ACTIVITIES DURING THE SA295 SEARCH NEAR MAURITIUS: DEC 87/JAN 88

By

E Potgieter

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1. INTRODUCTION

After the SA 295 Helderberg accident on 28 November 1987 IMT was approached to gather a team to assist in the search for the acoustic beacon ("pinger") that was monitored on the aircraft's flight data recorder.

I was approached to be part of this team, because of my experience/knowledge of the effect that fluctuation of temperatures have on under water sound transmission. And incase the transmitter could be located, to anchor transponders in the vicinity to facilitate the later recovery of the flight data recorder.

The purpose of this report is to summarize my activities during my visit to Mauritius during the period of 5 December 1987 to 6 January 1988, considering that my role ended up being different from the other MIT personnel that were on the island.

In conclusion I would like to make some suggestion from my observations, which should be kept in mind, in case another accident of this nature should occur in the future.

2. ACTIVITIES

2.1. Time Period 6-10 December 1987

During the first three days, I was not in a position to be part of the IMT team, as they were aboard the ship Wolraad Woltemade in the primary search area.

During this period, before the arrival of the experts from the USA, I delivered a presentation on the planning of an acoustic search. Considering that not many people had experience with maritime and sonar searches at that time.

After a delay to track down my equipment, which was sent to Mauritius especially for this search, I eventually tested and installed my instruments aboard the Wolraad Woltemade.

Late at night on 10 December, I was asked to be aboard the NS Sonne early the next morning 11 December, to be a representative & observer for SAA.

2.2 Time Period 11-21 December aboard NS Sonne

2.2.1 Mission Policy

After we left the Port Louis Harbour at 09h00, a meeting was immediately held where the technical aspects of this mission were discussed. Some of the urgent matters at hand that were discussed, were as follows:

2.2.1.1 Scale of Charts

After a thorough discussion of all the advantages and disadvantages of the different scales and the time would it take to produce these charts, it was decided that a scale of 1:25 000 would be used. After the search of the primary search area 1 was completed, we were given orders by the at sea commander to change our scale to 1:50 000. The German scientists were not happy about this decision.

2.2.1.2 Transmitter detection system

Even though the detection of the acoustic beacon was not officially part of this mission, the chief electrical engineer onboard offered to set the ships transponder to 37.5 kHz. Those in the meeting decided to ask him to continue, even though this was not the main priority of this assignment/order. After 36 uninterrupted hours of work by this engineer (on his own!), the equipment was ready. The end result of the limitations of the equipment at his disposal, was a very narrow band width receiver. During the period of mapping signals were received in the renamed S1 area. The Captain refused to release this information from his ship, because he could not be absolutely certain of its origin.

2.2.1.3 Manning of Radio station

During normal research exercises this ship does monitor the frequencies of the HF radio. (VHF excluded) However, the meeting decided that the radio operators will monitor the HF radio equipment on a 24 hour basis.

2.2.1.4 Debris- recovery

The Captain and Chief Scientist were unsure of the exact orders regarding the above. After discussions, it was agreed that provided that the task did not delay the ship's primary mission every effort should be made to recover the debris.

At about 17h00 on the 11th December a message was received from the main control center that two pieces of debris had been spotted by an aircraft about halve a meter below the surface of the ocean. Unfortunately it was not possible to reach the site in daylight and would mean a delay of 12 hours with the task of mapping. Hence, it was decided not to proceed with the request of recovery of the debris.

The meeting was adjourned and it was agreed that future meetings will be held at 07h15 and 15h15 to ensure that I will be kept abreast with developments on the ship and whole operation.

2.2.2 Report of the Mapping operation

Although it was not required of me, and in respect of my own training, I offered to work shifts on the Sunbeam-mapping system. I thus gained valuable experience.

A copy of the tasks carried out on an hourly basis during the whole of the contract period was handed over to the management committee on arrival at Port Louis. In order to complete the report I will give a brief summary.

2.2.2.1 Saturday 12 December

The ship arrived at the primary search area at 0h01 and started immediately with the mapping of the debris area. At 20h00 the main east-west grid lines were completed. Unfortunately, due a gap in the GPS system, a Doppler system was used. From 22h00 north-south gridlines were mapped to establish the accuracy of the previous mapping. This was completed at 03h00 the next morning and production of the maps of the area commenced immediately.

2.2.2.2 Sunday 13 December

On completion of the mapping of the primary area the ship proceeded to the secondary area. This process was interrupted at 09h00 to enable a meeting with the various ships' Captains and exchange of personnel from the "John Ross". The remainder of the day was devoted to the mapping of the secondary search area. At approximately 21h00 the maps of the primary are were completed.

2.2.2.3 Monday 14 December

Mapping was interrupted during early morning to enable the transfer of the maps to the John Ross.

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…… It was later decide that the indicated direction is in fair agreement with the Heidelberg's flight direction. The control ship, however, did not accept this proposal. It was decided to extend the search area to the southeast.

2.2.2.6 Thursday 17 December

The mapping of above mentioned area 4 was completed at 08h00. At 11h00 the OFOF system was deployed. Until 21h00 a large amount of slides were taken. Informed by radio that the John Ross system was again suffering from problems.

The original contract period of this ship expired at 04h00 on 18 December. After numerous telexes and high-profile telephone calls between the ship and the German Minister of Research and Technology it was agreed to extend the contract to 21 December.

2.2.2.7 Friday 18 December

At approximately 01h00 the slides from the previous day's OFOS search were completed. Screening of these slides showed very little of interest, although a few man-made shapes were observed. During the course of the night a large man made object was observed on the TV cameras of the "grab". Due to poor definition this object could not be identified.

At 09h00 a 'pinger' was received from the John Ross with instructions to lower it to a depth of 4000 m. The reason for it was to test the detection system of the John Ross. After numerous bypasses, some as close as 400 m from the 'Sonne' they eventually managed to pick up the signal at 19h00.

The 'Africana' arrived at approximately 18h30 and representatives from the Sonne, Africana and John Ross had a meeting on board the John Ross. Main items on the agenda were the management structure whilst at sea and method of reporting. The Sonne was instructed during the meeting to proceed and map area 5 (south east from the primary search area) .

2.2.2.8 <u>Saturday 19 December.</u>

The mapping of abovementioned area was completed at 06h00 and the OFOS system was deployed at 06h30. For the first time a situation report was received from the Control Center in Port Louis. The general consensus was that the report was very vague. During the afternoon the OFOS system was withdrawn and the TV cameras with the 'Grab' redeployed.

2.2.2.9 Sunday 20 December

At 01h00 the 'grab' was withdrawn and the Sonne, as instructed by the John Ross placed on standby until 12h00. During the morning copy paper for the maps was received from the John Ross. At 12h30 the OFOS system was deployed for the last time.

Screening of the previous day's slides once again indicated a large amount of man-made objects. These objects were lighter as those mentioned in 2.2.2.5. (*Unable to say whether lighter in colour or in weight. The word used in Afrikaans is "ligter")* These observations supported a previous suggestion to extend the search area to the north-east. A telex was again sent to the John Ross in this respect but no response was received.

2.2.2.10 Monday 21 December

The ship left the search area at 04h00 for her return journey to Port Louis where she arrived at 14hoo. A meeting between the personnel of the control center and those of the ship was held at 15h30. Later that evening I received instructions to board the John Ross as observer.

The Sonne's route report was completed and handed over to control.

2.3 Period 22-23 December.

Whilst waiting for the helicopter transport to the John Ross, time was spent in the control center. During this time an attempt was made to calculate the possible drift of the lighter objects that was observed by the Sonne at the bottom of the ocean. Absence of accurate data led to many speculations and it was decided not to pursue this any further.

The satellite tracking station at Hartbeeshoek was contacted in an effort to establish whether the search area was perhaps monitored with infrared cameras. The theory was that a fire on the ocean might have started shortly after the accident. This area is not being monitored by anyone in the world, thus no concrete evidence could be obtained from this source.

At 13h00 on 23 December a representative of the USA navy and I left on a helicopter for the John Ross. I was in possession of a letter to the Ship's Captain stating that I was to be allowed to report independently, via the Africana , to the Control center in Port Louis.

2.4 Period 23-29 December

On arrival at the John Ross the ships captain informed me that I was required on the Africana to man their detection system. This was contrary to my orders and it required a fair amount of diplomacy to remain on the John Ross. In the end rough seas prevented any personnel transfers between the 2 ships by means of small boats.

During and particularly the first few days on board I had no access to the situation reports to the control center in Port Louis. In a way this prevented any quality control.

On recommendation from the Captain the independent report via the Africana was dismissed and instead he suggested a telex to the ships agent, Mr. Hugget, for onward transmission to Mr. Zandee or Mr. Boshof. The main period in question was the Xmas weekend. After the weekend it was established that Dr. Strümpfer will arrive on board Monday 28 December and a report could be made directly to him.
During discussions with ships crewmembers they informed me that according to the American operators, the detection system only picked up a signal once. This source of information is doubtful but requires further investigation, as this was not mention in previous situation reports.

I personally also had my doubts about the effectiveness of this detection system. The reason being that in 10days the system was never tested against a test-pinger for evaluation and secondly as a result of the constant background noise. On two occasions I found the detection system unmanned.

On 29 December Dr Strümpfer and I left by helicopter to PortLouis. On 30 December the John Ross mentioned in her situation report that the 'fish' has been withdrawn due to technical problems.

In total my feeling is that as a result of the initial problems and the subsequent uncertainty as to its functionality and effectiveness, the detection system on board the John Ross has to be questioned.

2.5 <u>Period 30 December 1987 to 5 January 1988</u>

The management committee in Port Louis decided on 30 December that transponders would be required to assist during the follow-up sonar search for more debris. The IMT transponder system was at that stage already on its way on board the Wolraad Woltemade. The Africana, however, on my orders, loaded two Benthos transponders from the National Research Institute for Sea Fisheries. The Committee therefore requested that I remain in Mauritius until the ship returns to Port Louis on 2 January. I was then required to prepare the apparatus and the anchor systems for handing over to the Steadfast personnel.

During the interim period I assisted with the calculations of the actual camera positions of the Sonne and with the identification of some of the main objects photographed by the Sonne.

On 4 and 5 January I was fully occupied with the preparation of the Benthos transponders and anchor system and handed over inclusive of training to the Steadfast personnel.

I returned to Cape Town on 6 January.

3. RECOMENDATIONS

I personally gained a lot of knowledge out of this experience. I have observed a few things, which could be of value in the future:

3.1 Communications:

During the search the communication channels between the control ship and control committee was not satisfactory, whilst the Sonne and the Africana had direct telephone connection with the committee. This led to frustrations by the Control Ship's Captain who considered that the telephonic reporting by the Sonne and Africana was considered as undermining of his authority.

3.2 Overall Command at Sea

I would strongly recommend that a local expert be appointed on an equal authority as the consultant as Commander at Sea. It will ensure a better quality control.

3.3 Duty hours of Shifts

On board the John Ross the men manning the detection equipment were required to work for 12hrs. It is my opinion that it is too long for continuous concentration. This can reduce his ability to distinguish between a signal and background noise.

I was particularly impressed with the professional manner in which the crew and scientists on board the Sonne conducted themselves. We can consider us very fortunate that the ship just happen to be in the area. No South African ship has such scientific capabilities and should another disaster ever occur we would have problems.