Consolidated version Of Lessons Learned For Presentation To Seafarers
As requested by FSI 21

GROUNDING (FSI 20)

Very serious casualty: grounding and subsequent constructive total loss

What happened?

A 100 m long, 4,500 gt modern container feeder ship ran aground on the coast, while trading between a group of islands. The vessel was on her home run serving on a scheduled loop. The grounding occurred at full speed only about 5 nm off her port of call, and in the early morning with an officer on watch standing navigational watch on a six-hour duty turn. Visibility was good, weather and sea rough but with no impact on the casualty. The vessel was salvaged by tug but declared a total loss.

Why did it happen?

Poor bridge team management was identified as having been the root cause of the grounding. The navigational watch pattern was subject to being changed on demand from a standard three-watch system in sea operation – with the master sharing – into a two-watch system – with one watch officer excluded – while serving ports in the islands' inland waters. Thus, the master rotated with the other watch officer on a six hour interval while the first watch officer was released for in-port cargo handling and operation.

This watch system together with other functions allocated to the watchkeepers resulted in an excessive workload for the officer on watch. Fatigue with a resultant deterioration of safety awareness appears to having affected the behaviour of the officer on watch. No look out was posted on the bridge, no regular fixes were taken, no course monitoring was conducted and the watch alarm was switched off.

What can we learn?

- Navigational watch routines have to be planned to accommodate all duties allocated to watchkeepers so that they are not impaired by fatigue.

- Navigational watchkeeping arrangements and principles have to be observed and accomplished in accordance with STCW regulations.

- Regular monitoring of the ship's heading and regular position fixing combined with thorough navigation by eye and the utilization of all available technical aids is a standard professional requirement. Do not switch off alarms.

- The COLREGs and STCW are clear and beyond any doubt. A complete navigational watch team is essential if there is any likelihood of the officer on watch developing stress based fatigue.

GROUNDING (FSI 20)

Less Serious Marine Casualty: Grounding

What happened?

While on passage on a tidal seaway a 23,000 gt bulk carrier suffered a main engine failure due to fuel starvation.

The order was given to drop both anchors, but they could not be dropped from the housed position without power. The starboard anchor was eventually dropped, but this action was insufficient to prevent the vessel from grounding on the north side of the channel. The vessel suffered no water ingress, there was no pollution, and after de-ballasting 2,000 tonnes of water the vessel was able to refloat with the aid of two tugs.

Why did it happen?

It was determined that the fuel oil booster pump was drawing fuel (4-6 bar) from the buffer tank to feed the main engine faster than the No.1 fuel oil feed pump was replenishing (2.5 bar) the buffer tank. No.2 fuel oil feed pump did not start, and so the main engine stopped when the fuel oil booster pump was unable to draw suction from the buffer tank. When checked after the accident, No.2 pump also could not produce more than 2.5 bar of pressure.

No.1 fuel oil feed pump was performing poorly due to excessive wear indicating a lack of maintenance. Following the accident it was discovered that there were insufficient spares onboard to repair the pump. No.2 fuel oil pump was on-standby at the time of the accident, but it did not start because the automatic pressure switch was set at 2 bar, and No.1 pump was still producing 2.5 bar of pressure.
Although it did not directly contribute to the accident, the failure of No.2 fuel oil feed pump to build pressure was attributed to incorrect adjustment of the pressure relief valve.

What can we learn?

- Critical systems need to be monitored. In this case, there was no means of alerting the operators to the reducing level of fuel in the buffer tank.

- Critical systems should be included in the vessel's Planned Maintenance System, which should be periodically checked by shore-side technical staff.

- Ship's staff should inform vessel managers when onboard spares need replacing.

- When transiting confined waters, the forward mooring deck should be manned and both anchors should be immediately ready for letting go.

GROUNDING (FSI 19)

Serious casualty: grounding caused by the failure to alter course when required

What happened?

The about 37,000 gt container ship ran aground early in the morning in May. The ship was travelling in a south-easterly direction at the southern limit of the traffic separation scheme at the time. The officer on watch, the chief mate, took over the watch at 0400 and subsequently did not carry out two course alterations required to keep the ship in the scheme. By the time the chief mate realized that the speed of the ship was dropping, it was too late to take effective corrective action and the ship grounded.

Why did it happen?

The chief mate was distracted from his watch-keeping duties because he was reading e-mails. These e-mails were of a disturbing personal nature and he was so absorbed by their content that he did not hear the VHF calls from VTS warning him that his ship was leaving the TSS and running into danger. He was alone on the bridge at the time of the grounding, having earlier dismissed the bridge lookout so that he could clean the accommodation. Consequently there was no other crew member there to warn him of the dangers ahead or of the VHF calls.
The chief mate had a pre-existing medical condition which contributed to his state of mind at the time but no one on the ship was aware of it.

What can we learn?

- The importance of maintaining situational awareness while keeping a navigational watch.
- The dangers of using bridge equipment, especially computers, for non-work related issues.
- The importance of maintaining a look-out on the bridge.

GROUNDING (FSI 19)

Serious casualty: grounding caused by lack of effective bridge team management

What happened?

The vessel was under way on a scheduled crossing in severe weather. During this crossing the vessel was informed that the port of destination would be temporarily closed due to severe weather conditions and seas. Under the instructions of the Master the vessel proceeded to an area of safe open water and commenced "slow steaming" while waiting for the port to reopen.
The vessel had been in the area for about four hours when, while approaching a turn at the northern extremity there was a fire alarm and a number of telephone calls to the bridge of a non-navigational nature. The electronic navigation system was not being used effectively, with the consequence that a wreck near the area was not detected. Because of the distractions, the vessel overshot the northern limit of the safe area before the turn was started and struck the wreck. The vessel was able to safely berth under her own power.

Why did it happen?

The bridge team was distracted several times, including a request from a driver of a refrigerated truck to run his engine so the truck could run its cooling plant. The exhaust from the truck led to the activation of the fire detection system, which then cascaded into further distractions to the bridge team, including discussions on starting up the ventilation system so that the truck's exhaust does not keep setting off the fire alarm. A series of telephone calls to the bridge took place and the Master himself took another four telephone calls to the bridge, before returning to the important aspect of navigating the vessel.

What can we learn?

- The lack of proper training in the use of the **Electronic Chart Display and Information System** (ECDIS) possibly led to the wreck being undetected, and the paper chart, which was marked with "no go" areas, was never re-assessed or amended. All OOWs must receive training on all bridge equipment related to vessel navigation.
- The Master influenced the OOW's actions even though the OOW had officially got the con. Therefore the OOW and the Master must communicate effectively as a part of the bridge team. Also the bridge team was never on standby or "red bridge" operating condition. During coastal manoeuvring or slow steaming, the bridge team must be extra vigilant and be in stand by or red bridge condition with all distractions kept to a minimum.

- No alternative passage plan had been made after the vessel deviated. Any deviations from previous passage plans should be made in writing and communicated to bridge team members.

GROUNDING (FSI 19)

Serious casualty: grounding caused by lack of effective bridge team management

What happened?

While moored at night, an about 78,000 gt bulk carrier broke away from the pier. At the time the vessel was almost fully laden and under the influence of a strong ebb tide. Despite the use of at least seven tugs under the guidance of a pilot and use of the vessel's main engine, it was not possible to manoeuvre the vessel back to the pier and bring her alongside. Attempts to hold the vessel in the deepest part of the port's entrance channel also failed and the vessel grounded during the morning hours. The vessel was subsequently refloated during the forenoon.

Why did it happen?

Neither the Port Authority nor the vessel's Master had not identified the risks of a vessel breaking free from its berth and the potential consequences. The effective holding capacity of the vessel's mooring winch was reduced by (a) the number of layers of mooring line on the winch drum; and (b) poor condition of the brakes. There is also the possibility that the brakes were not sufficiently tightened. In addition the mooring winches were not effectively monitored in the time leading up to the incident.

What can we learn?

- Safety Management System (SMS) of vessels must address procedures for mooring the ship, tending mooring lines and any of the associated risks. This includes assessing the vagaries of various ports including the tide or river current variances.
- Contingency Planning is very important. Ports and vessels should develop contingency plans or manuals and training.
- Maintenance of the mooring winches, especially of items like brake drums and linings, should be carefully carried out at regular intervals as prescribed by the manufacturer. If there are strong eddy currents in ports, especially at wharfs, these should be reflected in the charts and port entry documents.
- Sufficient manpower on board to tend to mooring lines, especially in strong tide areas must be considered.
- There should be established means of monitoring winches when required.

GROUNDING (FSI 19)

Serious casualty: grounding caused by lack of effective bridge team management

What happened?

The about 15,000 gt passenger vessel was leaving port. Within 7 minutes she grounded briefly. She was refloated within 3 minutes and continued on her voyage. At the time of the incident the vessel was under the influence of a strong ebb tide and fresh water outflow. The vessel was equipped with a bow thruster and twin controllable pitch propellers and a single rudder. No tugs were used.
The master controlled the engines and bow thruster to move the vessel off the berth and under a pre-determined agreement the pilot took control of the vessel once it was off the

berth. The passenger vessel narrowly avoided a collision with a berthed vessel and gained speed and steerage. However, due to an apparent miscommunication resulting from a foreign language being spoken on the bridge, the vessel grounded.

Why did it happen?

The lack of effective Bridge Team Management was a causal factor in the grounding. This is evidenced from the fact that the handling characteristics of the vessel were not discussed by the pilot and master during the pre-departure information exchange. These included the poor handling at low speed and the practice on board to use the engines independently during pilotages. The use of a foreign language resulted in miscommunication and misunderstandings on the bridge.

What can we learn?

- Where there are strong tidal streams during both flooding and ebbing, Port Authorities must inform Pilots and Masters of the situation and these items should be discussed by the Bridge Management Team.

- Passage Plans must be followed.

- Contingency Planning must be done, especially on vessels with poor handling characteristics at low speeds.

- Where the pilot and master do not both share a common mother tongue, then communications on the bridge must be carried out in English.

- Safety considerations should be paramount in the decision to use harbour tugs. Commercial conditions should come after safety.

- Master and pilot information exchange must ensure a safe passage.

GROUNDING (FSI 18)

Grounding caused by poor bridge team communication

What happened?

A dry cargo vessel in the laden condition was approaching its berth in a narrow river. She had a pilot on board. Before arriving at the berth, the visibility deteriorated. The chief officer and the master were on the bridge. The master was sitting at the steering console and steering the ship as no-one else on board knew the use of the special steering controls. An AB with a radio was in the forecastle head to act as look-out. The chief engineer was in the engine-room.

The passage continued in very poor visibility. As the vessel approached a sharp bend on the river, it reduced speed. Soon afterwards, the forward look-out reported deck lights of vessels moored on the wharf, close off the port bow. There was a series of loud exchanges in native language between the master, C/O and the AB, during which the master further reduced the engine speed and altered course to starboard away from the lights. The pilot heard the exchanges between the master and crew, but he did not understand and was not aware of their concerns over the proximity of the moored vessels, or the master's changes to the vessel's course and speed.

By the time the ship had cleared the vessels, her speed had reduced to about 2.5 knots over the ground and she was being swept bodily towards the left-hand bank of the river by the flood tide. The pilot advised the master to steer to starboard to negotiate the next bend in the river but when he noticed the vessel's insufficient speed, he advised the master to "speed up" and to "come more to starboard". A few moments later, the vessel momentarily touched the river bottom with her stern near the left-hand river bank. The master quickly put the azimuth controls to full ahead and to starboard. The vessel turned sharply and began to head across the river towards shallows in the middle of the river, and although the master put the engine controls to port, the vessel ran aground for the second time on the shallows. The pilot advised that the vessel would refloat without difficulty on the rising tide, but this advice was ignored by the master who applied full astern power. After several minutes, the master was informed by the chief engineer in native language that water was spraying from the port azimuth oil vent in the engine-room. The pilot was not made aware of this problem.

The vessel refloated after a short time by the rise of tide and with her engines operating at full astern, she slewed back across the river and again grounded for the third time from her stern. Control was regained shortly afterwards and she was berthed alongside.

After subsequent inspections, the vessel's port azimuth pod casing was found to be fractured and its propeller blades badly damaged. The vessel was given dispensation to sail to a repair port. When the vessel was later dry-docked it was established that, in addition to the damage already identified, the port azimuth drive shaft had to be replaced. There was also evidence of recent coating damage under the vessel's port quarter.

Why did it happen?

Although safe passage in the narrow river in restricted visibility required good communications and coordination between the master and pilot, there were a number of factors which indicated these were lacking on this occasion. Effective coordination between the pilot, the master and the bridge personnel was not established for communications and information exchanges and mutual understanding of each for the functions and duties of the other was not determined.

An instruction issued by the ship's manager regarding control of the ship's azimuth propulsion system was ignored. No-one but the master knew the operation and he was on the helm during the river passage because there was no other person on board who he considered competent to undertake this important task. Because the master was the helmsman, he was unable to maintain an efficient command of the navigation of his vessel. Consequently, the ability of the bridge team to navigate safely within the confines of the river in restricted visibility was seriously compromised.

The larger scale charts of the area, produced by the Port Authority, were more appropriate than the nautical chart for use by vessels navigating on the river, but unfortunately their availability had not been well promulgated. The pilot did not show the master the larger scale chart of the area that he carried.

Notwithstanding the limitations of the chart in use, the vessel's river passage was poorly planned and demonstrated complete reliance on the pilot for the vessel's safe passage. The exchange between the master and pilot was brief and failed to highlight the potential problems during the passage or the limitations of the bridge organization in restricted visibility.

What can we learn?

- Good communications and close cooperation between the master and the pilot during sailing in confined waters, especially in times of restricted visibility, is essential and should be a priority.

- Passages under pilotage should be carefully planned by vessels' crews.

- Deck officers and crew nominated to act as helmsmen on vessels fitted with special propulsion and steering systems should be trained to a defined standard. In this case, the master ignored an instruction issued by the ship's manager regarding control of the special propulsion system. He did not consider any of the crew to be sufficiently competent to undertake this task and did not train anyone. Consequently, the master himself had to stay on the helm of ship during the river passage. Because the master was the helmsman, he was unable to maintain an efficient command of the navigation of his vessel. He was overloaded at times and the ability of the bridge team to navigate safely within the confines of the river in restricted visibility was seriously compromised.

- Where locally produced charts are available, it would be extremely beneficial for embarked pilots to refer to them when discussing the intended passage during the initial exchange with the master, and to make the charts available for scrutiny during the passage.

GROUNDING (FSI 18)

Grounding caused by fatigue and alcohol consumption

What happened?

A feeder containership was sailing in a narrow strait during the early hours of the morning. After making a course change the vessel failed to make several required course changes and did not answer radio calls from VTS, pilot and a shore radio station. When there were no answers to radio calls, VTS authorities deployed a pilot boat and diverted a navy helicopter to investigate. The pilot boat and the navy helicopter tried to attract attention by sound and horn, but there was no reaction from the ship. The ship was already out of the channel and grounded in shallow waters shortly afterwards. The pilot embarked and found the OOW to be still asleep on the bridge.

Why did it happen?

Fatigue and intoxication by alcohol consumption both by master and OOW is the leading contributing factor. Furthermore, there was no bridge look-out and the bridge watch alarm system was not in use. None of the crew members on board reacted to sounds made to attract attention by the pilot boat and helicopter prior to the grounding.

What can we learn?

- Fatigue is an ever increasing problem which played a heavy role in this accident. Crew, and specially watchkeeping personnel, should be adequately rested and fit prior to their watch.

- Consumption of alcohol increases the effects of fatigue. Company alcohol policies should be followed by all crew at all times.

- All watchkeeping personnel should be well familiarized with and follow bridge resource management procedures closely.

- Bridge watch alarm systems should be regularly checked.

GROUNDING (FSI 18)

Grounding caused by pilot error and failure of bridge team to monitor vessel's progress

What happened?

A 72,437 DWT, single screw bulk carrier grounded on the west bank of a wide shallow river. The 225 m vessel was fully laden with iron ore, had a draught of 14 m, and had a river pilot on board.

The vessel was proceeding upriver at eight knots and the pilot agreed to pass an outbound vessel green-to-green. As the vessels were abreast each other, the pilot ordered the helmsman to put the rudder to port. The helmsman complied, and the vessel grounded gently on the west bank a short while later. The water level was rising, and by using the engine and rudder the pilot was able to refloat the vessel one hour later. There being no apparent damage, the vessel was allowed to proceed to anchor where it was inspected. Again, no damage was evident.

Why did it happen?

An error of judgement on behalf of the pilot caused the grounding, but the bridge team was not monitoring his orders closely enough for them to detect the helm error in time to prevent the accident.

What can we learn?

- Pilots are fallible. Navigational officers must understand the pilot's plan and monitor the vessel's progress against it.

- With the exception of the Panama Canal, the master is ultimately responsible for the safety of his vessel. He should, if necessary, take the con in order to prevent an accident.

GROUNDING (FSI 18)

Grounding caused by heavy weather

What happened?

A ship ran aground while attempting to transit to an area of shelter during an approaching cyclone. The passage took the ship close to the shore and therefore when the ship found it difficult to maintain heading in the weather, it was forced closer and closer to the shore, eventually grounding in severe weather conditions. The engine was not able to generate sufficient power to enable the ship to maintain its heading in the circumstances and the crew found themselves at the mercy of the weather.

Why did it happen?

- The severe weather caused the ship to not be able to maintain a heading to keep it away from the shore. Consequently, it was pushed onto the shore and it did not have enough engine power to help it maintain a safe distance off the shore.

- The master did not appreciate the risk the weather posed to his ship when he planned for the passage Consequently he did not allow sufficient distance from the ship to the coast (<5 nm).

What can we learn?

- The importance of properly identifying the risks of the weather on any passage.

- Although only discussed briefly in the report, the need to ballast down ships if possible.

GROUNDING (FSI 17)

What happened?

A big partly laden oil tanker was approaching a ship channel. She had a draught of 11.5 metres. The Pilot boarded directly on arrival for the transit from sea to the port anchorage area.

During passage, there was a swell which caused the ship to roll about 5 degrees. There also was a strong southerly tidal flow (5-6 knots). To counterbalance the southerly drift and to keep the ship out of the main body of tidal flow as much as possible, the pilot planned the ship to stay west of the main channel. But the ship was more to west than planned. As the draft increased about 1.35 metres due to squat effect and a further 1.8 metres due to rolling, the maximum instantaneous draft during the passage from ship channel increased to about 14.65 metres. This would not have caused any grounding if the ship had stayed in the main channel. But as the ship was about 100 metres more to west than the planned track, the depth was not sufficient and the ship touched the bottom several times, which was not noticed by anyone during the passage.

The crew noticed seawater in the forepeak tank after anchoring in the port roads. Further investigation revealed a hole in the forepeak ballast tank and several indents in various parts of the flat bottom. Temporary repairs were carried out in the port and permanent repairs were done later in dry-dock.

Why did it happen?

The pilot made a handling error which was not noticed and corrected by the bridge team. Moreover, the increase of draft due to squat effect and rolling of the ship was not noticed and duly taken into consideration by the master or the pilot.

The planned track was to the west of the channel to counterbalance the drift by tidal flow. But the ship transited the channel about 100 metres more to the west than planned. This was not noticed or corrected by the bridge team. Bridge resource management (BRM) principles were not properly applied by master or pilot.

Although the echo sounder was in operation, it was not properly monitored by the bridge team.

What can we learn?

The presence of a pilot does not relieve the officer on watch and the bridge crew from their responsibility for safe sailing of the ship. Pilots are advisors to masters and they act as ship handlers during manoeuvres. They have the local knowledge of tides, currents, local conditions, channels, etc. In this case, the pilot made a handling error which was not noticed and corrected by the bridge team. The decisions whether to pilot the ship, or not, or how to pilot it, was left entirely in the hands of the pilot. The bridge team was relying entirely on the pilot's training, experience and judgment. There was only one barrier (the pilot) between the accident and safety. If the pilot had made a slightly bigger error that day, the result could have been more serious.

The human resources on the bridge can be effectively organized if Bridge Resource Management (BRM) principles are applied properly. All human beings are subject to errors. One-man errors may turn into chain errors and lead to accidents if proper and effective corrective measures are not taken. BRM, if effectively implemented, is a useful tool to discover and correct single person errors. If a proper master-pilot exchange, under keel clearance calculation and bridge team briefing had been carried out, the accident could have been avoided. The OOW was monitoring the passage, but did not know when to interact with the pilot. The bridge team was not aware that the ship was more to the west of the passage than planned.

If they had been fully briefed, and fully understood the pilot's plan for the passage, they would have been in a better position to assist him.

Owners, managers and crew of ships should apply the BRM principles properly and interact with the pilots effectively.

Echo sounders, if used and monitored properly, may indicate the approach of dangerous situations.

GROUNDING (FSI 16)

What happened?

A small cargo vessel experienced a main engine breakdown. The vessel was drifting, pushed by a wind towards land. Assistance was requested and a small coastal tanker arrived on scene. Several attempts were made to pass a towing line to the drifting vessel using a small boat. The vessel grounded before towing could commence. Within minutes, the coastal tanker also grounded on a nearby reef.

Why did it happen?

The master of the cargo vessel had joined the vessel two days before the accident. He was not familiar with the vessel's windlass and ground tackle. No other member of the crew knew how to use the windlass to anchor the vessel.

The lack of navigational precision of the coastal tanker, the less than adequate hydrographical information and the inappropriate chart scale, rendered the close-in manoeuvring near submerged reefs a risky proposition. Also, the engine power and engine control of the vessel were not adequate for rendering assistance of this nature.

What can we learn?

The master and crew should know how to operate and make use of the windlass and ground tackle. Assisting a vessel in distress is another emergency scenario that should be planned for under section 8 of the ISM Code.
Pre-approved tug and salvage arrangements should be negotiated between the state and private industry to ensure that adequate tug assistance is available in the event of an emergency.

GROUNDING (FSI 16)

What happened?

A small general cargo ship ran aground after it dragged anchor during the passage of a typhoon.

Why did it happen?

The master did not plan well for the anchorage position. The starboard anchor was difficult to recover and was therefore not used. Insufficient anchor chain scope put out at initial anchoring.Crew not trained or briefed adequately prior to or during incident.

What can we learn?

Masters should plan adequately for every situation. Passage planning should include all available information and any restrictions. All crew members should be trained and informed during any voyage or incident to ensure that they react correctly.

GROUNDING (FSI 16)

What happened?

A small general cargo vessel ran aground whilst seeking a sheltered anchorage in bad weather.

Why did it happen?

There was not an adequate or detailed passage plan (or equipment) for getting to the anchorage even though the possible need to use it had been identified.

Failure of BRM in that the master did not know accurately where the vessel was as he approached a shoal area.

What can we learn?

Masters should plan adequately for every situation. Passage planning should include all available information, equipment and any restrictions. BRM should be practised to reduce the risk of grounding particularly in unfamiliar areas or circumstances.

GROUNDING (FSI 16)

What happened?

The general cargo ship left port with a pilot on board. When the pilot left, some distance before the pilot boarding area, he gave instructions on changing course when passing the entrance buoy. The master, who was alone on the bridge with the helmsman, since the

second officer accompanied the pilot to deck, misunderstood the situation and changed course too early and the ship grounded.

After pumping out some ballast water, the ship was afloat at the following high water. After hull examination, she was allowed to continue the journey.

Why did it happen?

- No passage plan was made on board for the pilotage phase of the voyage.
- The bridge team was not complete since ~~as~~ the second officer left the bridge to accompany the pilot to deck. Consequently there was no navigator available to check positions and assist the captain.
- The pilot left the ship before he was ensured that the pilot passage was safely completed.
- The pilot did not ensure that the captain fully understood the instructions given.
- The scale difference between the chart and the chart insert may have confused the master in differing the entrance buoy from no.1 buoy. This may have led to the premature course change.
- The scale of the chart was inappropriate, as it did not show the approach in detail.

What can we learn?

Routines and regulations should be followed. In this case, a complete passage plan or adequate manning on bridge could have prevented the grounding.

Missions should be completed. If the pilot had stayed through the pilotage passage, the grounding is not likely to have happened.

Tools (in this case the chart) should be designed for the user.

GROUNDING (FSI 16)

What happened?

A ship went up a river on high water. According to the pilot, charts and tide-tables there was a clearance of 0.25m under keel, which was allowed and acceptable according to port restrictions. Still, the ship grounded. The next high water, the ship was afloat and continued the journey, but grounded once again. With assistance of tug boat, the ship eventually continued the journey. Some damage made it necessary torenew some steel in the bottom.

Why did it happen?

Clearance under bottom of 0.25m is a very small margin.

On board they expected the chart datum being the vertical reference. The tide-table used, however, had another vertical reference than the chart datum.

It cannot be excluded that some meteorological factors had an influence on the water level.

What can we learn?

Restrictions, as in these case port restrictions, should not be at the lowest possible margin.

Tide-tables can have different vertical references.

Meteorological factors may have a negative influence on tide.

The importance of adequate and reliable tools cannot be underestimated. Data in charts and tables should be presented and related to in the same way whoever presents the information, thus risk of misunderstanding data can be reduced.

GROUNDING (FSI 16)

What happened?

The large ship approached the port without large scale charts. The planned route to the pilot boarding area was departed to make a short-cut to reach the berth as early as possible as the agent has urged the ship to arrive. The master received the new route by the pilot station via VHF.

The ship grounded and was not afloat until almost four weeks later. It had sustained considerable damage on the bottom.

Why did it happen?

Company's SMS was violated since the ship approached without a pilot or large scale chart.

The BRM was not effective. Another deck officer could have assisted by checking incoming information and watching instruments like the echo-sounder.

The information from the pilot-station was not reliable.

What can we learn?

Information, as in this case from the pilot-station, should not be relied upon unless confirmed being reliable.

One should not make deviations unless it is necessary and confirmed safe.

Procedures and instructions must be followed.

Short cuts taken in an attempt to save time and money may reduce safety margins and create unsafe situations.

NEAR MISS GROUNDING (FSI 16)

What happened?

A ship nearly ran aground when it was being navigated in pilotage waters with its auto-pilot in 'automatic track keeping mode'. The ship was equipped with a sophisticated integrated bridge system which allowed the auto-pilot to make course alterations at programmed way-

points. The system failed to initiate a course change, and when the ship was very close to running aground, the master engaged manual steering and turned the ship sharply to avert the grounding.

Why did it happen?

- A sensor failure or error led to the auto-pilot system reverting to another mode of operation.

- The master and chief officer on the bridge were over-reliant on the integrated bridge system and were not adequately monitoring the vessel's progress during the pilotage.

- Both the chief officer and the master lacked appropriate knowledge of the capabilities and limitations of the vessel's auto-piloting system.

- There had been past incidents where the system had failed and procedures had not been appropriately changed as a result.

What can we learn?

There is a tendency for crew to become too reliant on sophisticated navigational systems, and this must be countered by the appropriate management of bridge resources, a thorough assessment of the risks of the passage (particularly in pilotage waters), contingency plans for when the system fails and good navigational watch keeping practices at all times.