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Our Reference:
SNW/784/0159/03
Date
16 May 2007

USS MINNEAPOLIS-ST PAUL – INCIDENT ON 29 DECEMBER 2006 – FURTHER INVESTIGATION

References:

- A. NBC(D)/7/3 dated 30 Apr 07 – Letter instructing further investigation.
- B. SNW/784/0159/03 dated 18 Jan 07 – Report of Immediate Investigation.
- C. NBC(D)/7/3 dated 5 Feb 07 – NBC Investigation – Letter to CINCFLEET.
- D. US Command Investigation Report – Deaths of [Two Crewmen] onboard USS MINNEAPOLIS-ST PAUL (SSN708) on 29 December 2006.

We have the honour to report the conclusions obtained from our further investigation into the deaths of two crewmen from USS MINNEAPOLIS-ST PAUL on 29 December 2006.

As instructed by Reference A, we have reconvened the investigation team set up in January to conduct the Immediate Investigation and have included in deliberations evidence from a Subject Matter Expert from Clyde Naval Base. We have reviewed the US Command Investigation at Reference D and in particular the substantial additional material published on the world wide web. In addition we have re-interviewed QHM and the Chief Admiralty Pilot and interviewed, ourselves, for the first time the Admiralty Pilot involved in the incident.

Our conclusions are reported at the Enclosure.

We have the honour to be,
Sir,
Your obedient Servants

Defence Equipment & Support

[REDACTED]

[REDACTED]

Commander Royal Navy

[REDACTED]

[REDACTED]

Commander Royal Navy

[REDACTED]

Captain Royal Navy
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Annex:

A. Key Quotes from Enclosures to Reference D.

Enclosure:

1. The Facts Surrounding Interaction of the Pilot with the Submarine Command Team.

ANNEX A TO
SNW/784/0159/03
DATED 16 MAY 2006

KEY QUOTES FROM ENCLOSURES TO REFERENCE D

On the planned position and speed for Pilot leaving the submarine

Encl 64 from the OOD says *"This probability had been discussed the previous day, and we talked again about driving right of track and his disembarking right after we were clear of the ship".*

In encl. 65 the OOD says *"At the brief, we discussed that if the weather seemed rough, we would conduct the BSP on the 250 leg of the transit out of the harbor. Otherwise we would conduct the BSP outside of the breakwater. I don't recall whether we set a speed at which the BSP was to be conducted. ... On the way out, we decided we would conduct the BSP on the 250 leg".*

In encl. 69 the Navigator says *"We discussed getting the pilot off after the moored vessel at "Charlie" buoy, but the exact point was not discussed. The pilot indicated the "Charlie" buoy would be the earliest point at which he would be comfortable getting off of the ship."*

In encl. 76 the Nav Evaluator says *"We intended to do the transfer before leaving the protection of the breakwater but after we passed the vessel at anchor. I don't recall what speed the transfer was supposed to take place at. I don't recall any triggers or "go/no go" criteria for the pilot transfer being discussed at the piloting brief."*

In encl. 77 a Rider says *"The pilot disembarkation was specifically discussed, and was planned to occur inside the breakwater in the vicinity of buoy (anchorage) Charlie."*

In encl. 78 a Rider (not clear if it is the same person) says *"although the pilot was used to getting off outside the breakwater, because of the forecast conditions, we decided to get him off inside the breakwater. ...we made the call to get the pilot off prior to leaving the protection of the breakwater."*

In encl. 84 the CO says *"We discussed expected rudder orders, SPM usage, a ship anchored at the C buoy, where and how we would debark the pilot. We discussed the possibility that the anchored ship may be blocking our track and that we would have to conn off track to the north to clear the ship. The pilot said that the pilot normally gets off the ship after the piloting is done on the 170 leg. We discussed that if the weather was bad he would debark on the 250 leg once we were safely past anchored ship. The transfer would be two legs early but we felt that we could safely navigate the ship out without the pilot on board at this point."*

In encl. 85 the CO says *"We specifically asked the pilot if it would be safe to conduct the transfer before the 170 leg – he said that it would be. ...we identified*

the following hazards for the outbound transit: ship-driving through the complicated channel down the river, the anchored vessel likely to have drifted into our track, and the pilot transfer. We discussed transferring the pilot outside the breakwater, although if the seas were bad, we would conduct the transfer on the 250 and 224 legs of the transit. I understood the pilot transfer would take place at approximately 6 knots, but I don't recall whether this was specifically discussed at the piloting brief. ...Our goal was to have the evolution completed before we turned off of the 250 leg. We did not have a set "drop dead" point, wherein the transfer could no longer be attempted or completed. The pilot was OK with our plan".

In encl. 87 the XO(Desig) says *"I recall discussion that we would need to disembark the pilot before going outside the breakwater, but I do not recall the exact location where we intended to disembark the pilot."*

In encl. 88 he also says *"At the piloting brief, we also discussed the transfer point to get the pilot off MSP. We planned to disembark the pilot after maneuvering past the merchant vessel moored at "Charlie" buoy. I know that we wanted to get the pilot off as early as possible to allow us time to de-rig the bridge in preparation for the expected heavy seas. I do not recall any discussion of the ship's speed for the pilot transfer. I imagine that the transfer would take place at our usual transfer speed, that is, 3-5 knots."*

In encl. 91 the 1st Lt says *"I took away from this brief that the pilot would disembark near the breakwater exiting the river."*

In encl. 99 the XO says *"we discussed the pilot debark point would be on the 250 leg (two legs prior to the 170 leg, the normal pilot pickup/dropoff point). The Pilot agreed that this was standard for the weather expected and that there should be no problems. He also discussed that there would be a ship anchored at the anchorage and we would likely have to go north of track to pass between it and the mooring buoy (the anchored ship would likely tend to the north)."*

In encl. 100 he says *"The XO [REDACTED] also said the pilot was likely to get off between the anchorages (on the 250 leg) because it (sic) the sea state would start to increase on the 170 leg (passing Penlee point). This was in accordance with our plan to disembark the pilot on the 250 leg, as discussed with the pilot at the piloting brief the previous day."*

ENCLOSURE 1 TO
SNW/784/0159/03
DATED 16 MAY 2007

THE FACTS SURROUNDING INTERACTION OF THE PILOT WITH
THE SUBMARINE COMMAND TEAM

1. Reference B remains an accurate record of events except in respect of the following areas where there is evidence from the US Investigation that modifies or expands it.
2. In Enclosure 84 of Reference D the CO of the submarine says "*the Navigation team was told that the pilots do not attend the piloting briefs*" and at encl. 85 he says (of the Pilot) "*Although he initially said he would not come and we had to push to get him there, he did attend the brief*", in encl. 99 the Executive Officer of the submarine says "*we had requested he attend our Piloting Brief and he initially refused until I personally called the Pilot Station to request his presence at our brief, then he agreed*". We therefore investigated this point in our interviews with QHM and his staff. We asked QHM if he could determine what had happened. At his interview he told us that he had not been able to find out but asserted that he expects the Pilot to attend such briefs for foreign warships. The Admiralty Pilot, [REDACTED] told us that he had been 'phoned by Flag when he was at home on leave, not on duty and asked if he would attend the brief. He had asked if he was really required, when this was confirmed he agreed to attend. We have concluded that it would have been better if the Pilot's attendance at the brief had always been planned and known in advance.
3. Reference B para 7 stated that the Pilot agreed with the CO that he would leave the submarine "*once I was satisfied that the ship was on the correct bearing for departure and was travelling at a safe transfer speed*". Examining the enclosures to Reference D gives a variety of views of what was agreed about the departure point for the Pilot. Key quotes appear at Annex A, from which we have concluded that the pilotage brief definitely discussed the point at which the pilot would leave and that it appears that it was agreed that the pilot would leave the submarine on the 250 leg after passing CARDIGAN BAY (CARD). Overall the evidence from the enclosures suggests that the speed of the transfer was probably not agreed and may not have been discussed at all at this brief. At our interview with him the Pilot told us that his original signed statement had not reflected that he recalls saying at the brief that the transfer speed should be "Slow, because I don't like getting my feet wet", by this he said he had in mind 3-5 knots. Because this was not supported by his signed statement or any of the statements in the US Investigation we have concluded that it remains uncertain what was discussed or agreed about the speed for the transfer at this Pilotage Brief.
4. The Pilot told us that the Piloting Brief onboard MSP on 28 Dec 06 was a large meeting of about 20 of the Ship's Company and that there was no prior opportunity for the Pilot to follow his customary practice of a smaller meeting with CO and Navigator where more in depth debate of the plan would have been easier to conduct. We conclude that this may have been a factor making it more difficult for the Pilot to contribute effectively to the pilotage planning process.

5. In Reference B para 8 we say "He (the Pilot) also spoke to the master of the tug FORCEFUL who was standing by CARD at 'C' buoy who informed him that the wind was currently SSW 40-45 knots but would reduce for MSP's move. When he arrived on board he spoke to MSP's Navigator (*we believe this was actually Officer of the Deck (OOD)*) and both agreed that conditions were suitable for the move." Reference D finds it significant that the information from FORCEFUL was not passed on to MSP. At our interview the Pilot agreed that he had not passed this information on to MSP when he was talking with the OOD after joining her about 30 minutes before sailing but says that this was because this information was by then about two hours old and newer information was available.

6. The US report states that the fact that surface ships would not be allowed to get underway in the conditions was not disclosed to the submarine. It expresses concern that this may have prevented the crew from properly appreciating the severity of conditions. We discussed this with the Chief Admiralty Pilot (CAP) and the Queen's Harbour Master (QHM). We were told that on that day no surface warships were due to move in the harbour and some scheduled commercial vessel moves did take place. No surface vessel movements were therefore cancelled. Had a surface vessel with high windage been due to sail that day the move might well have been cancelled, but smaller surface vessel movements (for example T22 frigate) might have gone ahead. If conditions had further deteriorated QHM might have ordered "Controlled Moves", where vessels would have only sailed with much greater resources in attendance. This state would have been announced to all ships, including MSP, on VHF Channel 13. Further deterioration of conditions would have led to a closure of the port, again announced to all vessels on VHF Channel 13. There was thus no announcement or notification from which MSP was excluded and we conclude that there is not a significant point here.

7. In Reference B para 10 we say that "the pilot had a discussion with the CO about the transfer with the CO asking what side he wanted the ladder and where he planned to get off". Statements from the OOD (encl 64) and CO (encl 84) indicate that just after the turn from the 170 leg on to the 250 leg the OOD told the Pilot that he was happy and asked if he wanted to leave the submarine at that point and the Pilot said he wanted to stay until clear of CARD. In interview the Pilot told us that he had no recollections of this conversation taking place.

8. In Reference B para 13 we discuss the approach of the Pilot Boat when called in for the transfer. Statements from the CO (encl. 84 and 85) indicate that the Pilot Boat was slow in coming alongside, although he acknowledges that this was unlikely to have had an effect on the outcome of the incident and the OOD (encl 65) believed the delay was probably due to the boat "*waiting to see the Jacob's ladder go in position and the guys on the deck indicate that they were ready*". This view was supported by the Pilot who told us that he believed the pilot boat would be waiting for the Jacob's ladder to be rigged before moving in. We conclude that this was not a significant factor in the incident.

9. In Reference B para 21 we discuss the significance of the failure to disseminate the lessons identified from the SOVEREIGN incident whilst exiting

Plymouth Breakwater. Reference D makes it clear that a similar lesson learned could have been obtained from encl. 30, the details of an incident in [REDACTED]

[REDACTED] We conclude that it is in our collective interests (US and UK) to be more proactive in sharing non nuclear incident reports.

10. From our interview with the Subject Matter Expert (SME) from Clyde Naval Base [REDACTED] a senior Admiralty Pilot), who has had extensive experience of piloting US Submarines, we learnt that the differences in bridge practices between UK and US Submarines can be disorientating for UK Pilots. This is particularly relevant because of the use of 'phone talkers to pass orders and the fact that navigation is conducted from the control room and not on the bridge making it difficult for the Pilot to follow the key navigational orders that are being passed, compared to UK practice where all orders can be heard being acknowledged on loudspeakers on the bridge and the navigator can be seen conducting navigation. We have concluded that unless properly briefed or experienced on the differing procedures on a US Submarine, UK Pilots may find it difficult to gain confidence in, and fully integrate themselves with the bridge and navigational team. This may have been a factor that led the Pilot to have concerns for the competence of the US crew to navigate safely around CARD.

The Standards Required of an Admiralty Pilot

11. We asked QHM for the documents defining the standards to which Admiralty Pilots are required to perform. We were given a copy of the Admiralty Pilotage and Harbour Control Service Handbook (APHCSH) and of the Marine Pilotage National Occupational Standards (NOS). The APHCSH provides a listing of the competences required of an Admiralty Pilot, these include specific reference to NOS. We confirmed with QHM that these are the standards against which the performance of Admiralty Pilots should be judged. We also asked CAP about the status of NOS and were told that it is "aspirational". In his interview we asked the Pilot if he had seen and read NOS, he said he had, but some time ago. The Clyde SME told us that he had heard of NOS but had not read it and was unsure if a copy was available to Admiralty Pilots on the Clyde.

12. We have concluded that whilst the NOS are clearly defined as the standard of performance to be expected of Admiralty Pilots this must be viewed against the background that the detailed content of this document is not well known to pilots within the APHCS.

Performance of the Pilot against required Standards

13. In his interview the Pilot acknowledged to us that his pre-occupation with ensuring that the submarine drove safely past CARD led to his losing situational awareness. He thus did not take positive action to ensure that the submarine slowed or stopped to conduct a safe boat transfer before losing the lee of the breakwater.

14. We conclude that on the execution of this piece of pilotage the Pilot showed a number of shortcomings against the standard defined in NOS, particularly elements of: Unit 1 – Planning an act of pilotage, Unit 2 – Embarking and disembarking, Unit 3 – Assessing standards on the piloted vessel and Unit 4 – Co-operating with the bridge team and functioning within it.

Review of Recommendations and Actions in Reference C

15. We confirm that following our review, the recommendations contained within References B and C remain valid and well justified. We consider that there is need for further recommendations in the following areas.

16. Pilotage briefs should be arranged for all departing foreign submarines and the rostered Pilot should be given adequate notice of the requirement to attend. Pilots and foreign submarines should be aware of the factors which can make it difficult for Pilots to contribute fully to the required team effort of executing a joint pilotage plan and both should work to counteract them.

17. There should be a vigorous campaign to achieve full understanding and assured performance to the standard set by the pilotage competences within the Marine Pilotage National Occupational Standards, throughout the UK Admiralty Pilotage Service. This is likely to include continuous peer review and regular formal assessment.

18. Noting Reference B para 33 US authorities have now identified shortcomings to safety equipment, which should be reviewed by the relevant UK authorities.

19. The processes and culture need to be put in place to ensure that information is exchanged and shared freely and effectively. Examples of this are the need for Clyde and Devonport Pilots to share experiences over the differing bridge practices on US Submarines and for UK and US submarine communities to share lessons learned from incidents such as those on HMS SOVEREIGN [REDACTED]
[REDACTED]