

ALTERNATIVE TEXT

Regulations 9(4) and 9(6) of the Merchant Shipping (Accident Reporting and Investigation) Regulations 1994 provide that any person whose reputation is likely to be adversely affected by the Report shall have the opportunity to comment on that part of the Report before it is submitted to the Secretary of State. If, following representations, there are passages in the Report which remain in issue and are critical of the person, alternative text can be provided by the person for the part which is in issue. Such alternative text must be included with the Report as an appendix.

A number of persons, companies and organisations have exercised their rights in this respect. The alternative texts, which have been incorporated into the relevant numbered paragraphs from the Report, are given below, together with the person, company or organisation who provided the text.

The Pilot (who was on board when SEA EMPRESS initially grounded)

- 5.14 *The pilot also told the Inquiry that he was steering 035° to make a judgement as to which way the tide was likely to affect the vessel. This suggests prudence, because it is not unusual for tidal streams to turn earlier or later than predicted. But to make such a judgement when between two sets of leads, with neither in line ahead and with just five or six minutes to go before reaching the 'point' of the cone in the Channel entrance required a high standard of vigilance, not only by the pilot but also by the Master. No flood tide ESE running, was experienced until the vessel was approximately two cables from the main entrance buoys when a sudden and strong set to starboard was experienced. Any large vessel which is just two minutes or so from a restricted channel entrance and needs a prompt course correction must have immediate and effective helm applied in order to achieve this. The giving of a course change order instead meant that the amount of helm applied and the rate of turn to the new course was left entirely to the choice of the helmsman, whose priority on this occasion was to avoid an excessive swing.*
- 5.23 *Merchant Shipping Notice M.854 titled 'Navigation Safety' provides advice on the planning and conduct of passages. It includes the following recommendation - "ensure that the intentions of a pilot are fully understood and acceptable to the ship's navigational staff". This Notice was published in 1978 and continues to be current. Although it is not addressed to pilots, the pilot of SEA EMPRESS should have been aware of it. Unfortunately there were no written guidelines for the pilotage authorisation oral examination made available to the pilots. A knowledge of relevant M Notices is also in the oral examination syllabus for a Class 1 Certificate of Competency, which the pilot had obtained shortly before joining Milford Haven Pilotage Limited.*

- 21.2 *The immediate cause was the strong and sudden set to starboard experienced approximately two cables from the main entrance buoys.*

Recommendation 8.

A comprehensive tidal stream survey should be conducted along the West Channel from the entrance buoys to a position on the line joining West Blockhouse Point and East Blockhouse Point, including the waters in the immediate vicinity of the Channel extending to a line three nautical miles to seaward of the main entrance buoys. The information obtained should be provided to all who require it.

- D.2.14 *Concern was expressed by the pilots to the salvors and the Deputy Harbour Master on VHF Channel 12 about controlling the casualty in the predicted wind and sea and the strong complex tidal stream with the available tugs. However, the salvors gave the assurance that with two further tugs due to arrive on scene on Saturday morning (ANGLIAN EARL (84 tbp) and ESKGARTH (50 tbp)) they would have a total nominal bollard pull of 417 tonnes available and they considered this was enough for their purpose.*

Acomarit (UK) Limited

- D.5.26 *It was unfortunate that a breakdown of communications between the Salvors and Acomarit personnel resulted in the crew having insufficient time to prepare the main engine for use. Since the Salvors had overall charge of the operation they should have ensured that their requirements were communicated in good time and understood.*

Smit Tak BV and Klyne Tugs (Lowestoft) Limited

- 13.15 *At about this time, at the specific request of the Duty Coastguard Officer, the Salvors moved out from the MRC, initially to the offices of Cory Towage at Slip Hill. Thereafter they made arrangements (through Cory) to rent the Murray Suite behind the Town Hall. The Senior Salvage Master communicated with the Marine Team principally through the Harbour Master. The salvage plans were generally presented to the meetings of the Marine Team where they were discussed, but the meetings were of little value to the Salvors. Salvage plans were changing rapidly, twice in the middle of meetings events occurred that necessitated a change in the plans and, accordingly, the approval process could not keep pace with events.*
- 15.11 *The Salvors expressed the valid concern that damaged steelwork was hanging down from the bottom of the casualty as a result of the grounding, so effectively increasing her draft. When the casualty was safely alongside Herbrandston Jetty she was surveyed by the salvor's divers. The divers found that areas of steel structure were indeed hanging from the underside of the casualty over a length of some 30*

metres in way of number 4 starboard ballast tank. In some places the steel extended 7 to 8 metres below the keel. It seems likely, on the balance of probabilities and the nature of the damage that it was caused by the initial grounding of the casualty and, as such, was existing from the very beginning of the salvage services. However, it has to be recognised that any structure which is hanging below the casualty is present because it has been torn out of the bottom. In the event that it caught on the sea bed during forward motion of the casualty, there are three possibilities:-

- i. that the forward momentum of the casualty will break the steel off where it remains attached, or*
- ii. the steel will not break off immediately and the damage will be exacerbated, increasing the overall length of the tear (towards the stern). As it was, the tear extended as far back as frame 50 and the plating was set up and badly ruptured as far back as frame 42 which is only two frame spaces from the engine room bulkhead. It is quite conceivable that any exacerbation of the tear would have led to the engine room flooding; or,*
- iii. snagging on the sea bed may turn the vessel in azimuth causing the tugs to lose control and her to strand elsewhere.*

Taking all the above into account, the Inquiry is of the view that the decision not to take the casualty to sea was correct.

15.20 *The salvors had examined the possibility of reducing the casualty's draught, and had calculated that a minimum draft of about 19.17 metres could have been achieved by pressurising the damaged ballast tanks. This fact was never made known to the Marine Team, and there appear to be two main reasons for this. One is that the Salvors did not consider a proposal that would involve the likelihood of a further oil loss, however limited, would have been approved by MPCU. It must be borne in mind that the Salvors were operating under LOF-95, clause 1(a) of which reads:- "The Contractor shall use his best endeavours:-" and clause 1(a)(ii), "while performing the salvage services to prevent or minimise damage to the environment". The other is that the Harbour Master indicated that he would permit a maximum draft of only 18.3 metres.*

15.24 *Another consideration needs to be taken into account in such a hypothesis. It is known that grounding accidents can leave significant lengths of damaged structure hanging beneath the underside of the casualty. The extent to which this was present on SEA EMPRESS, if at all, was not known in the early stages. However, this factor does not appear to have been significant in the salvors' discussions with the Marine Team on the proposed draught limit of 18.3 metres. This target draught was accepted without reservation. The Inquiry does not believe that this situation would have been changed if instead, an entry draught limit of 20.7 metres had been proposed - because even at that*

increased draught there would still have been over 2 metres of water under the deepest point of the hull at the shallowest point in the channel. The practical effects of steel hanging down on the movement of the casualty have been discussed in Section 15.11. However, it was part of the original salvage plan that a diving survey was to be undertaken after lightening and, in the event that steel was found to be hanging down, the Salvors would have taken steps to remove it prior to proceeding to Herbrandston.

- 19.14 *The final period analysed, between the measurements taken on Wednesday 21 February and Thursday 22 February, included the pressurisation of various tanks by the Salvors which resulted in the successful refloating operation. The 7,000 tons oil loss over this period was a direct consequence of the action of the tide and there was nothing the Salvors could have done about this. Their actions in refloating the vessel could well have prevented a much greater potential oil loss.*
- 21.27 *As a purely theoretical calculation (and ignoring the possibility of steelwork hanging down) it is possible that the casualty could have been brought up to Herbrandston Jetty on Saturday 17 February, though this would, undoubtedly, have led to the release of some additional cargo. This option was not fully explored on the basis that the Harbour Master had set a draft requirement of 18.3 metres and, in addition, because the Salvors would not propose a plan that would involve deliberate pollution however small. [See also paragraphs 15.12 - 15.24]*
- 21.36 *As the salvors request for the two large coastguard tugs had been declined, the salvors contracted the largest available tug, the "DE YUE", which was only ten hours steaming time away, in preference to AHTS vessels based in Aberdeen (which were in excess of 40 steaming hours away). In hindsight these tugs would have been more suitable in the weather conditions that were experienced.*
- 21.41 *On the high water of the afternoon of Monday the 17 February the casualty refloated on the high water and the tugs were unable to hold her in position.*
- 21.44 *The refloating attempt on Tuesday 20 February failed primarily because the casualty was caught on a pinnacle or ridge of rock in way of number three centre tank and secondly because the tidal current was pinning the vessel against St Ann's Head shoal. The combination of the two factors was sufficient to thwart the refloating attempt.*
- 21.46 *The most important factor in the escalation of the incident was the lack of knowledge by the Milford Haven Port Authority and the pilots of the tidal currents within the limits of their harbour area and this reflects badly on their commitment to navigational safety.*

- 21.60 *Reputable Salvors were engaged and they were clearly expending every effort under very difficult circumstances. The formal use of powers of intervention or direction would therefore have been inappropriate, either by the Government or Milford Haven Port Authority.*
- 21.61 *A series of unexpected events occurred which forced the Salvors to react to events rather than anticipating them. The Salvors had to adjust their salvage plan to accommodate those events and did so in a methodical and professional way.*
- D.6.11 *It seems that the casualty may or may not have been afloat at an observed mean draft of 16.6 metres. Despite all of the tugs efforts the vessel could not be refloated on the high water. Whilst the casualty's heading could be swung in azimuth over 15 ° to port and starboard, she could not be moved bodily away from the location. The damage under number 3 cargo tank is consistent with her sitting on a ridge or pinnacle, however it is also possible that she was being pinned on the strand by the tidal stream. By 1945 hours when the tide was falling, it was realised that the operation to refloat the casualty had failed.*
- D.6.14 *The casualty may have been pivoting above a pinnacle or ridge of rock beneath number three centre tank, which is consistent with the damage found in Belfast.*
- D.6.15 *To be deleted.*

Cory Towage Limited

Summary (page 2, first paragraph)

The cause of the initial grounding has been found to be due to pilot error. The main factor, apart from the bad weather, which resulted in the salvage operation taking so long, was the lack of information given to the salvors on the tidal currents in the area. This led to the loss of the casualty's anchors and the escalation in the salvage services required.

- 11.4 *ANGLIAN DUKE (100 tbp) arrived in Milford Haven at about 0800 hrs on Friday 16 February and was therefore able to assist in holding the casualty in the 'pool'. At about 2035 hrs the tug VANGUARD (23 tbp) was engaged by MHPA for general duties, but this agreement was later taken over by Cory. Cory's tug from Cobh, ESKGARTH (50 tbp), and ANGLIAN EARL (84 tbp) then arrived at 0650 hrs and 0848 hrs respectively on Saturday 17 February to support the operation. With the arrival of these two additional tugs it is considered that the total amount of tug power available to the salvors was adequate for the operations which were envisaged, namely turning the casualty, holding her in the 'pool' in line with the main tidal stream, with the assistance of her anchors and engine, and lightening her. However, once the turning operation ran into unforeseen difficulties, particularly the loss of the casualty's anchors, the amount of tug power available was for a short period insufficient.*

- 11.13 *There was sufficient tug power available to undertake the operation as originally intended.*
- 12.19 *The role of MoD Salvage and Mooring Officers, acting as MPCU advisers on board the casualty, was purely to observe and specifically not to influence the salvage decisions. Also, they were to provide specialist advice to MPCU ashore and to undertake operations using MPCU resources under the control of the MPCU Local Commander. This is a very difficult role for men who are used to leading their own salvage operations. In fact they took more of an active role and assisted in tank soundings and position fixing and in many other ways without getting too involved with the actual salvage operation. They also took a very active role when the casualty was swept aground on Saturday evening in organising the safe evacuation of firstly non-essential personnel and then, eventually, all the crew and salvors. The salvors did not find their presence on board helpful. They were seen by the salvors to be Government officials without responsibility and without experience in this type of salvage operation.*
- 13.12(iii) *To be deleted.*
- 14.13 *It is considered highly unlikely that a situation could have arisen in the SEA EMPRESS incident where the first of these reasons would have applied with the level of confidence necessary for intervention to be considered. Those advising the Overall Commander did not have the expertise or experience of commercial salvage on the scale of SEA EMPRESS which would enable their opinion to counter the considered professional opinion of a reputable international salvage organisation such as Smit Tak. If the salvors' plans had not been thoroughly thought through then the proper course of action in such a circumstance would have been to advise the salvors of this fact in order to avoid the need to intervene. Intervention might have been provoked by the second set of circumstances outlined above, but this is considered improbable for the following reasons.*
- D.2.24 *At 1745 hrs the pilot who was plotting the casualty's position detected that she was drifting out of position by which time the ebb tide had begun to take effect. The main engine and steering gear were employed in an attempt to arrest the casualty's drift. The change in the tide put it in opposition to the wind, creating a short sea which made it difficult for the tugs to maintain station and caused the tow lines to snatch. As the ebb tide strengthened the casualty began to drift towards the west. At 1755 hrs, following the shortening of the tow line prior to its repositioning, ANGLIAN DUKE (100 tbp) was instructed to apply full power. Compliance with this order resulted in the tow line parting, to be followed by that of TITO NERI (50 tbp). At 1800 hrs DALEGARTH (45 tbp) made fast on the port quarter but the tugs were unable to arrest the bodily drift of the casualty as she moved to the west, on a southerly heading, into shallower water. The movement of the casualty seemed to surprise everybody; it had been thought that the direction of the tidal*

stream was in line with the channel, not across it, and the strength of the tidal stream at that time was far greater than anticipated. The casualty had been positioned, inadvertently, with the force of the ebb tidal stream acting on her port side. This was due to the pilots' lack of knowledge of the tidal streams in the area.

- D.2.31 The most important factor in the loss of control of the casualty was that the exact nature of the tidal pattern in the vicinity of the southern area of the 'pool' was not fully understood by the pilots who were advising the Master and the salvors'.*
- D.5.25 The available tugs were deployed when required. However, due to a lack of understanding of the effects of the tidal streams in the area by the pilots, the tugs were not deployed in sufficient numbers to hold the casualty aground.*

Marine Pollution Control Unit's Local Commander at Milford Haven

- 3.30 Later on the Monday afternoon SEA EMPRESS refloated. The five tugs in attendance were unable to control her movements and she moved west across the main channel. At about 1715 hrs, the casualty was in line with the main exit from the 'pool', facing inwards and the MPCU adviser on board made a request to those ashore (MPCU and Milford Haven Port Authority) for permission to take the casualty out to sea. This was approved with several conditions. However, to take the casualty to sea would require the use of her main engine (one of the conditions) but as it had not been prepared for use, the question was academic. (It was established later that the MPCU adviser had not consulted the salvors but had sought approval of his own accord, presumably in the event that taking the casualty to sea might become a real possibility.)*
- 12.18 The third source is named as MoD Salvage Officers. Their role, as envisaged in the plan, is to board the damaged vessel, advise MPCU and the Panel of Salvage Experts on the salvage operations and to monitor the conduct of those operations. They are not expected to assume any direct responsibility for those operations. A draft Memorandum of Understanding (MOU) between the Directorate of Marine Services (Naval), MoD, and MPCU was drawn up in August 1995 which sets out the Terms of Reference for MoD Salvage and Mooring Officers seconded to MPCU. The MOU is more explicit on the role and authority of MoD Salvage and Mooring Officers seconded to MPCU than the National Contingency Plan is. (A copy of the draft MOU is at Annex F.) The MoD Salvage and Mooring Officers involved in the SEA EMPRESS incident were employed under the terms of the MOU and represented MPCU on board SEA EMPRESS soon after the initial grounding. Further support was given to MPCU by the secondment of the Chief Salvage and Mooring Officer who acted as senior adviser ashore, sometimes deputising for the MPCU Local Commander in accordance with the MOU.*

- 13.12(v) *The MPCU adviser on board caused confusion when he requested permission for the casualty to be taken to sea as it drifted in the channel on Monday. The Harbour Master thought that there was a pilot on board and he thought the casualty was heading to seaward; the Overall Commander and the Local Commander thought that the request had come from the Salvage Master and they were unaware that the intention had been to take the casualty to sea stern first. Permission under certain conditions was granted (which were not met).*
- 13.15 *At about this time the salvors moved out from the MRC to less crowded offices in the town and the Senior Salvage Master communicated with the Marine Team principally through the Harbour Master. The salvage plans were generally presented to meetings of the Marine Team where they were discussed, but the meetings were of limited value to the salvors. Salvage plans were changing rapidly, twice in the middle of meetings. Nevertheless, there were no known delays in Marine Pollution Control Unit or Milford Haven Port Authority procedures for approving salvage plans.*
- 13.19 *The fact that the Marine Team was not acting as a cohesive unit, because its MHPA and MPCU members could not devote themselves to the salvage exclusively full time, placed demands on the salvors' resources. It is considered that a team of three or four working closely together on a 24 hour basis and with a single line of communication with the ship would have been better able to cope with the demands of the situation.*
- 21.43 *The fact that permission was granted for the casualty to be taken to sea on the evening of Monday 19 February without all the facts being made known to those concerned in the decision making process reflects on the inability of the Marine Pollution Control Unit to follow its modus operandi in placing an officer on board. It was unusual to substitute an MPCU officer with an MPCU adviser; the root causes were lack of MPCU mariners and the adviser taking lone action on his own initiative.*
- 21.52 *To be deleted.*
- 21.56 *Communications between the Marine Team and the salvors was poor at times. The salvage incident would have been better managed by a more cohesive command team dedicated solely to the salvage, lead by the Overall Commander and fully operational on a 24 hour basis.*
- D.4.19 *Earlier in the day, at 1135 hours, the Marine Team had established the day's policy for the tugs attending the casualty; this was to remain attached if possible and should she refloat the tugs were not to fight it. At 2148 the pilot on board reported to the Signal Station that the crew of DE YUE (200 tpb) wanted to let the line go and enter port. Via the Signal Station it was stressed by the MPCU Local Commander that DE YUE (200 tpb) should remain attached at all costs. The Master assured the liaison officer that he understood he should not let go. However, he*

explained that he was unable to maintain position on a short tow line and wanted to lengthen the tow line in order to take off the weight, then move ahead and take the weight again on the line. A little while later when the Master was asked by how much did he want to extend the tow line his reply was about 135 metres. The pilot relayed this to the MPCU Local Commander via the Signal Station, adding that if the tow line was lengthened by that amount DE YUE (200 tpb) would be in danger of being too close to shallow water, which concerned the pilot. The reply from the port authorities was that they would not permit the tug to lengthen her tow line as it would place her in an unsafe position, however another tug was being dispatched to give DE YUE (200 tpb) assistance.

D.5.16 *At this stage one of the MPCU advisers on board contacted MPCU ashore and requested permission for the casualty to be taken to sea. This request was passed by the Local Commander to the Overall Commander (The Coastguard Agency's Chief Executive) in the MEOR in Southampton. It was apparent that a decision was needed very rapidly and he granted permission for SEA EMPRESS to proceed to sea on the basis that; the request had come from the salvors, the Harbour Master was in agreement, the tugs were confident of success, and that the main engine started. The MPCU adviser on board recalled receiving a negative response to this request but this is not supported by the overwhelming evidence from those making the decisions ashore. The Overall Commander, and the Local Commander were not in possession of all the facts and what they had been told was misleading. They were unaware that there was not a pilot on board and unaware that the vessel would be taken out stern first and it had been inferred that the request had originated from the salvors. This indicated a weakness in MPCU's organisation in that they did not have enough personnel to place a mariner (On-Scene Commander) on board the casualty which is MPCU normal procedure when a casualty is involved in a pollution incident. The Harbour Master had agreed to the request but there had been a misunderstanding as the salvors had not initiated it. It is most unlikely that this incident would have occurred had MPCU placed an On-Scene Commander on board the casualty with the MPCU adviser reporting directly to him. In any case the question became academic when the engine was reported as unready to start. The Salvage Master was unaware at the time of the above mentioned events.*

D.6.9 *Prior to attempting to refloat the casualty there was a disagreement between the salvors on board about the plans for the casualty. This was settled by the Salvage Master who stated that the agreed plan was to beach the casualty to the south of Angle Buoy. In a separate incident the pilot suggested that he had in mind an alternative plan for the casualty. Concern about this was relayed back to MPCU ashore by their adviser on board. As a result the MPCU Local Commander and his senior adviser went to the Signal Station to prevent the rumoured deviation from the agreed plan. The Harbour Master immediately instructed the pilot on board that he was to comply with the agreed plan.*

Chief Salvage and Mooring Officer, Ministry of Defence
(Salvage Advisers to the Marine Pollution Control Unit)

- 3.30 *Later on the Monday afternoon SEA EMPRESS refloated. The five tugs in attendance were unable to control her movements and she moved west across the main channel. At about 1715 hrs, the casualty was in line with the main exit from the 'pool', facing inwards, and a second request appears to have been made from the casualty, but not from the MPCU Advisers, to those ashore (MPCU and Milford Haven Port Authority) for permission to take the casualty out to sea. Although this was agreed to, it was not fully communicated to those on board. However, to take the casualty to sea would require the use of her main engine but as it had not been prepared for use, the question was academic.*
- 11.4 *ANGLIAN DUKE (100 tpb) arrived in Milford Haven at about 0800 hrs on Friday 16 February and was therefore able to assist in holding the casualty in the 'pool'. At about 2035 hrs the tug VANGUARD (23 tpb) was engaged by MHPA for general duties, but this agreement was later taken over by Cory. Cory's tug from Cobh, ESKGARTH (50 tpb), and ANGLIAN EARL (84 tpb) then arrived at 0650 hrs and 0848 hrs respectively on Saturday 17 February to support the operation. With the arrival of these two additional tugs it is considered that the total amount of tug power available to the salvors was adequate for the operations which were envisaged, namely turning the casualty, holding her in the 'pool' in line with the main tidal stream, with the assistance of her anchors and engine, and lightening her. However, once the turning operation ran into unforeseen difficulties, including the loss of the casualty's anchors, the amount of tug power available was inadequate. However, concerns had been expressed by the MPCU salvage advisers as early as 1715 on Friday as to the adequacy of the tugs in view of the anticipated deterioration in weather conditions. Arrival of the additional tugs was discounted, and concern continued to be expressed by the MPCU advisers.*
- 12.18 *The third source is named as MoD Salvage Officers. Their role, as envisaged in the plan, is to board the damaged vessel, advise MPCU and the Panel of Salvage Experts on the salvage operations and to monitor the conduct of those operations. They are not expected to assume any direct responsibility for those operations however their role in the event that a commercial salvor has not or cannot be engaged may become much more involved, especially if the MPCU becomes 'de facto' the salvor in possession. A draft MOU between the MoD and the MPCU was considered in Aug 95 but finalisation was delayed by restructuring within the MoD. In the interim draft Terms of Reference (TORs) were produced to cover the role of MoD Salvage & Mooring officers seconded to the MPCU. Neither MOU or TORs can be finalised until the MoD restructuring has been completed. The MoD personnel employed by the MPCU were engaged under the terms of these draft*

documents and provided the MPCU with salvage advice from afloat and ashore soon after the initial grounding. Further support was given to the MPCU by the secondment of the Chief Salvage and Mooring Officer who acted as the senior adviser ashore. However, it is surprising that the Chief Salvage and Mooring officer was not advised by the MPCU of the contents of the National Contingency Plan.

- 12.20 It should be noted that MPCU did offer the salvors a great deal of assistance in terms of salvage and mooring equipment and personnel, helicopter assistance, and in many other ways. However it is a pity that, in terms of salvage planning, MPCU who have, or should have, the powers to positively assist the salvors took the negative role of monitor, do not influence and veto if necessary. This did not assist the salvor and put the MPCU advisers on board the casualty in an awkward position and might even have been counterproductive.*
- 13.12(v) There was confusion when there was a request from on board for permission for the casualty to be taken to sea as it drifted in the channel on Monday. The Harbour Master thought that there was a pilot on board and he thought the casualty was heading to seaward; the Overall Commander thought that the request had come from the Salvage Master and he was unaware that the intention had been to take the casualty to sea stern first. Although permission was granted, under certain conditions (which were not met), the reply was received on the casualty as negative.*
- 13.16 The salvors ideally needed to channel their communications through one body which had the authority to approve and facilitate their plans for the casualty as well as the necessary contacts to help them with local and specialist advice and possibly logistic support. After the salvors moved out from the MRC they clearly looked to work principally with the Harbour Master as the casualty was within the Port Authority area, and the Harbour Master had the principal day-to-day authority for the onshore management of the salvage operation until and unless MPCU intervened. This strategy was only partly successful due to MPCU becoming more active as the incident progressed. For example the MPCU Overall Commander who was still based at the MEOR in Southampton, required to personally approve the salvors' plans. The MPCU salvage advisers were also critical of the salvor's performance. The senior salvage adviser was directed by the Chief Executive of The Coastguard Agency that should the Tuesday evening re-floating fail, then all parties were to be convened to consider radical alternative plans. With MPCU active on the casualty and ashore, the Harbour Master could clearly not take decisions without consultation. It was during this period, especially, that the question of "Who's in Charge" became an important issue.*
- 14.13 It is considered highly unlikely that a situation could have arisen in the SEA EMPRESS incident where the first of these reasons would have applied with the level of confidence necessary for intervention to be considered. It is possible that the salvors' plan had not been thoroughly*

thought through, but the proper course of action in such a circumstance would have been to advise the salvors of this fact in order to avoid the need to intervene. Intervention might have been provoked by the second set of circumstances outlined above, but this is considered improbable for the following reasons.

14.20 *MPCU did not have the resources to take control of the salvage from the salvors. The Secretary of State for Transport needed a salvor and needed to work with them to form and expedite the plan. Reputable salvors had been engaged and they were clearly expending effort under difficult circumstances. As long as they continued with their efforts use of the powers of intervention would have been inappropriate except, perhaps, to assist the salvors to overrule any decisions imposed on them by others.*

15.19 *Initially however, both the pilots and the MPCU salvage advisers made strong representations to the Harbour Master that the casualty could not be held in the 'pool' through the impending gale without additional tugs. With the arrival on Saturday morning of the tugs ANGLIAN EARL (84 tbp) and ESKGARTH (50 tbp), and the decision to turn the casualty, their concerns had been reduced for the short term as it meant that in the absence of a large sea-going tug to hold the stern to seaward the ship's engines and anchors could be used. It did not resolve the problem of the unsuitability of the available tugs or their ability to cope with heavy weather but removed the immediate objection to the proposed salvage strategy.*

21.24 *The initial inspection of the casualty by the crew, and that subsequently carried out by the Marine Pollution Control Unit and their advisers, in the early hours of Friday 16 February, could not fully identify which cargo tanks were ruptured.*

21.32 *The salvors were diverted from their main task in order to attend meetings ashore early in the incident, partly due to a lack of effective representation of the Marine Pollution Control Unit and Milford Haven Port Authority on the casualty but primarily due to a lack of effective representation of the salvor on board the casualty, as a consequence of a shortage of senior management.*

21.43 *The fact that permission was granted for the casualty to be taken to sea on the evening of Monday 19 February without all the facts being made known to those concerned in the decision making process reflects on the poor quality of communications between those on board the casualty and those in authority ashore.*

D.1.30 *By 1100 hrs, to the credit of all those involved, all the equipment necessary to pump out the pump room had been off loaded from the barge WICKNER and the pumps rigged ready to lower within the pump room by MPSC staff. However further progress was not possible as neither the salvor in possession, nor the MPCU contractor, had the*

resources on board to undertake a pump room entry without jeopardising the ship or the individuals undertaking the task. It would also have constituted a direct intervention without specific approval of the MPCU, the salvor or the ship's Master.

D.1.35 The extreme draught of the casualty severely limited the options which were available for dealing with the emergency. The decision to leave the casualty in the 'pool' at this stage of the incident and not take her to sea, nor beach her, was correct. However, at this stage an accurate survey of the ship's condition was not possible, especially the condition of the structural strength remaining in the vessel or the under keel clearance. This meant the option of proceeding directly to Herbrandston terminal could not be properly evaluated, even had the SERS facility been utilised. As a result only two practical salvage options were known to MPCU and MHPA, namely to hold the casualty in the 'pool' and lighten her, or to take her to sea. The possibility of taking the casualty directly to Herbrandston Jetty without prior lightening was not fully explored. This possibility is discussed in Section 15.

D.2.9 To facilitate a speedy and safe transfer of the cargo from the casualty's centre tanks to the lightening tanker it was intended to use the main pumps of the SEA EMPRESS. However, this required the water in the pump room to be pumped out and the space to be ventilated because the atmosphere was well within the explosive range. This operation, which had previously been halted on the orders of the MPCU adviser, was recommenced at about 1400 hrs by the salvors using the pumps and equipment previously provided by MPCU in addition to trained manpower with specialist equipment provided by the salvor for working in explosive vapour conditions. Two submersible pumps were used and ventilation had to be provided by portable units. This was necessary because the lower end of the compartment's ventilation trunking was below the water level. Until the water level was lowered sufficiently to uncover the trunking the casualty's own ventilation system could not be used. The presence of product and fuel in large amounts meant the pump room atmosphere remained highly explosive.

D.5.16 To be deleted.

D.5.27 To be deleted.

Milford Haven Port Authority

- 5.28 *Consideration was given at an early stage in the inquiry to making an interim recommendation that pilots should use the Outer Leading Lights when bringing all vessels into the Haven via the West Channel.*

The MHPA pointed out that this would represent a major change in entry procedure with potentially serious safety implications.

The line of the Inner Leading Lights has marked the safe entry approach to the West Channel for over 300 years and is the established approach for all vessels at all states of tide except VLCCs, that is vessels in excess of 150,000 dead-weight tonnage (dwt) which inevitably time their arrival close to high water. The Outer Leading Lights were provided in 1971 for use by VLCCs arriving at high water but since the SEA EMPRESS was neither a VLCC nor arriving at high water, the Outer Leading Lights were not relevant to her.

The proposed recommendation to use the Outer Leading Lights for all purposes would therefore have represented a significant departure from a well-established approach procedure.

- 5.29 *The proposed use of the Outer Leading Lights was tested on a computerised simulator with two tankers, one of 88,425 dwt and one of 133,855 dwt. Although both vessels were able to enter the West Channel successfully on the simulator, the simulator results can only be regarded as indicative and extensive additional work would be necessary to establish whether the new entry procedure was safe.*

Section 22, sixth paragraph

MHPA have accepted that further simulation trials should be conducted but have expressed concern that any trials with live ships should only be contemplated if the simulator studies conclude that a high degree of safety can be achieved and if the full co-operation of pilots and shipowners is assured.

Milford Haven Pilots

- 4.11 *Another source of information, which was available at the time of the incident, is the local knowledge derived from the experience of the pilots, fishermen and others. It was generally known that there were anomalous strong tidal streams at the entrance to the West Channel and around Saint Ann's Head. However, it is apparent that a general "rule of thumb" was used by MHPA and at least some of the experienced pilots. This was that the convergence between the coastal tidal streams, which flow more or less at right angles to the line of approach, and those within the Haven, that generally flow in line with the channel, occurs approaching Mill Bay Buoy, ie near the geographical entrance to the Haven.*

- 4.13 *The general conclusion reached as a result of the Inquiry's study into the tidal streams within the 'pool' is that they are complex and strong. No accurate description of the tidal stream pattern existed at the time of the incident.*
- 21.33 *The decision on Saturday 17 February to turn the casualty to face the wind and sea was correct based on good seamanship practices and the information available. The principal reason for the loss of control of the casualty after the turn was the strength of the tidal forces and the inadequate tug bollard tonnage available to counter it.*
- 21.46 *The most important factor in the escalation of the incident was the strength of the tidal forces and the inadequate tug bollard tonnage available to counter it.*
- D.2.24 *At 1745 hrs the pilot who was plotting the casualty's position detected that she was drifting out of position by which time the ebb tide had begun to take effect. The main engine and steering gear were employed in an attempt to arrest the casualty's drift. The change in the tide put it in opposition to the wind, creating a short sea which made it difficult for the tugs to maintain station and caused the tow lines to snatch. As the ebb tide strengthened the casualty began to drift towards the west. At 1755 hrs, following the shortening of the tow line prior to its repositioning, ANGLIAN DUKE (100 tbp) was instructed to apply full power. Compliance with this order resulted in the tow line parting, to be followed by that of TITO NERI (50 tbp). At 1800 hrs DALEGARTH (45 tbp) made fast on the port quarter but the tugs were unable to arrest the bodily drift of the casualty as she moved to the west, on a southerly heading, into shallower water. The movement of the casualty seemed to surprise everybody; the strength of the tidal stream at that time was far greater than anticipated. The casualty had been positioned, unavoidably, with the force of the ebb tidal stream acting on her port side.*
- D.2.26 *The computer generated model of the tidal streams at the entrance to Milford Haven suggest that, following the turn, the velocity of the ebb tidal stream in the vicinity of the casualty was nearly 50% greater than before. This difference was due mainly to the increasing strength of the tides as they approached springs and partly to the casualty having been repositioned slightly further south and west. The effect of this increase in tidal velocity would have been to approximately double the tidal forces exerted on the casualty. It has been calculated that the maximum force on the casualty's underwater hull form, due to the tidal stream on the beam, had increased to a figure in the order of 570 tonnes. This force would have increased still further as the casualty was carried into shallower waters and probably exceeded 700 tonnes before the casualty grounded. It is clear that even if the assembled tugs had been deployed against this unexpected tidal stream, their combined nominal bollard pull of 417 tonnes was inadequate for the circumstances which actually prevailed. It is apparent, given the calculated tidal forces and*

the inadequate tug bollard tonnage available to counter this, that the vessel would have been driven ashore no matter where she had been anchored within the pool, all of which lies within the influence of the westerly ebb stream.

D.2.30 The decision by all parties to turn the casualty was understandable and based on good seamanship practice and the available information. However, the principal reason for the loss of control of the casualty after the turn on Saturday was that not enough consideration was given to the effect of the tidal stream.

D.2.31 The most important factor in the loss of control of the casualty was the strength of the tidal forces and the inadequate tug bollard tonnage available to counter it.