Report of Investigation into the sinking of Hong Kong registered supply vessel Hai Yang Shi You 699 in approximately position 22° 06.626'N 114° 16.286'E, about 3.3 nautical miles south of Po Toi Island, Hong Kong at 1700 on 25 July 2012

The Hong Kong Special Administrative Region
Marine Department
Marine Accident Investigation Section

01 Sept.2014

Purpose of Investigation

This incident is investigated in accordance with the Code of the International Standards and Recommended Practices for a Safety Investigation into a Marine Casualty or Marine Incident (the Casualty Investigation Code) adopted by IMO Resolution MSC 255(84).

The purpose of this investigation conducted by the Marine Accident Investigation and Shipping Security Policy Branch (MAISSPB) of Marine Department, in pursuant to the Merchant Shipping Ordinance Cap. 281, the Shipping and Port Control Ordinance (Cap. 313), or the Merchant Shipping (Local Vessels) Ordinance (Cap. 548), as appropriate, is to determine the circumstances and the causes of the incident with the aim of improving the safety of life at sea and avoiding similar incident in future.

The conclusions drawn in this report aim to identify the different factors contributing to the incident. They are not intended to apportion blame or liability towards any particular organization or individual except so far as necessary to achieve the said purpose.

The MAISSPB has no involvement in any prosecution or disciplinary action that may be taken by the Marine Department resulting from this incident.

Table of Contents

1. Summary

1.1 At 1330 local time (UTC + 8) on 23 July 2012, the Hong Kong registered supply boat/tug *Hai Yang Shi You 699 (HYSY 699)* departed the 9EZ anchorage of Pearl River Estuary for Da Ya Bay to carry out standby duty for *Hai Yang Shi You 226*. On the passage, *HYSY 699* was affected by typhoon Vicente, on 24 July she listed severely to starboard side in position between the Ninepin Group（果洲群島）and Waglan Island（橫瀾島）. The master ordered abandon ship and her 14 crew members were rescued by *Nan Hai Jiu 111*. At 1700 on 25 July, during *HYSY 699* being towed by *Nan Hai Jiu 116*, she sank at No. 2 precautionary area of Traffic Separation Scheme of Dan Gan Shui Dao, in approximately position 22^0 06.626'N 114^0 16.286'E**,** about 3.3 nm south of Po Toi Island, Hong Kong. Neither personnel injury nor oil pollution was reported. *HYSY 699* was finally salvaged successfully by Guangzhou Salvage Bureau on 16 October 2012.

1.2 The investigation revealed the following probable root causes of the sinking of *HYSY 699*:

i. Prior to the approach of the severe typhoon Vicente, the vessel had not done the typhoon preparation work properly;

ii. Under the rough weather condition, numerous equipment malfunctions caused the loss of main propulsion power and further led to the ship listing severely to starboard; and

iii. Prior to the towing operation, no action taken to regain the ship stability thus the rescue operation was carried out inefficiently.

2. Description of the vessel

Ship name:	Hai Yang Shi You 699
IMO No.:	9193678
Flag:	Hong Kong
Port of Registry:	Hong Kong
Classification Society:	Det Norske Veritas
Ship Type:	Supply Vessel/Tug
Gross Tonnage:	2264
Net Tonnage:	728
Length overall:	63.480 metres
Breadth (molded):	16.000 metres
Depth (molded):	7.600 metres
Freeboard tropical/summer:	0.939metres /1.075 metres
Full loaded draft:	6.5 metres
Main Engine:	WARTSILA 12V32, 2000, 2 sets
Engine Power:	Total 11040 kW
Ship Builder:	ATLANTIS SHIPYARD PTE, SINGAPORE
Year of Built:	1998
Ship owner:	China Offshore Oil Engineering Company (Hong Kong)
Ship manager:	China Offshore Oil Engineering Company (COOEC)

Fig.1 – Hai Yang Shi You 699

3. Sources of Evidence

3.1 Information from COOEC, the operation company of *HYSY 699*.

3.2 Salvage report from the South China Sea Salvage Bureau.

3.3 Investigation report provided by Maritime Safety Administration, Guangdong.

4. Outline of Events

4.1 On 21 July 2012, the Hong Kong registered supply vessel "*Hai Yang Shi You 699"* (*HYSY 699*) was informed by the heavy lift vessel *Blue Whale* (藍鯨號) that they had to anchor at north of Dan Gan islands to take shelter from typhoon Vicente. *HYSY 699* received warning messages through NAVTEX that typhoon Vicente was at the south-southeast of *HYSY 699*, with moderate wind force and moving in westerly direction. The master of *HYSY 699* ordered his officers and crew to follow typhoon procedure. The bosun arranged crew members to secure all equipment and to check the condition of all weather-tight doors, ventilators, and emergency escape trunk. All were found in normal condition. Apart from the engine room ventilators which were left opened, all doors and ventilators were closed.

4.2 On 22 July 2012, the master of *HYSY 699* sent the second officer and the third engineer ashore at Chiwan, Shekou to procure food provisions, collect food money for the crew and machinery spare parts from the company.

4.3 On 23 July 2012, *HYSY 699* received weather facsimile showing Vicente changed its direction of movement to the northwest and wind force not clear. At 1230 on the same date, *HYSY 699* received a sailing instruction from the ship management company, the China Offshore Oil Engineering Company (COOEC), to escort the non-propelled barge *Hai Yang Shi You 226* (*HYSY 226*) at Da Ya Bay, for worrying that she might drag anchors due to the typhoon.

4.4 Before sailing, the master collected weather information from the internet and found Vicente's wind force of about 10 on the Beaufort wind scale (force 10) and moving in the northwesterly direction. He considered that Vicente would not have much effect on safe navigation of his ship. His vessel would be gradually moving away from Vicente. Besides, the destination of the vessel in Da Ya Bay would provide a better shelter area.

4.5 At 1330 on 23 July 2012, *HYSY 699* heaved up anchor and sailed to Da Ya Bay. The second officer and the third engineer had not yet returned to the vessel. The chief officer, the third officer and one able-bodied seaman were on the bridge. The master remained on the bridge at all times. The plan was first to proceed to Dan Gan channel Precautionary Area No.1, thence to change course to 020^{o} in order to pass through waters between Da San Men Dao and San Liang Shan before entering into Da Ya Bay.

4.6 When the voyage began, the weather was overcast with good visibility. The wind was from northeasterly at force 7 to 8. The sea state was moderate swells. The vessel's speed was about six knots. The fore and aft draft of the ship were 6.6 m and 5.7 m respectively. According to the master, a trim of 1 m by head would be the best stability condition for the vessel. After sailing, the bosun conducted inspection of the whole vessel and found normal.

Fig.2 – The AIS track of *HYSY 699* after sailing on July 23 2012

4.7 At 1500, *HYSY 699* was in position southwest of the Dan Gan Channel Traffic Separation Scheme (TSS) Precautionary Area No. 1 (Figure 2) and the wind was increased to force 10. Affected by wind and wave, the ship speed of *HYSY 699* was gradually slowed down from six knots to two knots. She informed *HYSY 226* of her difficulty in sailing. After that, she maintained her courses in the range of 015^{o} to 030^{o} and moved very slowly.

4.8 At 1800, *HYSY 699* was in position about 3.4 nm away the Precautionary Area No. 1. The ship management company informed the master that the wind force at centre of the typhoon increased to force 13. The master checked the vessel position and found that she was just over 70 nm from the typhoon centre. At about that time, it was reported that the rubber seal of a porthole in a cabin on the starboard side was cracked and water was leaking into the cabin slightly. They tried to rectify the problem but it was in vain.

4.9 At 2030, wind was blowing from northeasterly at force 10 and the vessel rolled about 20 degree either way. During routine inspection, a duty motorman found

bilge water inside the cement compartment increasing. After inspection by the chief engineer and the fourth engineer, they found the access hatch cover of emergency escape trunk in way of the cement compartment was flushed open by wave and resulted in about eight tons of seawater flooding inside of the compartment. Due to strong wind and waves at sea, the crew was unable to attend and close the access hatch cover. The chief engineer immediately reported to the master and requested to turn the ship around to keep her port side leeward. The master turned around the ship and she followed the waves at sea. Then the crew closed the hatch cover and the vessel resumed the voyage thereafter.

Fig.3 – the escape trunk from the cement compartment to the main deck at port side midship

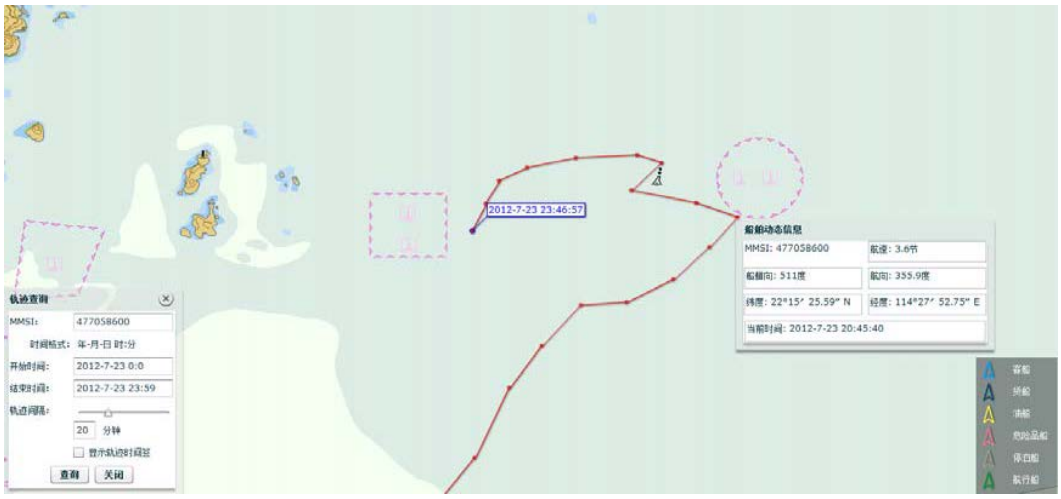

Fig.4 –AIS track of *HYSY 699* showing change in course at 2045 hours.

4.10 At 2218, *HYSY 699* was in the position east of Ninepin Group. Wind was easterly with force 11. The ship's heading was about 040^{o} and the vessel rolled about 20 degrees either way. The second engineer found that the No.1 main

engine sea water cooling pump tripped. When the standby No.2 main engine sea water cooling pump was started, the No.3 main engine sea water cooling pump was found leaking. The chief engineer reported to the master and requested to anchor the vessel for repairing of the pump. The master dropped the starboard anchor there with eight shackles of anchor chain paid out. The anchored position was 3 nm east of East Ninepin Island. The master reported the situation to the ship management company.

4.11 The ship management company then requested *Nan Hai Jiu 111* (*NHJ 111*) to proceed to *HYSY 226* for escorting her and *HYSY 699* was instructed to find an anchorage and take shelter of the typhoon after repair. As soon as the *HYSY 699* anchored, only the No.2 main engine sea water pump was running to supply cooling water to both main engines. Therefore, the main engines had to run under reduced speed and the pitch of both propellers was adjusted to only 10%. The vessel dragged her anchor and drifted in a southwesterly direction.

4.12 On 24 July 2012 at 0010, the repair of sea water pump was completed and the main engines operations resumed normal. At that time, it was found that a weather-tight door at aft of accommodation on the first deck was opened and sea water washed on the main deck entered into crew accommodation through the door. The weather-tight door was pushed opened by the oil drums, which had been broken loose from their securing position near the towing winch. The drums rolled and impacted on the door and as a result, the weather-tight door was opened and some of the oil drums distorted. The chief engineer reported to the master that small amount of water entered into the engine room through the engine room entrance door inside crew accommodation. The master requested all off-duty crew members to mop up the water inside accommodation and engine room and to remove the oil drums.

Fig.5 – the weather-tight door on the first accommodation deck facing aft (left: taken after salvage, right: taken by the crew deployed from *Blue Whale* after *HYSY 699* abandon ship).

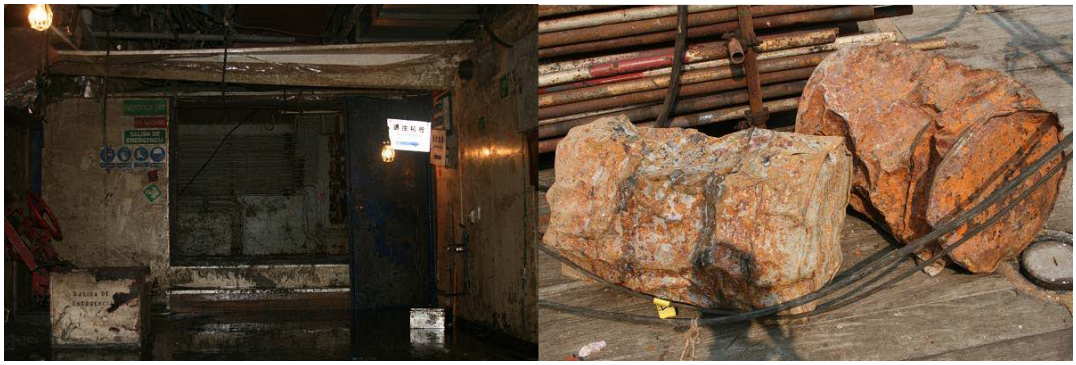

Fig.6 – left: the engine room entry door in accommodation / right: deformed oil drums after salvage.

4.13 At 0040, the master found his vessel dragging anchor and moving south towards subsea cables. He tried to heave up the anchor but it was in vain due to strong wind and rough sea. So he increased the speed of the main engines and increased the propellers pitch from 40% to 60%. After the adjustment, the loading of the engines was too high. The pitch of the propellers was adjusted back to 40%. The master ordered to pay out to 11 shackles of anchor chain.

4.14 At 0143, the wind was easterly with force 11. Worrying that continual dragging of the ship's anchor would render it breaking the subsea cables. With the permission obtained from the ship management company, the anchor chain was slipped off at position about 2.3 nm southeast of Ninepin Group. After that, the main engines were running to maintain the vessel moving at slow speed with her starboard side against the wind and wave.

4.15 Later on, the master was reported that the access hatch cover for the emergency escape trunk in way of the cement compartment at midship port side was opened by wave again. He turned the ship around to head against the wind and wave so that the crew could close the hatch cover. As the access hatch cover was slightly deformed or with its seal deteriorated, the crew used a rope to secure the hatch cover in closed position from inside the compartment. The master was reported that about 10 tons of water entered into the engine room.

4.16 At 0300, the wind direction changed to southeasterly from easterly. At about 0400, water inside the accommodation and engine room was cleaned-up. The weather-tight door at aft was closed. However, the door was deformed in the incident and could not be closed tightly. From 0300 to 0600, the vessel was moving slowly against the wind.

4.17 At 0700, the second engineer reported that the high temperature alarm of the starboard main engine gearbox located behind the cement compartment sounded. After inspection, it was found that water temperature increased but the pressures of the fresh water and sea water were normal. The chief engineer suspected the sea water cooling pump intake filter was fouled. He reported it to the master and requested the master to stop both main engines for half hour in order to carry out inspection and repair of the seawater cooling pump for the gearboxes. The master considered the position of the vessel was in the vicinity of subsea cable and not suitable to anchor. After observation with the main engines stopped, the ship was rolling about 15 to 20 degrees either way, much less than that of more than 30 degrees at night. He considered it was acceptable to him and agreed to stop the main engines to let the vessel drifting at sea. At 0727, the master reported the condition of the ship to the ship management company. The latter immediately contacted the South China Sea Salvage Bureau requesting to deploy vessels to rescue *HYSY 699*.

Fig.7 – AIS trace indicated HYSY 699 stopped engines and drifting at 0723 on July 24.

4.18 At the same time, the ship listed to starboard, the master ordered to transfer fresh water from tanks No. 1.4 to No. 1.3, and requested the chief officer to put the mooring rope which was about 70 metres in length at bow into water in order to adjust the ship's heading and reduce the rolling of the vessel. This action was not effective as expected. The master recovered the rope. It was also found that another mooring rope had fallen into the sea from starboard side at the midship position and it was fouled by the port propeller.

Fig.8 – port propeller was found fouled by a mooring rope.

4.19 At 0820, *NHJ 111* in the Da Ya Bay received instruction from the South China Sea Salvage Bureau requesting her to proceed to rescue *HYSY 699*.

4.20 At 0904, *HYSY 699* No.1 generator tripped and the ship blacked out. At 0906, the chief engineer started the emergency generator to supply electrical power and arranged engineers to check the problem of No.1 generator. The master reported to the ship management company and confirmed that *NHJ 111* would arrive in about two hours.

4.21 At 0930 hours, the second engineer reported that the generator fuel oil service tank was filled with some seawater. It took more than an hour for the engineers to drain the sea water out of the tank. In this regard, the chief engineer ordered to use fuel oil from the main engine fuel oil service tank.

4.22 At 1055, *NHJ 111* arrived at the scene and found *HYSY 699's* starboard side facing the wind and listing heavily to starboard. At that time, wind was easterly at force 8 and wave height was about 4 m. The master of *HYSY 699* requested to start the towing after the towing plan was agreed.

4.23 At about 1055, *HYSY 699* lowered down the two inflatable liferafts on the port side. At about 1100, the master found the vessel rolling at an angle of about 30 degrees, with the rolling period slightly longer than that under normal condition. The master asked all crew to prepare for abandoning ship and requested the engine room crew to stop all repair work. After that, the master ordered the

bosun to open the manhole of the slurry tank on the port side to fill in seawater into the tank using fire hoses with water supplied by the emergency fire pump.

4.24 At 1109, *NHJ 111* tried to connect the lines to the bow of *HYSY 699* but it was not successful. At around 1115, ballasting of the port anchor chain compartment was stopped. At around 1200, the generator failed to start after several attempts.

4.25 At about 1220, the rolling periods of *HYSY 699* was getting longer and the vessel's trim by head increased. At 1223, the master decided to abandon ship after considered that the prevalent situation of the vessel would pose risk to his crew's safety. At 1245 hours, all the crews abandoned the ship and boarded on the two liferafts.

4.26 The liferaft with the master on board was damaged by sharp object of the ship side of *HYSY 699*. Then the crew transferred to the other liferaft. At about 1300, the second liferaft was also damaged and all the crew members were drifting near the damaged liferaft. At 1330, *NHJ 111* successfully rescued all 14 crew members of *HYSY 699*. There was no injury to the crew.

Fig.9 – HYSY 699 listed to starboard severely at time of abandon ship.

4.27 At 1620, *NHJ 111* made fast to *HYSY 699* and maintained towing of *HYSY 699* at a very slow speed just enough to hold her from drifting towards the shore. Between 1715 and 1748, *Hai Yang Shi You 698 (HYSY 698), Nan Hai Jiu 116 (NHJ 116)* and *Hai Yang Shi You 681 (HYSY 681)* arrived separately at the scene.

At 2210, *NHJ 116* attempted to tow *HYSY 699* from her port quarter. However, due to too strong swell at sea, she could not come close to *HYSY 699* after several attempts.

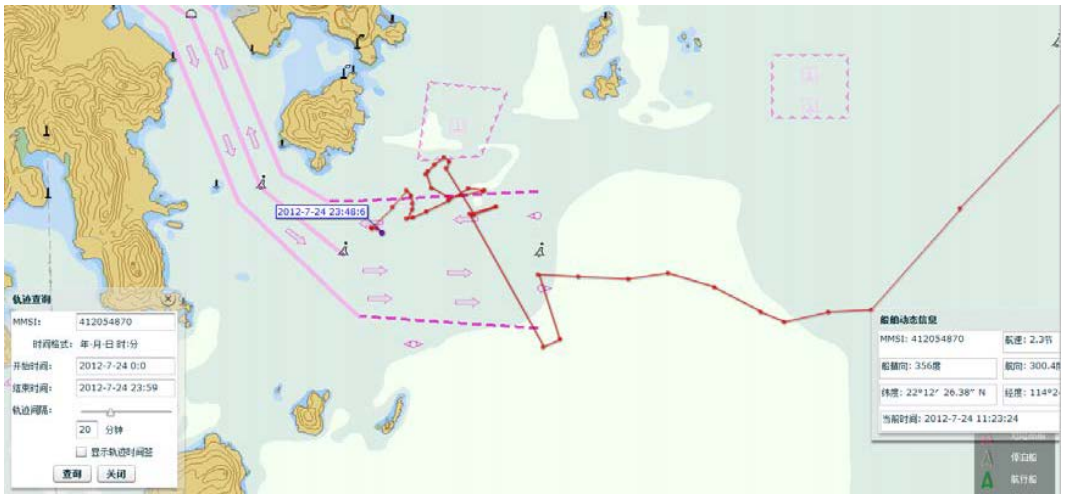

Fig.10 – Trace of Nan Hai Jiu 111 from AIS on July 24.

4.28 On 25 July 2012 at 0830, *NHJ 111* was towing *HYSY 699* in position approximately 0.9 nm southeast off the No. 1 buoy of Tathong Channel.

4.29 At 1130, the five crew members of *Blue Whale*, landed on board *HYSY 699* from a helicopter to make fast of the tow line from *NHJ 116* and check the condition of *HYSY 699*. They attempted to enter the engine room for inspection. However, due to water had accumulated to a depth of about 40 cm at the stairway of the first accommodation deck, and that the ship listed seriously to starboard as well as unknown conditions inside, they decided not to enter the engine room.

4.30 *COOEC* assessed the situation of the vessel based on information provided by the master of *HYSY 699* at the time of abandoning ship and the feedback from the crew of *Blue Whale* who boarded the vessel. It was agreed with South China Sea Salvage Bureau to have *NHJ 116* taking over the towing of *HYSY 699*.

4.31 At 1320, *NHJ 116* commenced towing of *HYSY 699* at a speed of 2 knots and the vessel was deemed stable. Then *NHJ 111* was casted off. At the same time, the emergency generator of *HYSY 699* was stopped. At commencement of the towage, *HYSY 699* was listing 20 degrees to the starboard. The master of *NHJ 116* increased gradually the towing speed to about four knots. During the towing passage, *HYSY 699* was escorted by *HYSY 681*, *HYSY 698* and *NHJ 111*.

Fig.11 – AIS track of *Nan Hai Jiu 116* on 25 July 2012.

4.32 At 1540, the crew on board *HYSY 699* requested to evacuate from the vessel when they found the ship listing to starboard increasing apparently and did not return to 15 degrees starboard. Immediately the master of *NHJ 116* reduced the towing speed back to two knots and reported the situation to the South China Sea Salvage Bureau. The latter instructed to continue monitoring the condition of *HYSY 699* and ordered *HYSY 681* and *HYSY 698* to come alongside the sides of *HYSY 699* in order to stabilize the vessel. But both of the vessels did not agree.

4.33 At 1600, the master of *NHJ 116* observed that *HYSY 699's* starboard listing worsened with a risk of capsize. He reported this to the Hong Kong Marine Department immediately.

4.34 At 1605, Hong Kong Marine Department instructed *NHJ 116* to alter course right south immediately to tow *HYSY 699* away from the navigable waters near to shore. At 1614, *NHJ 111* came alongside *HYSY 699* and picked up all the five crew members of *Blue Whale*. At 1620, *NHJ 116* increased the towing speed to five knots. At 1630, the starboard deck railing of *HYSY 699* had been immerged in the water and the risks of the vessel sinking persisted. The master of *NHJ 116* increased the towing speed so as to clear her from the navigable waters near to the shore. At 1650, *HYSY 699* started sinking. At 1655, *NHJ 116* cut off the towline and moved away from *HYSY 699* and stood by in the vicinity. At 1700, *HYSY 699* sank in position approximately 22^0 06.626'N 114^0 16.286'E, at southeast of No. 2 precautionary area of the TSS in Dan Gan channel.

Fig.12 – the condition of HYSY 699 when capsized and sank.

4.35 On October 16 2012, *HYSY 699* was salvaged successfully by Guangzhou Salvage Bureau.

5. Analysis of the information

Manning of the vessel

5.1 The vessel was manned with 16 Chinese crew, including the master, the chief officer, the second officer, the third officer, the chief engineer, the second engineer, the third engineer, the fourth engineer, the cook, five deck sailors and two motormen. The second officer and the third engineer went ashore at Shenzhen on 22 July 2012 and did not return to the ship prior to sailing. Therefore, the actual number of crew on board the vessel at the time of the accident was 14. All of them held valid certificates of competency. They are chartered by the China Offshore Oil Engineering Company (COOEC) from the China Oilfield Services Limited (COSL).

5.2 The master held a Class 1 Master Certificate since 2008. He was first employed as master on *HYSY 699* in May 2010. It was his second contract as a master on board *HYSY 699*. The chief officer joined the COSL since graduated in 2003. He held a Chief Officer Certificate since 2009. The third officer graduated in 2009 and joined the COSL in June 2010. He held a Third Officer Certificate and was first employed as the third officer on board *HYSY 699* since April 2012.

5.3 The chief engineer obtained his Chief Engineer Certificate and had acted as a chief engineer on board ships since 1992. He first joined *HYSY 699* as the chief engineer on 25 April 2012. The second engineer held a Second Engineer Certificate since 1989 and worked as the second engineer on board company's vessels. He first joined *HYSY 699* as the second engineer on 5 April 2012. The fourth engineer joined the COSL in December 2008. He held a Third Engineer Certificate and joined *HYSY 699* as the fourth engineer on 8 June 2012.

5.4 The Minimum Safe Manning Certificate of the vessel required officers onboard were: 1 master, 1 chief officer, 2 junior deck officers, 1 chief engineer, 1 first engineer and 1 junior engineer. Therefore at the time of the accident, the vessel was shorted of 1 junior deck officer, upon departure at 1330 on 23 July 2012. The vessel was abandoned at 1223 on 24 July 2012. It was considered that the shortage of one junior deck officer was not contributed to the cause of the accident.

Ship management company

5.5 The ship management company of the *HYSY 699* was the China Offshore Oil Engineering Company (COOEC). It held a Document of Compliance (DOC)

issued by the Maritime Safety Administration (MSA) of China on 13 September 2010, valid until 22 October 2015. The annual DOC audit was carried out on 6 January 2012.

5.6 *HYSY 699* held a Safety Management Certificate (SMC) issued by the Det Norske Veritas (DNV) on 25 July 2008, valid until 25 July 2013. The intermediate SMC audit was carried out on 2 June 2011.

Weather condition

5.7 From 23 July 2012 when *HYSY 699* departed the 9EZ anchorage in Pearl River estuary for Da Ya Bay until 25 July 2013 when she sank in the vicinity of No.2 precautionary area near the TSS of Dangan Shuidao, the Pearl River estuary was affected by typhoon Vicente.

5.8 Tropical depression Vicente passed the Luzon Strait and entered the northern South China Sea on 21 July 2012 and moved to west and developed into a tropical storm. On 22 July 2012, it stayed stationary in the South China Sea. It moved close to west of Pearl River estuary on 23 July 2012 and strengthened to typhoon quickly in the afternoon and further strengthened to severe typhoon at time close to midnight. It reached its maximum strength with wind speed up to force 14. It landed at the coast of Chi Xi Zheng, Tai Shan City, Guangdong province at about 0415 on 24 July 2012 and weakened to typhoon. Thereafter, it moved to around west-northwest, crossed over the west of Guangdong and Guangxi and weaken gradually until finally extinguished on 25 July 2012 at north of Vietnam.

5.9 The weather conditions and the sea states experienced by *HYSY 699* from 23 to 25 July 2012 were:

Date/time	weather	Wind direction	Wind force (Beaufort scale)	Wind gust (Beaufort scale)	Sea height (m)	Visibility (Km)
1100 on 23 July to 1100 on 24 July	Shower to rainstorm	Northeast to southeast	8 - 9 / 10 - 11	10 / 13 (max. 14)	4.5 / 8.0	3 - 15
0800 on 24 July to 0800 on 25 July	Extraordinary rainstorm	South to southeast	8 - 9 / 6 - 7	11 / 8	8.0 / 4.5	1 - 10
Daytime on 25 July	rainstorm	South to southeast	6 / 5	7 / 6	2.5 / 1.8	1 - 10

5.10 The severe weather encountered by the vessel was one of main contributing factors to the accident. It slowed down the speed of *HYSY 699* making her unable to reach Da Ya Bay for sheltering. It also caused sea water entering into the cement compartment and the crew accommodation and the water ingress into the fuel oil tank. A mooring rope was flushed into the sea and entangled the propellers, under this condition the main engine was overloaded. Finally, the repairs carried out to main engines' systems caused loss of main propulsion power while the vessel in the rough sea.

Preparation work prior to sailing of *HYSY 699* on 23 July 2012

5.11 *HYSY 699* sailed right before approaching of the typhoon and the master of the vessel was found not well prepared for that voyage:

a) there was quite a disparity between the typhoon information he acquired and the latest forecast, as such he did not grasp the latest and completed typhoon information before sailing;
b) he underestimated the difficulties his vessel would be facing with the typhoon and concluded that it would have minimal effect on safe navigation to his vessel; and
c) The pre-sailing meeting had not been held properly for typhoon, such as to assess working condition of main and auxiliary machineries and equipment; securing of all movable items such as oil drums, mooring ropes, etc. on deck; and press up all liquid tanks to reduce free surface effect.

Events leading to loss of main propulsion power

5.12. Under the effect of strong winds and heavy waves at sea during the voyage, the vessel suffered the following major mishaps leading to the loss of propulsion power:

a) at 2218 on 23 July, the vessel had to stop and anchored for the repair of main engine seawater cooling pump;
b) at 0700 on 24 July, the main engines had to be stopped for the repair of high temperature alarm of the main engine gearbox, probably due to propeller shaft being entangled by mooring rope;
c) at 0900 on 24 July, the vessel blacked-out due to sea water entered into the

fuel oil system for auxiliary generator.

Vessel listed severely to starboard after loss of propulsion power

5.13. At about 1100 on 24 July, the master found the vessel listed heavily to the starboard and she was rolling at angle of about 30 degrees. He decided to prepare for abandoning ship. After loss of propulsion power, the vessel drifted at sea under the effect of beam winds and waves. Seawater flushed on deck over the starboard side. At the same time, water entered into engine room, crew accommodation and other compartments increased the free surface effect which made the vessel stability worse.

6. Conclusion

6.1 At 1330 on 23 July 2012, the Hong Kong registered supply boat/tug *Hai Yang Shi You 699 (HYSY 699)* departed the 9EZ anchorage of Pearl River Estuary for Da Ya Bay to carry out standby duty for *Hai Yang Shi You 226*. On the passage, *HYSY 699* was affected by typhoon Vicente, on 24 July she listed severely to starboard side in position between the Ninepin Group（果洲群島）and Waglan Island（橫瀾島）. The master ordered abandon ship and her 14 crew members were rescued by *Nan Hai Jiu 111*. At 1700 on 25 July, during *HYSY 699* being towed by *Nan Hai Jiu 116*, she sank at No. 2 precautionary area of Traffic Separation Scheme of Dan Gan Shui Dao, in approximately position 22^0 06.626'N 114^0 16.286'E**,** about 3.3 nm south of Po Toi Island, Hong Kong. Neither personnel injury nor oil pollution was reported. *HYSY 699* was finally salvaged successfully by Guangzhou Salvage Bureau on 16 October 2012.

6.2 The investigation revealed the following probable root causes of the sinking of *HYSY 699*:

i. Prior to the approach of the severe typhoon Vicente, the vessel had not done the typhoon preparation work properly.

ii. Under the rough weather condition, numerous equipment malfunctions caused the loss of main propulsion power and further led to the ship listing severely to starboard.

iii. Prior to the towing operation, no action taken to regain the ship stability thus the rescue operation was carried out inefficiently.

7. Recommendations

7.1 To avoid the recurrence of the incident, the management company of *HYSY 699* should:

a. Provide proper training and briefing of the typhoon weather procedure to the master and crew with emphasis on the risk assessment, preparation prior to encountering rough weather, sailing under rough weather condition as well as the knowledge of anchoring, securing of movable objects, etc.

b. Review their Safety Management System and improve the typhoon weather procedures in light of lessons learnt from this accident.

8. Submissions

8.1 In the event that the conduct of any person or organization is commented in an accident investigation report, it is the policy of the Marine Department to send a copy of the draft report of investigation in part or in entirety to that person or organization for their comments.

8.2 The draft report in part has been sent to the following parties for comments:

a) The owner/management company of *HYSY699*.

b) The Maritime Safety Administration of Guangdong, China.

c) The Maritime Safety Administration of Beijing, China.

d) The Shipping Division of Hong Kong Marine Department.

8.3 Submission had been received from the management company of *HYSY 699* and the investigation report had been amended as appropriate according to the submission.