NATIONAL TRANSPORTATION SAFETY COMMITTEE

REPUBLIC OF INDONESIA

FINAL

KNKT.18.10.33.03

Marine Accident Investigation Report

The Grounding of *Sea Flyte*

(IMO 8623248)

Nongsa River Channel, Province of Riau Islands

Republic of Indonesia

11 October 2018

2020

FOREWORD

Praise to be given to the Almighty God with the completion of the Final Report on the Investigation into the grounding of ***Sea Flyte*** on 11 October 2018 in Nongsa River Channel, Province of Riau Islands, Republic of Indonesia.

The completion of this Final Report of Marine Accident Investigation was mandated by Indonesian Shipping Act No. 17 Year of 2008 Articles 256 and 257 as well as Government Regulation of Transport Accident Investigations No. 62 Year of 2013 Article 39 paragraph 2 Letter c which states that "The report of transport accident as referred to the verse (1) consists of the final report".

The report is the final output of the entire investigation process which covers fact information, analysis of causal factors that most likely contributed the accidents, recommendations for prevention and improvement, and appendix of other supporting documents. The report discussed the marine accidents issues about what, how and why the accident occurred and findings about the cause of the accident along with the recommendations of shipping safety to the parties to minimise or prevent recurrence by the same factors in the future. The final report is issued or publicly published after requesting responses and/or feedback from regulators, operators, manufacturers of transportation facilities and other related parties.

The Final Report of Marine Accident Investigation was made so that the interested parties could learn and take lessons from the accident.

Jakarta, October 2020

NATIONAL TRANSPORTATION
SAFETY COMMITTEE

CHAIRMAN

Dr. Ir. SOERJANTO TJAHJONO

Figure 1: Sea Flyte

The Accident

On 11 October 2018 at about 19.00 local time[1] (LT), *Sea Flyte* was berthing at Pier of Nongsapura Ferry Terminal (NFT), Province of Riau Islands, Republic of Indonesia. The Master of *Sea Flyte* rec eived an order to load passengers from the vessel in NFT to Tanah Merah Ferry Terminal (TMFT), Singapore. The sailing time from NFT to TMFT was about 35–40 minutes.

Figure 2: Figure 2: Nongsa Ferry Terminal (source: Google Earth)

At about 19.50 LT, passengers began to embark the *Sea Flyte*. The Chief Officer, assisted by a few crew members, were counting the numb er of passengers. The weather at the time was windy with a light shower.

At about 19.55 LT, the Master of *Sea Flyte* asked permission to the controller-on-duty of the NFT through radio. Afterwards, the controller gave permission to depart. The *Sea Flyte* was transporting 131 passengers onboard. There

[1] Western Indonesia Time (WIB = UTC + 07:00).

were three crew members on the bridge, i.e. the master and first engineer on the left bridge (steer was on the left bridge); Chief Officer on the right bridge next to the map table. The already set way points in the GPS was being utilised as the voyage reference.

Shortly after, the *Sea Flyte* began to cast off. She was sailing with the speed of about 6-7 knots at engine revolution of 700 RPM. The Master ordered the First Engineer to increase the speed gradually. The first engineer responded by increasing the engine RPM.

At about 20.03 LT, when the *Sea Flyte* was passing buoy No. 9, the weather suddenly worsened. The Master ordered the First Engineer to reduce the engine revolution back to 700 RPM as the visibility and strong wind were considered to be a hazard. When the speed was being reduced, the Chief Officer warned the Master to steer a little bit to the port side. The warning from the Chief Officer was not considered by the Master nor the Chief Officer. The *Sea Flyte* was drifted to the starboard side.

At about 20.04 LT, the Master, Chief Officer and First Engineer felt the ship's bottom hit a hard object beneath the water. The First Engineer immediately pulled the engine throttle to neutral position. At the time, the *Sea Flyte* was still moving until she hit something hard beneath the water for the second time and this made the *Sea Flyte* fully stopped.

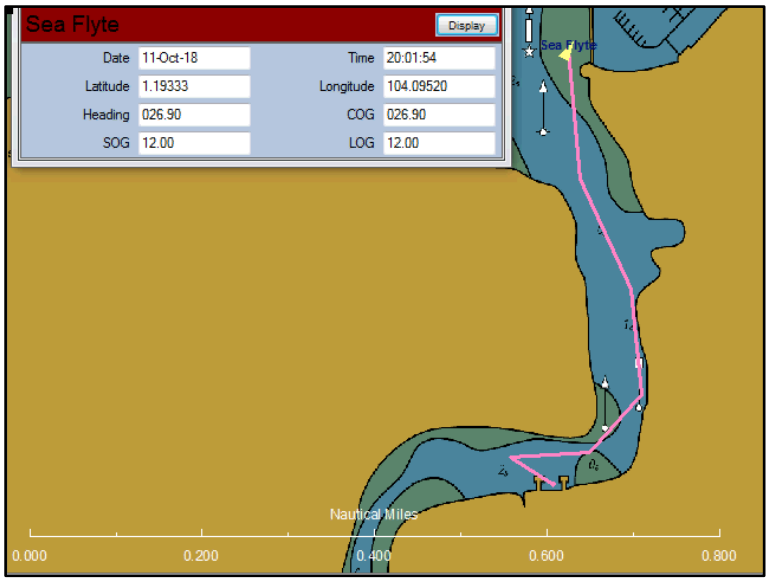

Figure 3: The track and grounding location of the Sea Flyte

Afterwards, the Master ordered the Chief Officer to check the condition on the deck thoroughly. At the same time, the First Engineer and Chief Engineer were ordered by the Master to check the condition of engine room. After checking, they concluded that there was no leak or damage in the engine room or any other visible parts. The Master ordered the Chief Officer and other crew members to instruct the passengers to don life jackets. Some of the crew members were assisting passengers to put on life jackets and also tried to calm them.

The Master immediately reported the situation to the controller-on-duty of the NFT, ship agent and the DPA[2]. As per the guidance from the DPA, the Master waited for the other boats to evacuate all the passengers. Whilst waiting, some crew members jumped out of the vessel to reach the nearby buoy mast and tighten the vessel to it.

At about 21.25 LT, the first boat —with the DPA onboard— arrived to check the condition of *Sea Flyte*. Subsequently, the other 3 boats came up to evacuate the passengers. After ensuring all passengers wore the life jacket, the DPA ordered to transfer all passengers to the NFT using those 4 boats. It took 12 times to transfer all passengers of *Sea Flyte* to the NFT. During the evacuation proces, the *Sea Flyte* began to float slowly.

At about 23.10 LT, the evacuation of Sea flyte passengers to the NFT was accomplished. Later on, all of the passengers were transported by *Golden Rider* to the TMFT, Singapore.

Since the *Sea Flyte* was deemed unseaworthy, she was pulled by the *Batam Fast 6* to the NFT at about midnight.

On 13 October 2018 at about 13.30 LT, the *Sea Flyte* was towed by a tug boat to a dockyard for repair.

[2] Designated person ashore is a person who has a direct access to the highest level of management in order to provide a link between the company an those on board.

Ship Information

The *Sea Flyte* (formerly *Sea Flyte H34*) was an Indonesian registered passenger ship (IMO 8623248) which services route between the NFT and the TMFT with approximately four trips[3] per day. The sailing time took about 40 minutes in each way. She was made of aluminium in 1982 in Australia. She was registered in Batam Port, Indonesia in 2007, but not classed in any classification society. At the time of accident, she was owned and operated by PT Batam Fast.

Refer to the "Pas Besar"[4] certificate issued by Batam Harbour Master Office, her gross tonnage was 115. Her dimensions of length, width, and depth were 29.65m, 6.55m, and 2.65 m, respectively.

The main power of the *Sea Flyte* was supplied by two units of four strokes diesel engines MAN D2842 LE which produce 2 x 890 HP[5]. Each engine was connected to a fixed pitch propeller. Electrical power was generated by 2 electric generators installed in the engine room.

Referring to the passenger ship safety certificate, the vessel was installed with radio telephone, NAVTEX receiver, EPIRB, radar transponder, standard magnetic compass, nautical chart, nautical publication, global navigation satellite receiver system, automatic identification system, speedometer, distance meter and echo sounder. She had also CCTV camera system. However, at the time of the accident, the CCTV system was off due to a technical issue.

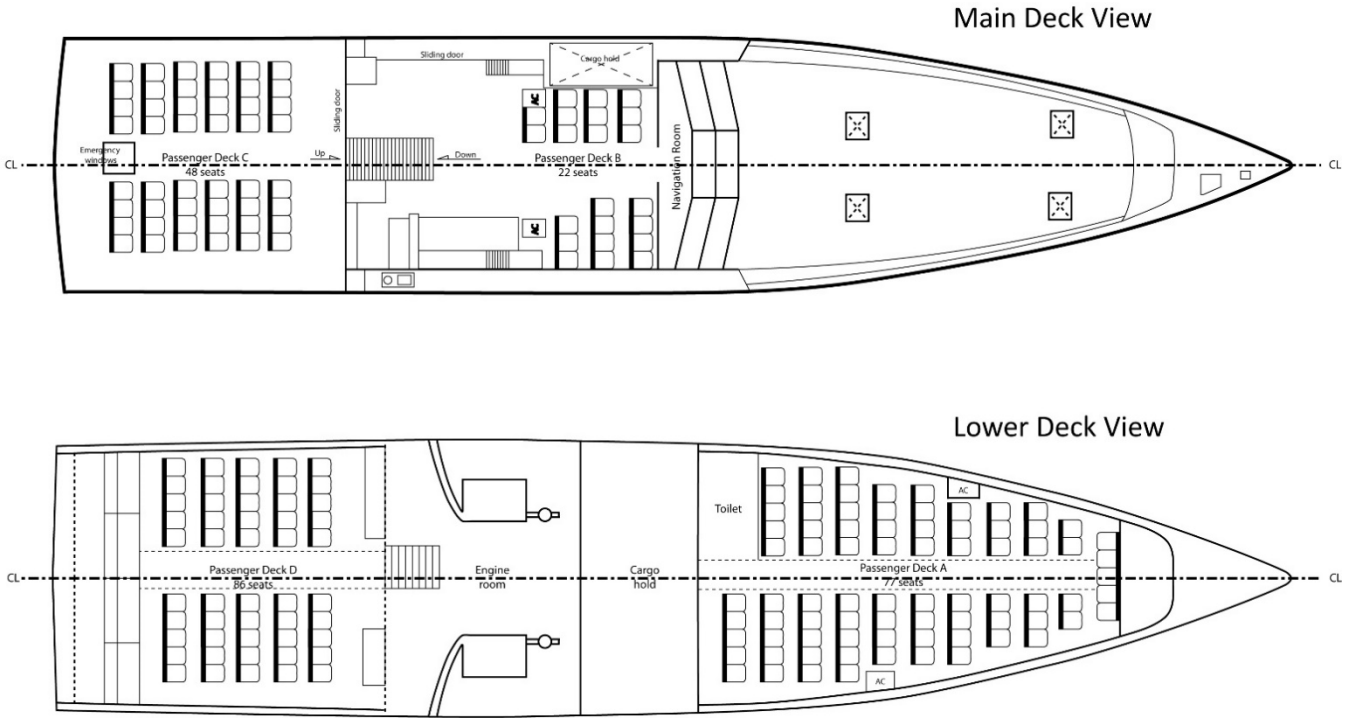

Figure 4: General arrangement of Sea Flyte

The *Sea Flyte* was equipped with four inflatable life rafts with total capacity of 295 passengers, located at the muster station as well as eight lifebuoys, 274 lifejackets (comprising 238 adult, 30 children and six infant lifejackets). Referring to the passenger ship safety certificate, the *Sea Flyte* was allowed to transport 220 passengers onboard.

[3] One trip is one way travelling from an origin point to a destination point.

[4] Pas Besar certificate is a document similar to certificate of nationality for ships GT > 7.

[5] Metric horsepower approximately equals 735.5 watts.

The total capacity of 220 passengers were spread into four accommodation spaces in two decks. There were two passenger decks (lower and upper decks). There was a separator in the lower deck. The navigation bridge was located in the front of the front upper deck. All passenger seats were facing towards the fore.

Two sliding doors were located in the middle of each side which allowes access to the outside.

The navigational bridge located in the middle of the vessel was next to the upper deck. The bridge consisted of three rooms which aligned cross sectionaly i.e. helms and engine rpm control room, void, and chart room.

Manning

At the time of the accident, *Sea Flyte* was manned by nine crew members who were Indonesians. The Master had a Deck Officer Class IV certificate issued in 2017 in Jakarta. The Master joined the shipowner company in 2008 and became the master of similar ships like *Sea Flyte*.

Chief Officer had a Deck Officer Class III certificate issued in 2016 in Jakarta. The Chief Officer joined the shipowner company in 2016.

The First Engineer had an Engine Officer Class III certificate issued in 2018 in Jakarta. The First Engineer joined the shipowner company in 2009 and became the Chief Engineer onboard *Sea Flyte* with Engine Officer Class IV certificate in 2018. However, since that, the First Engineer quit sailing to study. After several months of studying and obtaining the Engine Officer Class certificate, the Chief Engineer rejoined the *Sea Flyte*, but as the First Engineer.

In daily practice, the Master took the lead as the Master in sailing from the NFT to the TMFT. Otherwise, from the TMFT to the NFT, vessel operation was led by the Chief Officer.

Weather and Waters

Based on the CCTV footage record, the accident time was raining. At the beginning of the embarkation, there was a light shower. However, right after she passed Buoy No. 9, torrential rain started with strong winds.

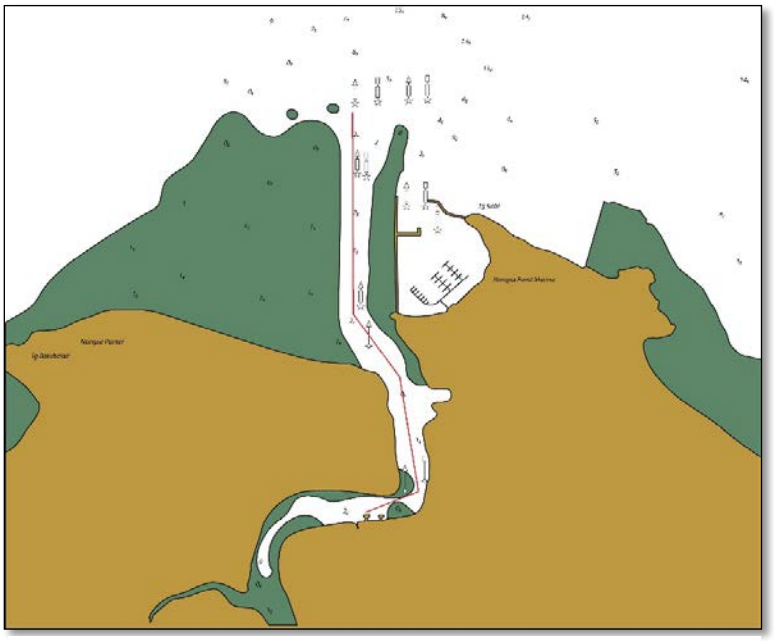

Figure 5: Nongsa Channel

The investigation team was unable to record the wind speed. The Sea Flyte also had no anemometer installed onboard.

In common practise, the controller-on-duty of the NFT checks the weather situation through a web-based weather forecast[6]. By the time, the NFT had no access to either the local nor the Headquarters Agency of Meteorological, Climatological, and Geophysical (BMKG) of Indonesia to obtain an accurate weather forecast.

The waters in Nongsa Channel was generally shallow. The width of the channel did not permit two ships to pass the channel at the same time. There were many marker buoys covered by retroreflective materials along the channel as they marked shallow locations as well as provide guidance towards the Singapore Strait and vice

[6] https://www.bmkg.go.id and other free private websites of weather forecast.

versa. At the end of the estuary, there were several permanent navigation buoys to guide ships, particularly in the night.

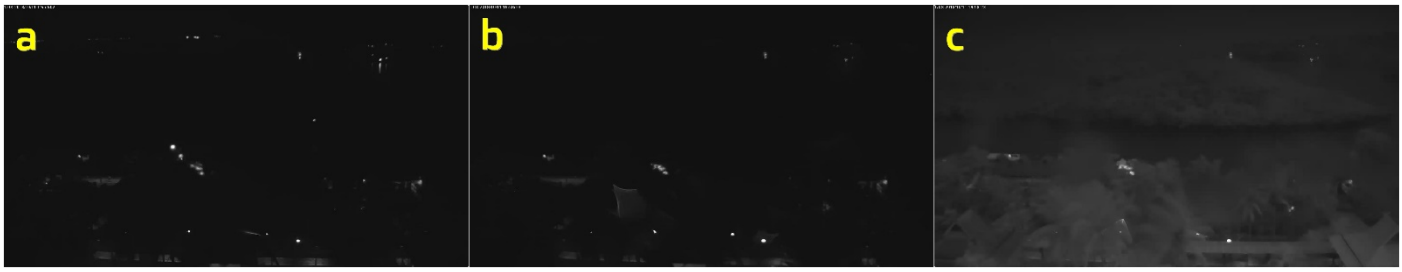

Figure 6: a) Before departure; b) Rain whilst the Sea Flyte departed; c) View of the channel whilst the lighting strike

The Aftermath

There were no injured passengers or water pollution due to the accident. However, the *Sea Flyte* suffered major damage on her propellers, propeller shaft as well as plates of keel and bottom.

Figure 7: Starboard shaft condition after the Sea Flyte ran aground

Figure 8: The damage profile of bottom plates and starboard propeller after Sea Flyte ran aground

Vessel Position Monitoring

The vessel was moving to starboard side approaching shallower water prior to the grounding. The left crew mentioned that the visual was obstructed by heavy rain despite the window wiper working normally. The visual reflective buoy was also not visible. Therefore, the visual navigation was no longer appropriate and needed to be supported by other navigation equipment. The crew could utilise the GPS tracking, depth sounder and possibly AIS position to maintain safe position of the vessel. Depth sounder alarm could also be set to provide warning when the limit water depth was reached. Off track limit in the GPS unit could have been set to provide warning when the ship's position was leaving the planned route.

There were some devices that could be utilised to avoid the grounding, namely radar, GOS and echo sounder. Even though the radar was active at the accident time, the ship crew did not have sufficient time to cross check the situation. Therefore, the surrounding buoys which might appear on the radar were not their focus. They were focusing on the visual condition through the windows. Likewise, the GPS and echo sounder were not utilised propperly as they were busy to lookout the vicinity. In addition, the speed of the vessel at the time did not permit the echo sounder to ring the alarm as the shallow waters was too close.

Despite using the navigational equipment in a limited passage condition, there should have been sufficient guidance for the bridge crew to increase their awareness of the condition.

Ergonomic of the Bridge Layout In relation with Bridge Team Performance

Figure 9: Starboard and port side bridge was separated by a wall

The investigation team found that there was a critical issue regarding the layout of the navigational bridge. The issue was in terms of the physical arrangement of the bridge. The initial layout of the bridge was without a separator. However, the ship had been modified to be separated. There was no clear information about why the separation was in place.

The separated bridge obstructed the cooperation between the left (master and first engineer) and the right bridge crew (chief officer). The communication between each set of crew members could not be transferred smoothly, particularly in a noisy situation such as in the torrential rain and the vessel's engine noise. In the heavy rain, the difficulty was increased as the master was hardly focusing on the visual outlook, instead they looked at the visual navigation equipment. Therefore, the Master did not pay attention to the *Sea Flyte's* position which gradually drifted to the starboard side, where the water was more shallow than in the middle.

Meanwhile, the chief officer who was observing the channel situation and position of the vessel could not leave his position to remind the left crew. When he was concerned of the vessel's position, he shouted to the left bridge crew with no response.

Departure Decision and Weather Information Support

The analysis of the grounding of *Sea Flyte* was based on the interview with the ship's crew and the NFT staff, including the CCTV footage of the NFT during the accident. The Automatic Identification System (AIS) data was also involved to review the vessel's movement and time, prior to the grounding.

According to the interview, the decision to depart was based on the readiness of the ship as well as the supporting documents. When they were ready, it was assumed that the ship was ready to depart. The process did not involve an accurate weather forecast, specifically the level of rainfall, strength and direction of wind and the duration of the bad weather. The light shower was assumed as a normal condition. This circumstance showed that the need of a weather forecast was not necessary.

At the time of the accident, there were no available accurate weather forecasts. The state weather agency website (BMKG) provided the simulation of the wind and waves across Indonesia. However, the accuracy of a weather forecast depends on many variables, such as temperature, moisture, cloudiness, rain and atmospheric temperature. Every place has its own characteristics and it is normal if one location differs from another. Particularly if the "neighbour" is located at a great distance from the weather sensors.

Referring to the information from the NFT, there was no weather station located at the NFT. The nearest weather station from the NFT was at the Hang Nadim Airport in which the distance between the NFT and airport was about 12 Kilometers. Different to the NFT, the Weather Station of Hang Nadim Airport was primarily for aviation purposes. It had several equipments such as weather radar, automatic weather system, ligthning detector, satellite receiver and aeronautical meteorological web.

Considering the topographic and environment between the airport and river channel was different, the accuracy of the weather forecast at the airport should be adjusted if it was for the marine operation as well. In addition, marine operation needed water information, i.e. tide, wave and current, which was unavailable in the weather forecast for aviation operation. Therefore, more weather sensors were needed to improve the quality of the weather forecast.

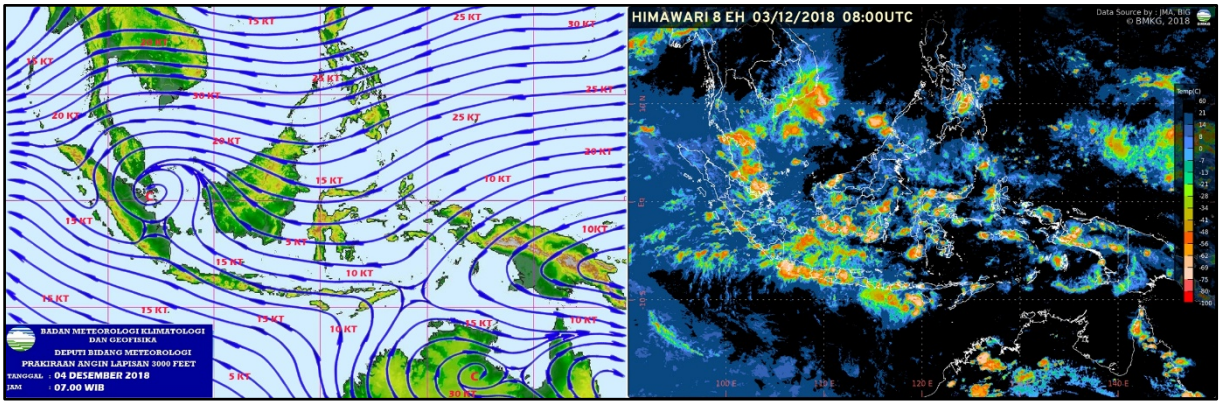

Figure 10: Sample of map of weather forecast issued by the BMKG

Although the controller-on-duty of the NFT had checked the weather forecast prior to giving a depart permit, the staff did not know what would happen after the light shower. In addition, the visibility and weather were deemed relatively good. This depicted that the weather forecast was invaluable as the controller was not a weather forecaster.

The accident would not have occurred if the controller-on-duty was aware of the future weather forecast.

In this circumstance, there was a strong need to provide a weather sensor for marine purposes. By doing this, severe weather would be predicted more accurately and would be highly valuable for the safety of marine operation.

Another Safety Issue

There was no officer of the Local Harbour Master at the NFT. All marine matters were managed by the controller of the port management which was in the private sector. In regards to the responsibility of the marine safety, there

should have been at least one officer responsible for the safety of ships in the vicinity. The harbour officer also needed to understand how to utilise weather information.

Referring to the latest Minister of Transport Regulation No. 61 Year of 2019 on Seaworthiness of Indonesian High-Speed-Passenger-Vessel, there was no specific regulation about the wind speed device. This rule was issued one year after the accident. At the accident time, it was the was. Therefore, until now, there was no rule which obligates the ship to install an anemometer onboard.

CONCLUSION

The grounding of the *Sea Flyte* was due to the inaccuracy of the vessel position. The vessel drifted towards the shallow water which went unnoticed by the handling crew despite the warning from the Chief Officer.

Both factors obstructed crew members to cooperate in avoiding shallow waters.

Contributing Factors

- Inappropriate situational assessment prior to the departure led to ignoring the potentional weather situation.
- A set of navigation equipment was not engaged properly to maintain safe operation of the vessel in the limited visibility and restricted channel.
- There was no clear guidance for the crew to pass the channel in limited situations as well as limited visibility due to the weather condition (safety issue).
- The design of the bridge did not support crew members to work colaboratively.
- There was no accurate weather forecast covering the Nongsa Channel.
- There was no weather forecast information or weather warning system in the NFT to provide information for the departure reference (safety issue).
- There was no local harbour officer located at the Nongsa Ferry Terminal.

RECOMMENDATIONS

According to the Indonesian Government Regulation number 62 year of 2013 on Transport Accident Investigation, article 47 stated that the involved parties shall respond to the recommendation(s) as mentioned in the investigation report and report the safety action(s) taken to the chairman of KNKT.

Following the findings as mentioned above, KNKT recommends the followings to prevent the recurrence of the incident.

METEOROLOGICAL, CLIMATOLOGICAL AND GEOPHYSICAL AGENCY (BMKG)

1. To provide weather information and monitoring system as well as sensors to support marine operation in the Nongsa River area.

Until the final report is issued, the KNKT had not received safety actions yet following the recommendations.

Status: Open

DIRECTORATE GENERAL OF SEA TRANSPORT, MINISTRY OF TRANSPORT

1. To revise Minister of Transport Regulation No. 61 Year of 2019 on Seaworthiness of Indonesian High-Speed-Passenger-Vessel to include the wind speed meter as one of the mandatory onboard devices.

Until the final report is issued, the KNKT had not received safety actions yet following the recommendations.

Status: Open

BATAM HARBOUR MASTER OFFICE, MINISTRY OF TRANSPORT

1. To establish official representative responsible for marine safety at the Nongsa Ferry Terminal.
2. To ensure the weather situation is safe for vessel departure.

Until the final report is issued, the KNKT had not received safety actions yet following the recommendations.

Status: Open

PT BATAMFAST

1. To rearrange the bridge layout to improve the bridge resource performance.
2. To develop guidelines for vessel's departure considering any relevant information and safe operation of the vessel.
3. To develop procedure for the crew in crossing restricted channel in a limited visibility circumstance.

Regarding this recommendation, the PT Batamfast had modify the bridge layout as well as revised the guidelines and procedures.

Status: Closed

SOURCES OF INFORMATION

Habour Master Office of Batam;

Crew of *Sea Flyte*;

PT BATAMFAST;

The Nongsa Ferry Terminal.

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