Departmental investigation into the grounding of the Egyptian bulk carrier THEBES in the western approaches to Torres Strait on 11 June 1997

MIIU

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Contents

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investigation into the grounding of the Egyptian bulk carrier

THEBES

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Summary

Late on the evening of 10 June 1997, the Egyptian bulk carrier *Thebes*, on a ballast passage from Singapore to Newcastle, NSW, embarked a licensed coastal pilot to the north-west of Booby Island for the passage through Torres Strait and the Inner Two-way Route of the Great Barrier Reef.

At about 2345, after negotiating Gannet Passage and with the vessel steadied on a course with Goods Island light right ahead, steering was changed from manual to automatic steering mode. The Pilot then handed the con back to the Master, in order to go below for a few minutes, but before leaving the bridge, at about 2352, he explained his passage plan, on the chart, for the Torres Strait.

When the Pilot returned to the bridge at 0002, the Master and watch officers were at the chart table. Moving through to the wheelhouse, the Pilot initially could not see Goods Island light ahead, but seeing the heading was on 110°, he then saw the light wide on the port bow. At the same time, the Master's attention was brought to the 2400 position on the chart, which was well to the south of the track. The Master ran to the steering console and the rudder was put hard to port. However, after turning through about 70°, *Thebes* ran aground on the south side of Larpent Bank.

The engine was put to full astern, water ballast was dumped from the forward upper wing tanks and pumped from the forepeak, and the vessel refloated at 0112 on 11 June. Soundings indicated that no tanks had been breached, therefore passage was resumed.

No pollution or significant damage to the vessel occurred as a result of the grounding and no-one was injured.

Sources of Information

Master, First Officer and Second Officer, m.v. *Thebes*

The Pilot

REEFCENTRE, Hay Point, Queensland

Technical information concerning
S G Brown Steering Control System provided by S G Brown, Watford, England, through AMI Sales, O'Connor, WA

Acknowledgement

Portion of Chart Aus 296 reproduced by permission of the Hydrographic Office, RAN.

Narrative

Thebes is a five hold, geared bulk carrier, having a length overall of 188.142 m, a beam of 31 m and a summer deadweight of 41,503 tonnes at a draught of 10.702 m. The vessel was built by Mitsui Engineering and Ship Building Company Limited, Chiba, in 1984 and is powered by a single, six cylinder B&W diesel engine of 8238 kW, providing a service speed of 14.75 knots. Owned and operated by the MISR Shipping Company of Alexandria, Egypt, the vessel is manned by an Egyptian crew.

The bridge consists of a combined wheelhouse and chartroom, the chart area being segregated by windows at the back of the chart table and curtains to the sides of the chart table. For ease of reference in the text, the terms “wheelhouse” and “chart area” are used.

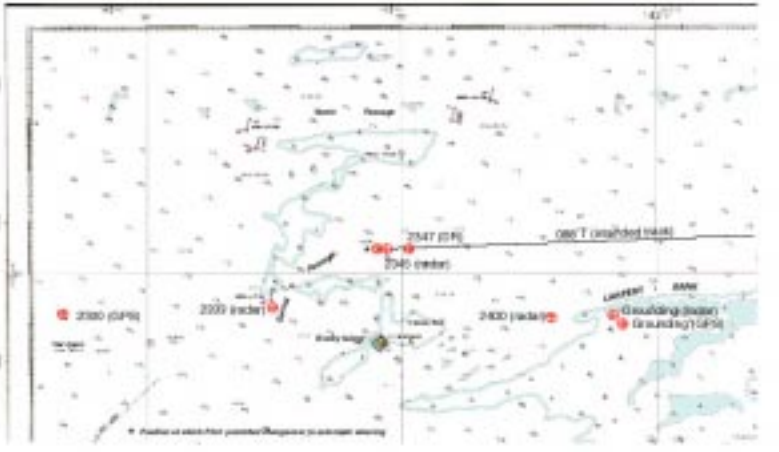
Portion of chart Aus 296 showing location of incident

On 3 June 1997, *Thebes* sailed in ballast from Singapore, where it had undergone a periodic drydocking, bound for Newcastle, NSW, where it was to load a cargo of wheat for Iraq. The Master’s initial instructions were to proceed by way of the Luzon Channel and east of the Philippines and New Guinea to the Coral Sea. However, the Master queried this, owing to the distance involved and his instructions were changed to proceed via the shorter route, through the Java, Flores and Timor Seas and the Torres Strait and Inner Route of the Great Barrier Reef. In planning the courses for the voyage, the First Officer included the courses through the Torres Strait and the compulsory pilotage area of the Inner Two-way Route of the Great Barrier Reef.

The passage through the Indonesian Archipelago was uneventful and the vessel approached Booby Island, off the western approaches to Torres Strait, on the evening of 10 June. Stand-by, for embarking a licensed coastal pilot, was given to the engine room at 2230 and course was adjusted from 100° to 089°. The vessel was at a

calculated draught of 4.0 m forward and 7.5 m aft.

The sky was cloudy, but the weather was fine and clear, with the wind from the south-east at force 4. As the pilot launch approached, course was altered to 050°, so as to provide a lee on the port side.



Portion of chart Aus 296 showing positions and grounding of Thebes

The Pilot boarded, in a position 5.5 miles to the west of Booby Island, at 2307 and the Master altered course to 070°, to pass to the north of the Gannet light buoy and a man was put on the wheel, steering having been in the automatic mode up to that point. When the Pilot arrived on the bridge, greetings were exchanged and the Master handed the con to the Pilot, informing him of the course, that the engine was on dead slow ahead and that steering was in manual. The Pilot advised the Master of his intention to proceed via the Gannet Passage, checked that the launch was clear, then brought the ship around to a heading of 100°, to make the approach to Gannet Passage, and ordered full ahead.

As he was not given a Pilot Card, the Pilot obtained the vessel's relevant details and was informed that the engineers required 15 minutes notice for manoeuvring from full sea speed. Full sea speed was requested at 2317. He ascertained that Bridge Resource Management procedures were not in place onboard, so stressed the need for adequate monitoring of the vessel's progress and that reliance should not be placed solely on GPS as a means of fixing the vessel's position.

The Pilot then briefed the Master and Second Officer on his passage plan for Gannet Passage, laying off his courses on the chart at the chart table as he did so. Noting the courses already laid off by the First Officer, he asked that these be erased, explaining that he would be following his own courses, according to his passage plan. He gave them a copy of his passage plan, together with an operational sheet titled "Pilotage in the Great Barrier Reef" and a booklet titled "Reef Guide". He discovered that the Master was not aware of the Reef

Reporting system, and reported the vessel to the REEFCENTRE on his behalf.

Having briefed the Master and Watch Officer on the first part of the passage plan, the Pilot returned to the wheelhouse. The Master queried the need for continued manual steering and the Pilot explained to him that manual steering would be used for all major course alterations and in the narrower sections of the Inner Route. He also stressed that an experienced helmsman must always be close to hand when steering was by autopilot and that, once they were through Gannet Passage, the helmsman could be given a break, until needed for the Prince of Wales Channel.

Gannet Passage was negotiated and the Pilot steadied the vessel on a course of 088°, which placed Goods Island High Light right ahead. When Booby Island light was abeam to starboard, at a distance by radar of 1.8 miles, the Pilot informed the Master that manual steering would not be required until shortly before the Prince of Wales Channel and steering was changed to the autopilot mode. Very shortly after this, at 2345, the Second Officer plotted the vessel's position on the chart. The Pilot had a look at this position, which placed *Thebes* slightly (150 m) north of the course line, then returned to the conning position and checked visually to see that *Thebes* was on the correct course, with Goods Island light in line with the starboard side of the deck cranes.

Satisfied everything was in order, the Pilot asked the Master if he could go down to the cabin, to go to the toilet and change into more comfortable clothes, as that was the only opportunity to do so until after clearing Wyborn Reef, a further five hours away. The Master agreed to this request and the Pilot handed over the con to him and properly briefed the Master and Second Officer on the course, pointing out that Goods Island light was right ahead, and the tidal direction (south-south-westerly). He also pointed out the pilot launch, wide to starboard, about two miles off and headed for Goods Island.

Before leaving the bridge, the Pilot briefed the Master and Second Officer on the transit of the Prince of Wales Channel, laying off the courses as he did so. Having done this, he reiterated the importance of maintaining the 088° track towards Goods Island and left the bridge at 2352.

After the Pilot had requested that the First Officer's courses be erased from the charts, the Second Officer had set to work on this task, in the chart area. When the First Officer arrived on the bridge, to take over the watch, he was instructed by the Master to read the Night Orders and also the pilotage instructions, which he proceeded to do.

At midnight, the Second Officer obtained two radar ranges to fix the vessel's position, but did not believe the position obtained, which placed *Thebes* well to the south, so he went to recheck the radar ranges.

The Pilot returned to the bridge at 0002, 11 June, where he found the Master and the two officers all at the chart table. He moved straight through to the starboard side of the wheelhouse to get his bearings. Initially he could not see Goods Island light, but he was not too concerned as there had been rain patches in Prince of Wales Channel when he had departed from the pilot station. He therefore moved across towards the radar, on the port side, and as he did so he saw the lights of the pilot launch wide on the port bow. Realising something was wrong, he looked at the radar screen and saw the heading marker was on 110°, he then saw Goods Island light between two and four points on the port bow.

At about this time, the Second Mate, who had rechecked the position, called out to the Master that the vessel was to the south. The Master had a quick look at the chart, then ran to the steering console and changed over to manual steering, observing as he did so that the gyro heading was 110° and that the set course pointer was off to the left, still aligned on 088°.

The actions of the Master and the Pilot were virtually simultaneous, the Pilot ordering hard to port as the Master put the wheel over. The Pilot then went to the chart area, had a look at the midnight position on the chart, then returned to the conning position. After swinging through about 045°, the vessel started to shudder, as though closing the bottom, and the pilot, closest to the telegraph, rang dead slow ahead, at a time recorded as 0005. However, about two minutes later, the vessel stopped swinging and came to a stop on a heading of 040°.

The Pilot requested that all deck lights be switched on, then he and the Master moved to the chart area to look at the position being plotted on the chart by the First Officer. The tide was falling, the predicted rate being 0.3 m an hour, and the GPS placed *Thebes* on the south side, the windward side of Larpent Bank, therefore quick action was needed.

The pilot had had command of bulk carriers of similar class to *Thebes* and was therefore able to provide valuable input to the discussions on what should be done. It was quickly decided to dump ballast from nos. 1, 2 and 3 upper wing ballast tanks and to pump ballast from the forepeak, the lift calculated as being 0.4 m per hour, with a change of trim by the stern. The Second Officer took a seaman forward and had started to open the ballast tank

dump valves by 0010, at which time full astern was rung on the telegraph, the engine having been stopped at 0009.

The Master instructed the engineers to check the fuel oil tanks for ingress of salt water and instructed the First Officer to take soundings around the vessel to ascertain how hard the vessel was aground. However, the tidal flow proved too strong for the latter action. He also checked the Australian Pilot, Volume III, and ascertained that Larpent Bank was sand, so was confident that any damage would be minimal.

After coming to a stop and after the engine was put to full astern, as a result of the effects of the wind on the accommodation block and the transverse thrust of the propeller, *Thebes* slowly swung to starboard, to a heading of 070°.

When everything was under way to refloat the vessel, the Pilot asked the Master what had happened to cause the *Thebes* to go off course and the Master indicated that there had been an automatic steering failure. The Pilot contacted the REEFCENTRE and informed them that *Thebes* was aground after a steering failure and informed them of the measures being taken to refloat the vessel. He also requested that the information be passed to the appropriate authorities and to his pilotage company. This communication was logged by the REEFCENTRE as being at 0031.

The Pilot recalled the pilot launch and requested the coxswain to check the depth soundings and also to check for any oil pollution. The launch approached *Thebes* from ahead and provided the Pilot with a run of soundings across the Bank, at one cable spacing, but was unable to take soundings around the vessel because of the turbulence caused by the propeller turning astern.

By 0100, the Pilot was beginning to wonder if their efforts were going to be successful. At 0110, the First Officer, who had been keeping an eye on the GPS, saw that movement was indicated and then, at 0112, the Pilot saw that the bow was beginning to swing to port, shortly after which the launch coxswain called on the VHF to say that it looked as though *Thebes* was moving. The Pilot ordered half astern and as *Thebes* gathered stern way the bow continued to swing to port. The Pilot informed the REEFCENTRE that *Thebes* was afloat and manoeuvring clear.

As the bow passed through north the engine was stopped and then put to dead slow ahead, and the wheel put hard to port. The Pilot brought the ship around to a heading of 275°, then, with the pilot launch leading the way and with the coxswain informing him of the soundings, he manoeuvred *Thebes* clear of Larpent Bank. Using the GPS derived positions, the First Officer plotted the vessel's position at one to two minute intervals. When *Thebes* had passed clear of the position plotted on the chart at midnight, the Pilot brought the vessel around to head due north until the original course line was attained, at 0149.

As soon as the vessel was well clear of the bank, the soundings of all tanks were checked and, satisfied that no tanks had been breached, the Master expressed his wish to continue the voyage. The steering gear was functioning properly in manual and the Chief Engineer reported that there were no problems with the main engine, therefore the pilot was happy to comply with the Master's wish. The REEFCENTRE was informed that all compartments were secure, full ahead was rung at 0151 and full sea speed was requested at 0153.

The passage through the Torres Strait and Inner Route of the Great Barrier Reef proceeded without further incident, the autopilot being successfully used where it was considered safe to do so. An underwater inspection, conducted at Newcastle, NSW, revealed only minor scratching of the paintwork.

REEFCENTRE

Mandatory reporting by vessels sailing within the Torres Strait and the Inner Route of the Great Barrier Reef, under the REEFREP ship reporting system, became mandatory on 1 January 1997. The interactive system is operated by the REEFCENTRE, a communications and radar observation centre located at Hay Point, Queensland.

At the time of the incident, full installation of the radar equipment was not complete and the equipment had yet to be commissioned. However, the radars were operating and the Duty Officer had observed *Thebes* when it was to the north of Booby Island, at about 2345, when the vessel's course was indicated as being 090°+.

The Duty Officer had then moved away to perform other work and when he again looked at the radar screen, he saw that *Thebes* was well to the south. The plotting computer then indicated a rapid turn to port and a rapid reduction in speed by *Thebes*, after which *Thebes* had come to a stop. The Duty Officer plotted the position on

the chart, which showed that *Thebes* was on Larpent Bank. The past track markers on the radar screen indicated *Thebes* had maintained a fairly straight track from north of Booby Island until just before the grounding. Unfortunately, the radar information recording system was not installed at that time, therefore the radar plot was not available for scrutiny by the investigating officer.

Comment and Analysis

Steering control system

Thebes is fitted with an S G Brown Gyro Steer All-electric (G.S.A.E.) Steering Control System, in which the Primary Hand steering, as well as the Secondary Steering and Autopilot modes, is electrically controlled. Only one steering mode, Hand, Sec(ondary) or Auto, can be selected at any one time and selection is by means of a rotary, three-way switch located in the top left hand corner of the steering control panel.

Thebes wheelhouse

To change from either hand or secondary mode to autopilot, the set course pointer has to be aligned with the heading, by depressing the control knob and rotating it as necessary; when the control knob is released the set course pointer remains locked on that course. The steering mode switch is then turned in a clockwise direction to the Auto position. The chosen course will then be maintained until either the course is changed, by depressing and adjusting the set course pointer control knob, or the steering mode selector switch is changed to either secondary or hand by turning the switch in an anticlockwise direction.

Thebes steering console
Steering mode change over switch

The G.S.A.E. steering system is fitted with an off-course alarm, but this is only functional in the auto mode.

On *Thebes*, the steering mode selector switch is linked to a loud, invasive buzzer on the steering gear indicator panel, located on the aft bulkhead in the chartroom. When the steering mode is changed at the steering console, the buzzer on the chartroom panel sounds and has to be cancelled at the panel.

Consideration of possibilities

Although *Thebes* is fitted with a course recorder, it had not been functional for some considerable time, therefore, there was no documentary evidence to show when and how quickly the vessel had deviated from the correct course.

When, after negotiating Gannet Passage, the Pilot informed the Master that the autopilot could be engaged, *Thebes* was steady on 088°, with Goods Island light right ahead. When the Pilot later looked at the radar and when the Master went to the steering console to change over to manual steering, the heading was 110°. According to the Master, when he changed over to manual, the set course pointer was locked on 088° and had rotated to the left with the steering repeater.

The track made good between the 2345 and 2400 positions was 112.3°, indicating that, even allowing for the south-south-westerly flowing ebb tide, *Thebes* had deviated from the correct course very soon after the change over from manual steering was made. This was supported by the radar observations at the REEFCENTRE.

Had the selector switch been moved to the autopilot position without the set course pointer being aligned within the yaw parameters, the off course alarm would have sounded and rudder would have been applied to bring the vessel around to whatever course the set course pointer was indicating. Only 45° of the heading scale is depicted, but over an arc of 180°, the scale being expanded four to one. Thus, with *Thebes* on a heading of 088°, 110° is at the extreme right of the visible scale and, therefore, the set course pointer would have had to have been offset almost at a right angle to the right. However, the Master had previously changed from autopilot to manual when *Thebes* was on a heading of 070°, just after the pilot had boarded. If autopilot had been selected without adjustment of the set course pointer, the set course pointer should still have been aligned on 070°, to the left, and the autopilot would have brought *Thebes* around to port, to 070°. The Master had questioned the Pilot on the need for manual steering as *Thebes* approached Gannet Passage, and may have adjusted the set course pointer, in anticipation of switching to autopilot. However, at that time the vessel was on a course of 100°, not 110°. If indeed the autopilot was engaged with the set course pointer on 110°, the autopilot would immediately have applied starboard rudder and *Thebes* would immediately have started to turn to starboard. However, when the Pilot had visually checked to see if *Thebes* was still on course, some two minutes after the change from manual had been made, Goods Island light was still in line with the starboard side of the

deck cranes.

According to those who were on the bridge at the time, the off course alarm did not sound, which indicates the selector switch was not changed to the autopilot position. Accounts varied as to which member of the ship's bridge team made the change from manual to autopilot mode and who cancelled the buzzer in the chartroom, but it is apparent that whoever effected the change-over made a mistake.

If, in error, the selector switch was turned to the secondary steering position, or if the selector switch was not altered at all, leaving the steering in the manual mode, the vessel would have slowly wandered from the original course. The direction and the rate at which the bow paid off would be mainly dependent upon the effect of the wind on the bow and on the accommodation block aft. It is possible *Thebes* would have paid off to starboard, seeking the wind. However, for *Thebes* to have quickly found a state where the various forces (wind, sea, propeller thrust) were in equilibrium and to have remained settled on the same heading for upwards of 15 minutes is difficult to accept, but appears to have occurred.

An alternative explanation is that after *Thebes* had come around to 110°, someone realised there had been a mistake in setting the selector switch, but instead of alerting the Master, aligned the set course pointer to the ship's heading and switched to autopilot. However, altering the selector switch setting would have sounded the buzzer in the chart area and could not have gone unnoticed.

The Pilot, at interview, could not recall whether or not he heard the buzzer, either when the change to autopilot was made, or when the Master changed back to manual shortly before the grounding. Later in the passage, he became aware of the buzzer's purpose and, if he happened to be in the chart area at the time of a change over, he would cancel it for the Officer of the Watch. Heard for the first time, the buzzer could be quite startling and could give rise to concern that something could be wrong. However, as both the First Officer and Second Officer stated that the buzzer sounded when the Master changed back to manual steering, and as the Master stated that he found the set course pointer correctly aligned on 088°, it is probable the selector switch had been manipulated earlier, but to the wrong, "secondary", position.

Steering console

The steering mode selector switch is located in the top left hand portion of the control panel of the console, which is angled at about 50° from the vertical. The three control positions for the switch are above the switch, away from the operator. The switch is operated by turning a raised, flanged knob, a cut in the flange indicating the switch position and aligning with an illuminated strip for night time operation/indication.

Even for a tall person standing at the steering position, the body of the knob hides the position indicator cut in the flange, thus the positioning of the switch is not readily discernible, particularly at night.

On board procedures

The First Officer had planned the courses through Torres Strait and the Inner Two-way Route and the Master ensured that his officers familiarisd themselves with the pilotage plan and the Pilot's requirements, the Second Officer plotting the vessel's position at 15 minute intervals, using radar ranges, after the Pilot had requested that be done. However, no Pilot Card had been prepared for handing to the Pilot when he boarded and, reportedly, the Master had replied in the negative when the Pilot asked if Bridge Resource Management procedures were in place on board.

When the Pilot left the bridge, at about 2352, the members of the ship's bridge team were in the chart area, studying the pilotage information provided by him. Also, when he returned, at 0002, he found the bridge team at the chart table. It is apparent that no officer was present in the wheelhouse during the Pilot's absence and that the progress was not monitored at all for a period of about 15 minutes, with the result the vessel's deviation from the intended course was not noticed. The simple act of checking to see that Goods Island light was still right ahead would have provided immediate indication that something was amiss.

Response to the situation

The pilot returned to the wheelhouse close to 0002. Initially he was not too concerned about not seeing Goods Island light, considering rain to be the cause. He only became concerned when he saw the pilot launch wide to

port, instead of to starboard and reacted when he saw from the radar that the heading was 110° and Goods Island light was around three points on the port bow. His automatic reaction was to order hard to port, to get the ship back to the correct track. He did not inspect the chart, to ascertain exactly where the vessel was, until hard to port rudder had been applied and the manoeuvre was under way.

The Master's attention was drawn to the situation by the Second officer, who had plotted the position at 2400, but had then checked the radar ranges as he felt the position could not be correct. The Master's immediate reaction was to run to the steering console, change to manual and apply hard to port rudder.

The spontaneous and simultaneous reactions of the Master and the Pilot were to go hard to port, towards the intended track. However, neither made a full appraisal of the situation, making allowance for the distance travelled in the time interval since the 2400 position was obtained. Certainly the Pilot had been placed in an invideous position, but it would have been prudent for him to have had a look at the plotted position before taking action. Had the real time position been plotted for assessment of the situation, it should have been obvious that at 0003, when the advance would have been about 7 cables, by going hard to port the vessel would turn on to the south side of Larpent Bank and grounding would be virtually inevitable. In submission, the pilot stated that he did quickly assess the situation and the options, once the turn had been initiated and, because of the reliability of the survey of that particular area*, considered the turn to port to be the safest.

Although both the Second Officer and the First Officer were at the chart table, and so in a position to provide information to the Master and Pilot on distance off the bank, neither challenged the hard to port manoeuvre or replotted the vessel's position, utilising GPS derived positions for speed of action, to monitor the turn.

When navigating with large scale charts, it is extremely important to be aware of the rate of advance at the current speed of the vessel, the length of the vessel forward of the bridge in relation to the scale of the chart (an extremely important factor when contemplating tight manoeuvres) and the effect of shallow water in enlarging the ship's turning circle.

Pilot's absence from the bridge

The pilotage distance from Booby Island, off the western approaches to Torres Strait, to Low Isles, at the southern end of the Inner Two-way Route, is 478 miles, a passage time of 32 hours at 15 knots. Just one pilot is

employed to conduct the full pilotage of a vessel, with the pilot taking rests from the bridge in stretches where, circumstances permitting, it is safe to do so.

The Pilot had left Thursday Island on board the pilot launch at 2100. On boarding *Thebes* at 2307, he had gone straight to the bridge and piloted the vessel through Gannet Passage. Between Gannet Passage and the Prince of Wales Channel there is a clear run of 12 miles, and this is the only suitable place for a pilot to absent himself from the bridge, to make himself comfortable, until after the vessel has passed Wyburn Reef, some five hours later.

The Master was on the bridge and had accepted the con, the visibility was clear and Goods Island light provided a good lead, right ahead. The Pilot had looked at the position plotted on the chart and had checked that the vessel was headed in the correct direction, to satisfy himself that everything was apparently in order and that it was safe for him leave the bridge. It is therefore considered that it was reasonable for the Pilot to absent himself from the bridge for a brief period at that time.

Accuracy of statements

Obviously, the recollections of the different individuals involved in an incident may vary slightly. However, during the course of the investigation it became apparent that the account of the incident had been somewhat "tailored" by the members of the ship's staff. Only after a demonstration of the operation of the relevant controls on the steering console was it accepted that, rather than an autopilot malfunction, an autopilot set-up error had occurred.

Navigation aids

Larpent Bank is not marked by navigation buoys or beacons. As the distance between Booby and Goods Islands is 14½ miles, there is no close visual reference point to provide immediate indication that a vessel is closing the bank. A light buoy marking the western extremity of Larpent Bank would have provided immediate indication of the position of *Thebes* in relation to the bank.

Conclusions

These conclusions identify the different factors contributing to the incident and should not be read as apportioning blame or liability to any particular organisation or individual.

Thebes grounded after it had deviated from the intended course, the deviation going unnoticed by the ship's bridge team for a period of almost 15 minutes.

The following factors are considered to have contributed to the grounding:

- An error in the setting of the selector switch when changing from manual to autopilot steering modes.
- During the period the Master had the conduct of the vessel, while the Pilot was absent from the bridge, all officers remained in the chart area and the vessel's progress was not monitored.
- The spontaneous and simultaneous reactions of the Master and the Pilot to go hard to port, towards the intended track, before a full appraisal of the situation was carried out.
- The lack of Bridge Resource Management procedures on board, which resulted in the wheelhouse being unattended, the vessel's progress not being monitored and the order to go hard to port not being challenged by the Officer of the Watch.
- The design of the steering console is such that the setting of the selector switch is not readily discernible, particularly to someone of medium or small stature and at night cannot be readily seen at all.

It is further considered that it was reasonable for the pilot to have absented himself from the bridge at that particular time.

Submissions

Under sub-regulation 16(3) of the Navigation (Marine Casualty) Regulations, if a report, or part of a report, relates to a person's affairs to a material extent, the Inspector must, if it is reasonable to do so, give that person a copy of the report or the relevant part of the report. Sub-regulation 16(4) provides that such a person may provide written comments or information relating to the report.

The final draft of the report was sent to the following:

The Master, First Officer and Second Officer, *Thebes.*

Pilot.

The only submission received was one from the Pilot, who submitted:

The investigation concludes, in part, the unchallenged decision to turn to port as one of the factors contributing to the grounding. Notwithstanding that such a situation should not have been allowed to develop on the bridge of such a vessel manned and trained to the appropriate levels of competence and ability; I would make the following comments and conclusions, without prejudice:

1) The initial *decision to turn to port was the most obvious choice at the instant it was realised that the vessel was out of position in an area where the waters to the south are noted to be inadequately surveyed and the bottom sands are reported to shift. Port tactical diameter is smaller than starboard for "Thebes" and wind on starboard bow would serve to accelerate the initial rate of turn; to port – bow 'falling off' the wind.*

2) Once the turn had been initiated I appraised the situation (from the chartroom, Master was on helm; Pilot's conclusion below elaborates) and noted that the waters ahead were charted at 6.9 metres depth and to the south (starboard) at 6.5 metres depth. "Thebes" was drawing 7.5 metres aft prior to the grounding.

3) The 2400 position was the only reference in the short time available to appraise the situation. An advance of seven cables to time 0003hrs and a turn to port (basis 4 cable tactical diameter) would indicate "Thebes" could have narrowly missed the western edge of Larpent Bank, albeit by only one cable.

4) Since grounding I am of the opinion that "Thebes" was actually about three cables further to the east of the position charted at 2400hrs. This can be shown by working (3: above) backward from the actual grounding position.

5) Once "Thebes" position was charted at 2400hrs it was obvious that the risk of grounding was acute.

Consideration was given (Pilot's conclusions below elaborates) to the various outcome exingencies during the turn and the decision to continue *to port was made with the following two considerations in mind;*

(a) The vessel would have been set further into danger and inadequately surveyed waters by attempting crash stop or attempting turn to starboard. Had a starboard turn been undertaken the vessel would have risked grounding at her after end in way of engineroom, propellor and rudder and fuel tanks with subsequent risk of pollution and possible damage to her propulsive and steering equipment.

(b) Whilst, turning to port, there was risk of running onto Larpent Bank it would be an end-on bottom encounter in way of forward (Forepeak, Number one deep, Number one water ballast tanks port and starboard) and at speed considerably slackened whilst undertaking turn under full port rudder. Grounding would thus occur in way of an area of the vessel where there was no risk of pollution and also adequate forward bias of ballast to assist subsequent refloating operations.

6) The tide was falling at 0.3metres per hour. This is roughly the deballast uplift for "Thebes" class on basis of gravity discharge of the port and starboard topside tanks actually used to lighten her bodily once aground. It was the change of trim (by stern, further reducing forward draft) effected by deballasting the forepeak, coupled with astern thrust that allowed refloating within the hour. The vessel subsequently moved astern unassisted and remained afloat to steam clear of Larpent Bank with the pilot launch verifying soundings ahead in real time whilst doing so.

Had the vessel grounded in way of her afterpart as result of a starboard turn it is debatable whether deballasting and combined change of trim would have been sufficient on that rate of falling tide to refloat instant as such vessels inherently trim by the stern on deballasting and do not have similar bias of removable ballast abaft the LCF as forward of same. Additionally the ebb tide may have set the vessel further into the

shallows south of Larpent bank during such operation rendering final removal of the vessel from the scene unsuccessfull without assistance.

CONCLUSION

Pilotage is inherently a real time judgemental decision making process. As pilot I had to consider the various options and possible outcome ramifications (above) very swiftly when reacting, upon having returned to the bridge, finding the vessel out of position. Contrary to written and verbal (SOP) advice to the Master upon initial pilotage passage briefing there was no helmsman standing by at the steering position when corrective action was required. The master had to take the helm and simultaneously rendered himself unavailable to myself for a full appraisal conference at this critical and most urgent time; my intentions were called out to him whilst he was steering.

Our decision to continue turning port was made on basis of the charted 2400hrs position and also my own knowledge of disposition of fuel and waterballast in such class of vessel at a time when I was faced with a situation where risk of grounding was acute. To state, in conclusion, "that the Master and Pilot reacted without full appraisal" *is, in my professional view, an over-simplification given; the urgency of the situation, the circumstances relating to the vessel's bridge organisation at the time and the possible undesirable consequences of either port or starboard turn action in this case.*

The Comments and Analysis section of the report was amended, where considered appropriate, to reflect this submission.

Details of Thebes

IMO No.	8204286
Flag	Egyptian
Classification Society	Lloyd's Register of Shipping
Ship type	Geared bulk carrier
Owner	MISR Shipping Company
Year of build	1984
Builder	Mitsui Engineering and Ship Building Co Ltd, Chiba Works
Gross tonnage	24,561
Net tonnage	16,392
Summer deadweight	41,503 tonnes
Length overall	188.14 m
Beam	31.04 m
Draught (summer)	10.702 m
Engine	6 cyl B&W diesel
Engine power	8238 kW
Crew	29 Egyptian