model of PFD was from a Japanese manufacturer and compliant with the Japanese regulations (see footnote 38).

2.2.2 As indicated in paragraph 1.5.2, the investigation team opined that the buoyancy of the PFD used by the ST may have been equivalent to the performance level 100 of the international standards (ISO 12402), i.e. suitable to be used in sheltered or calm waters (see table 3).

2.2.3 The ST was a freelance worker and procured his own PFD as a part of his PPE. The model of the PFD used by the ST was not suitable for non-swimmers as stated in the safety instructions of the User Manual, which was in Japanese, as confirmed by the maker.

2.2.4 The ST was carrying a backpack which weighed about 8kg when he fell into the water. Though the backpack did not obstruct the inflation of the lifejacket, the additional weight could have affected the ST's ability to stay afloat.

2.2.5 It is important to note that backpacks or bags, which may prevent a person from staying afloat or even obstruct the proper inflation of the lifejacket, should be lowered down / picked up using a rope, instead of being carried when embarking or disembarking from vessels on to the launch boats. Although

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<sup>52</sup> The freeboard (4.5m) minus the height of the pilot ladder above water (1.3m) and the body height of ST (1.8m).

there are lifejackets with higher performance level of buoyancy (275N) meant for carrying heavier objects, the user should also be mindful that the inflation of the lifejacket may be compromised by carrying a backpack or bag.

2.2.6 Thus, in determining the appropriate type of lifejackets to be used, it is important to know the limitations, level of safety protection and the operating environment of such lifesaving equipment taking into consideration the maker's safety precautions.

## 2.3 **Rescue efforts onboard Y90**

2.3.1 After the ST fell into the water, the bunker surveyor immediately rendered his assistance by reaching out to the ST and trying to pull the ST out of the water with the help of the skipper but was unsuccessful. Subsequently, the bunker surveyor entered the water and attempted to push the ST upwards while the skipper pulled the ST up from deck, but this attempt was also unsuccessful.

2.3.2 While waiting for rescue to arrive, the bunker surveyor remained in the water and tried to keep the ST's head above the water. Despite these efforts, swells were seen flushing over the ST's face and the ST lost consciousness after a while.

2.3.3 In a MOB situation, deploying a lifebuoy is an important part of the rescue efforts to help the casualty to stay afloat. The investigation team noted that the skipper's immediate reaction was to bring the ST out of the water. However, after two failed attempts to bring the ST out of the water and while waiting for rescue to arrive, a lifebuoy could have been deployed from Y90. While there is no certainty that the deployment of a lifebuoy could have averted the consequences, it is important to note that early deployment of a lifebuoy can increase the chances of survival for a conscious person by holding on to the lifebuoy.

## 2.4 **The transfer from Amal to Venus**

2.4.1 At the time of boarding Amal, the ST embarked using the combination ladder as the ship's freeboard was more than 9m. During the period he was onboard, the Amal's draft did not change significantly. After completion of servicing the OWS, it is likely that the ST would need to disembark using the combination ladder again. However, when the crew of Amal brought the ST to the starboard side for disembarkation, the ST brought the two crew to the port side and

started to seek permission from the CO-V to disembark via Venus.

- 2.4.2 The investigation team could not ascertain the reason for the ST's decision to disembark via Venus. The breaking of the descent into two phases of lower height through Venus, as compared to disembarking from the combination ladder and then on to the pilot ladder in one go, could have been the main consideration.
- 2.4.3 The ST's transfer from Amal to Venus involved the shifting of the pilot ladder to a non-designated location and landing on the safety railing of Venus which was not a safe practice onboard. The ST's intention to transfer to Venus and then to disembark from Venus to Y90 was not objected by the crew of Amal and Venus despite the means of transfer from Amal to Venus being unsafe.
- 2.4.4 In this case, it was fortuitous that nothing untoward happened during the transfer from Amal to Venus. Notwithstanding the cause of the ST's fall into the water, the safe means of disembarkation for the ST should have been via the combination ladder at the starboard side of Amal and intervention from both the JDO and CO-V could have ensured proper means were used by the ST to disembark from Amal.

## 2.5 **Implementing SMS procedures onboard**

- 2.5.1 The SMS procedures of Company-V provided guidelines for shore personnel disembarking from its bunker tanker at anchorage. These included maintaining a 3-point contact when using the pilot ladder as well as having a ship's crew to be on site to supervise the disembarkation. However, there was no evidence to suggest that the ASD-V highlighted these requirements to the ST before the latter attempted to disembark. The ASD-V was the only person from Venus overseeing the disembarkation. When the ASD-V was on site, he was assisting the ST in preparing the three boxes belonging to the ST to be lowered to Y90. As such there was no supervision of the ST's disembarkation till the ST had safely transferred over to Y90.
- 2.5.2 It is further noted that when the ST fell into water there was no lifebuoy deployed by the crew of Venus, contrary to the actions to be taken as per the SMS, when witnessing a MOB situation. The crew of Venus assumed that someone from Y90 would offer the assistance to rescue the ST from the water. It would have been desirable for the crew of Venus to have released a lifebuoy towards the ST, regardless of Y90's presence in the vicinity, as doing so, could

have also provided some assurance to the ST to consider holding on to in addition to relying on the lifejacket.

- 2.5.3 The conversation between the CO-V and ST was not made known to any person onboard Venus and the crew of Venus did not raise any concerns when the ST came onboard from Amal. This has resulted in only the ASD-V assisting the ST's disembarkation and transferring the three boxes from Venus to Y90. As such, the ASD-V had to accept the ST's assistance to rig the pilot ladder. It must be recognised that rigging the pilot ladder is a strenuous task and may result in injuries if a person is not trained.
- 2.5.4 All the above seems to suggest that there was a general lack of safety awareness onboard Venus for the safety of personnel.
- 2.5.5 Onboard Amal, though the familiarisation training on the SMS was carried out for all crew as per the Company-A's procedures, the pilot ladder was rigged at a non-designated location by the crew with the permission of the duty officer. This was a deviation from the Company's requirements which clearly stated for the pilot ladder to be rigged only at a designated location, to ensure the safety of persons during embarkation/disembarkation.
- 2.5.6 It is vital for the ship's crew to understand the reasons for established safety procedures within the SMS and ensure compliance for the safety of persons.

## 2.6 **Incidental finding**

- 2.6.1 The port authority recommends via PMC no. 34 of 2020 that persons intending to transfer, to wear appropriate PPE, including a working SOLAS type-approved lifejacket or a lifejacket meeting ISO 12402 – performance level 100, or higher. In this case, it appears that the lifejacket used by the ST met the specified minimum performance level 100. However, this PFD did not prevent the swells from flushing repeatedly over the ST's face, resulting in the ST swallowing water despite the bunker surveyor's efforts in trying to keep the ST's head above water.
- 2.6.2 PFD of performance level 100 is generally for calm waters (e.g. inland waters) or sheltered waters (e.g. within the breakwater). The anchorages within the port waters are considered as protected waters by the port authority. However, sea conditions can be rougher with higher swells and more dynamic further away from the shoreline, especially when there are higher traffic movements.

Thus, PFD with performance level 100 may not be sufficient for the safe transfers at such anchorages. Hence, it is desirable to review the minimum performance level of PFD to be used for transfers at anchorages.

### 3 CONCLUSIONS

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

- 3.1 The fall of the ST from the pilot ladder into water could be due to losing balance or dizziness during the descent. With his underlying medical conditions, the probability of him feeling dizzy after assisting with the rigging of the pilot ladder onboard Venus to facilitate his disembarkation could not be ruled out.
- 3.2 The lifejacket worn by the ST was a PFD likely equivalent to the performance level 100 of the international standards (ISO 12402) which is suitable to be used in sheltered or calm waters. The lifejacket did not prevent the swells (less than 2m) flushing over the ST's face which resulted in sea water entering the ST's airway and causing him to drown.
- 3.3 It is commendable that the bunker surveyor and skipper of Y90 rendered their immediate assistance to recover the ST from the water, however, the lifebuoy from Y90 should have been deployed while waiting for assistance.
- 3.4 The ST's intention to go over from Amal to Venus, which involved rigging the pilot ladder at a non-designated location onboard Amal and landing on the safety railing of Venus, was not in accordance with safe practices and was not objected by the crew onboard Amal and Venus.
- 3.5 The rigging of the pilot ladder at a non-designated location to facilitate the ST's transfer from Amal to Venus was a deviation from Company-A's SMS procedures.
- 3.6 The ASD-V, who received the ST from Amal, did not inform the other crew member of the presence of the ST. As such, the ASD-V had to rig the pilot ladder for the ST to disembark and to prepare transferring of the three boxes to Y90 alone. This resulted in the ASD-V receiving the assistance of the ST in rigging the pilot ladder, a strenuous job.
- 3.7 The ASD-V was busy preparing the three boxes to be lowered when the ST was descending the pilot ladder, hence there was no supervision to ensure

that the ST had disembarked safely on to Y90. There was also no lifebuoy deployed from Venus when the ST fell into water.

- 3.8 There are PFDs of various performance levels meant for different environmental conditions. While the anchorages are considered as protected waters by the port authority, the sea conditions could be rough with higher swells. The minimum performance level of the PFDs to be used for transfers of personnel at anchorages should be reviewed.

## 4 SAFETY ACTIONS

*Arising from discussions with the investigation team, the organisation has taken the following safety action.*

- 4.1 Company-A - The Mideast Ship Management Limited JLT (the ISM Managers of Amal):
- (a) After the occurrence, Company-A sent an email to its fleet of ships highlighting the compliance of the SMS procedures - "Safe access to vessel", reminded all masters of ships that pilot ladders shall never be rigged on ship's safety railing and only at designated location onboard ship.
  - (b) To enhance the awareness of safe transfers to its crew, Company-A participates in Shell – "Maritime Partners of Safety" program through learning engagement tool, a topic of "Personnel Transfer" training module is included in the crew training matrix for all its fleet of vessels. The training needs to be completed in January, May and September every year.
- 4.2 Company-V - The Straits Bunkering Private Limited (the ISM Managers of Venus):
- (a) Company-V carried out an investigation internally after the occurrence and reviewed the SMS procedures relating to personnel embarkation and disembarkation. A training manual for the safe embarking and disembarking of vessels was disseminated to its fleet of bunker tankers.
  - (b) A safe boarding of a vessel circular was sent to its fleet of bunker tankers for guidance.
  - (c) An unannounced man overboard drill was conducted on one of the bunker tankers by the Designated Person Ashore of Company-V to ensure its crew onboard familiar with the company's SMS procedures relating to man overboard emergency situation.



## 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.*

For the ISM Manager of Venus:

- 5.1 To ensure its safety management system procedures are effectively implemented onboard its fleet of ships, particularly for personnel disembarkation at anchorage. [TSIB-RM-2021-027]

For the operator of launch boat Y90:

- 5.2 To remind the skippers of its launch boats to deploy lifebuoy immediately in a man overboard situation. [TSIB-RM-2021-028]

For the authority of the Port of Singapore:

- 5.3 To review the minimum performance level of personal floatation device to be used for transfers of personnel at anchorages to provide better guidance to the community. [TSIB-RM-2021-029]

**- End of Report -**