

REPORT OF THE PRELIMINARY INVESTIGATION INTO THE GROUNDING
ON A SUBMERGED ROCK AND HOLING OF THE HULL OF THE
MV CAPE PILLAR ON 21 JANUARY 1984

ACTION TAKEN BY DEPARTMENT OF TRANSPORT

1. Following a detailed examination of the Preliminary Investigation report and with due consideration given to Captain Clarke's conclusions and recommendations the Department of Transport has decided that no action will be taken against the certificate of competency of any person.
2. The Department of Transport's contractual arrangements with charterers are being reviewed to more clearly address the likelihood of unusual risks arising during the intended operation and to set out more precisely the advice to be given to the owners in order that appropriate additional equipment and operating procedures can be provided if considered desirable.
3. The Department of Transport is reviewing the adequacy of management directions and instructions to the Master regarding operating practices and procedures.
4. The Department of Transport is re-examining the damage control procedures on its ships and will then make any necessary changes to improve safety in view of the particular features of their employment.

MARINE OPERATIONS DIVISION
DEPARTMENT OF TRANSPORT
CANBERRA

PRELIMINARY INVESTIGATION

into

the grounding on a submerged rock and holing of the hull of the MV Cape Pillar in the vicinity of Latitude 34 degrees 12.2 minutes South, Longitude 123 degrees 37.9 minutes East, on 21 January 1984.

February 1984

AUTHORITY TO CONDUCT INVESTIGATION

On the 23 January 1984 David Pearson Clarke was appointed by the First Assistant Secretary, Marine Operations Division, Department of Transport, under sub-section 377A (1) of the Navigation Act 1912, to make a preliminary investigation under that section into the circumstances of the striking of a submerged object and holing of the hull of the M.V. Cape Pillar in the vicinity of Latitude 34 degrees 12.2 minutes South, Longitude 123 degrees 37.9 minutes East, on 21 January 1984.

The investigation shall include

- (a) the responsibility of the charterers regarding the safe operation of the ship
- (b) the responsibility of the Master, in navigating the vessel in poorly charted waters in proximity to an area marked on British Admiralty Chart No. 1059 as having portions not sounded and not to be traversed
- (c) the measures taken by the Master and crew subsequent to the incident to protect life and property.

In undertaking the investigation, the following witnesses were examined and depositions recorded

24 January 1984 at Perth	B.J. Sloane G.B. Pepper J.C. Sutton	Surveyor Class 2, Department of Resources and Energy. Technical Officer Grade 1. Senior Technical Officer Gde 1.
26 January 1984 at Esperance	P. Robinson D.J. Durant	Master, Cape Pillar. Second Mate.
27 January 1984 at Esperance	W.H. Orgill G.N. Pretsel R.C. Todhunter J.C. Harvey	First Mate. A.B / Diver. Shipwright. Chief Engineer.

The report on the damage to "Cape Pillar" prepared by Mr F.H. Scriven, Senior Marine Surveyor Department of Transport, together with an extract of the log of the Esperance Volunteer Emergency Service, provided valuable assistance in the preparation of this report. In addition, discussions with the Commanding Officer of the Navy survey vessel, H.M.A.S. Moresby, were useful in framing the recommendations made.

BACKGROUND TO OPERATIONS

The Department of Transport motor vessel, "Cape Pillar", was engaged under a hire agreement with the Department of Resources and Energy to undertake bathymetric surveys off Tasmania and in the Great Australian Bight during the period 7 October 1983 to April 1984.

Following its work in the Bass Strait the vessel commenced survey activity in the Western Bight from early December 1983 using Esperance as a base port for crew changes, replenishment of fresh water, fuel and stores. It was scheduled to complete surveying the Western Bight in the vicinity of the Recherche Archipelago by early March when it was programmed for more survey work near Kangaroo Island.

The main purpose of the survey was to map the bottom contours from the coast out to the 300 metre line. The survey lines were programmed 3,000 metres apart in a 150° - 330° direction roughly at right angles to the bottom contours. These survey arrangements were controlled by the survey section of the Division of National Mapping, Department of Resources and Energy (D.R.E.).

To undertake this task, the Department of Transport (D.O.T.) agreed to provide a vessel suitably equipped and manned for the purpose. It was also agreed that the Master would comply with all reasonable requirements of the representative of D.R.E. and would be responsible for providing crew to operate a survey launch and equipment provided by D.R.E.

Staff and equipment necessary for survey work were to be provided by D.R.E. They were required to maintain close liaison with the Master of the vessel regarding employment and areas in which the vessel may work safely. The D.R.E. was responsible for informing the owner in advance of any possible difficulties or dangers which may be encountered in performing the task.

Apart from the equipment provided by D.R.E. for the survey task, no special navigational aids were provided on the vessel. It has two radars, an echo sounder, gyrocompass and automatic steering. The vessel's engines and controllable pitch propeller

are bridge controlled. It is designed for manoeuvrability and efficient operation as a Nav aids maintenance vessel.

D.R.E. provided an integrated sonar doppler satellite navigator together with two echo sounders. This equipment enabled the ship to be accurately positioned and programmed and to record soundings during the survey.

The survey team consisted of eight personnel, one Surveyor Class 2 in charge, six watchkeepers and an electronics technician. The team maintained two man watches similar to the ship's officers. They operated in accommodation aft of the wheel house and had direct communications by telephone with the bridge.

"Cape Pillar" was manned with a Master and crew of thirty, the normal operating crew for the vessel while undertaking survey work.

OUTLINE OF EVENTS

The "Cape Pillar" arrived in Esperance on 18 January 1984 and departed at 1300 hours Thursday 19 January to resume survey duty after a routine crew change. The vessel proceeded along recommended tracks to a position off Salisbury Island where it picked up the 300 metre contour. The vessel then steamed in an easterly direction along this contour to a survey line running 150° - 330° near to the Eastern Group of islands. When position was established on the line, course was set at 330° and the ship proceeded towards the coast.

Early on Friday 20 January the ship was stopped near the end of the survey line in the vicinity of Israelite Bay. The survey boat was launched and an inshore survey commenced. This task involved soundings from the consort boat whilst the "Cape Pillar", standing off and keeping roughly to a thirty metre contour, was used for positioning. The vessels worked in a south-westerly direction, roughly parallel to the coast until about 1600 hours when the launch was recovered in the vicinity of Cape Pasley.

At about 1700 hours in a position 33° 59.7' South, 123° 19.6' East, course was set to 150° to run the first of a number of survey lines, each 3,000 metres apart near South East Isles. At 2138 hours in a position 34° 34' South, 123° 48' East, the vessel was set on the north-westerly course towards the coast and at 0218 hours Saturday 21 January, course was set to 150° from position 33° 57' South, 123° 26.7' East. This survey line ran approximately one nautical mile off the eastern end of Cooper Island which was passed at about 0400 hours. No hazards were encountered on this run although it was noted that near Cooper Island a relatively "shallow" patch of 46 metres was recorded, compared to 65 - 75 metres in the surrounding area.

Course was reversed at 0712 hours from a position approximately 17 miles south-east of Salisbury Island and reversed again at 1158 hours from a position 5½ miles west of Cape Pasley when course was set to 150°.

As this survey line passed through the middle of Cooper Island, it was proposed to alter course to the east, run down on the earlier survey line and resume the track again to the south of the island, keeping it at least one mile clear.

At 1354 hours Cooper Island bearing 150° distant 1.1 miles, course was altered to 060° and at 1406 hours Cooper Island bearing 192° distant 1.5 miles, the helm was put to starboard to bring the vessel round to 150°. It was estimated that when back on course "Cape Pillar" would have been about 1.6 miles off the north-east corner of the island.

Some seconds later the echo sounder showed a rapid shoaling of the bottom. This was confirmed by the survey watchkeepers who relayed their concern to the bridge. The Second Mate in charge of the watch put the ship's helm hard to port and indicated that he was pulling out. While adjusting the echo sounder to a lower range he noted that the depth sounding was rapidly decreasing. Before further action could be taken, the vessel struck a submerged object. Some minutes later, three rock pinnacles were seen about two metres below the surface alongside the vessel. There was no other indication of these uncharted obstructions.

Immediately following the incident, the Master assumed control. The vessel was stopped and an assessment was made of the damage sustained. On board inspection showed that water was rapidly entering the cargo hold but no other damage could be seen. A ship's diver together with one of the survey team, an amateur diver, went over the side to inspect the damage. They found three damaged areas, the major one being abreast the cargo hold at the level of the hold ceiling, extending into the cargo hold and below into the port No. 1 double bottom tank where the shell plating was ruptured.

The weather at the time was fine and clear; wind Easterly force 5, moderate sea and low swell, a cloudy sky with good visibility. The nearby reefs and islands were clearly visible. No significant tides or currents were evident.

It was soon found that the bilge pump could not counter the ingress of water into the cargo hold. Wooden wedges and hessian partially plugged the ruptures and it appeared that the inflow was being held. At 1528 hours course was set for Goose Island Bay where the vessel anchored in ten metres of water at 1830 hours.

Soon afterwards, divers returned overside with rubber backed plywood patches designed to assist in plugging the holes. These efforts did not stop the inflow and the ship's bilge pumps could not hold the level of water, probably because of blocked strum boxes from debris in the hold.

The cargo hold gradually filled and eventually the vessel was floating on the tween deck hatch lids which were securely dogged and tommed down from the deckhead above. The hold access door was fitted with a blanket seal and tommed off the adjacent bulkhead. Seepage of water from the tween deck hatches and access door was contained by the ship's bilge pump system pulling from bilges in the void space. The water tight doors and hatches in the tween deck had been securely closed.

In view of his concern for the safety of the ship, the Master shifted anchorage at 2222 hours closer to the beach. At 0300 hours Sunday 22 January, seven of the survey party and ten non-essential crew members were landed. They all returned at about 0900 hours when it was found that the water level in the hold had been contained. This was probably due to the easing of the inflow as the water level inside the ship approached that outside.

Prior to the accident it was estimated that the draft of the vessel was 11 feet 5 inches forward, 15 feet 10 inches aft. At Goose Island Bay anchorage the draft was 17 feet 6 inches forward, 13 feet aft and freeboard at the main deck forward about 4 feet 6 inches.

At 0750 hours the fishing vessel "Flying Fish" (Shark Cat) arrived alongside with a portable pump supplied by the Esperance Voluntary Emergency Service (E.V.E.S.). This was in response to a request made from the ship via Coastwatch at 2200 hours the previous evening. The message had been given to E.V.E.S. at 2242 hours and by 2250 hours the Shark Cat was loaded and departed by road for the Orleans Bay Caravan Park where it was launched at 0430 hours.

More pumps were requested at 0915 hours and arrangements made by E.V.E.S. for their delivery by the fishing vessel "Seaward" ex Cape Arid. These arrived at 1540 hours. With the additional pumps and improved temporary patching, the water level was gradually reduced.

The fishing vessel "Seaward" was released at 0815 hours Monday 23 January when the tug "Cape Le Grand" arrived from Esperance. At 0940 hours the "Flying Fish" arrived alongside with a party of Navy damage control personnel together with a Departmental Marine Surveyor. This vessel was used to take off the Natmap survey party who later returned via Perth.

For the next two and a half days the Navy Clearance Diving Team together with ship's engineers and crew effected temporary repairs. The cargo hold was pumped dry after the ship's side holes had been plugged using a collision mat and with assistance from the additional pumps. A temporary steel box was welded to the ship's side and tank top in way of the damage. This effectively secured the water tight integrity of the hold. No repairs were made to the split plates at the No. 1 double bottom and forepeak tanks which remained open to the sea.

By early morning Thursday 26 January, temporary repairs were completed and at 0347 hours the vessel departed for Esperance with the tug "Cape Le Grand" in attendance. "Cape Pillar" berthed at Esperance at 1348 hours. After temporary repair to the damaged forepeak plating, the vessel was cleared to sail to Fremantle, the nearest port where permanent repairs could be effected.

"Cape Pillar" sailed from Esperance at 1600 hours Friday 27th January and arrived at Fremantle at 0700 hours Monday 30 January after an uneventful passage. Two portable fire pumps were retained on board, however the slight leakages from the hull were adequately contained by the ship's bilge system.

Later examination of the damage confirmed three distinct areas on the port side, namely:

Indentation of the hull extending 2300mm by 950mm set in 60mm aft from the stem. The shell plating was torn from the one foot draft mark for approximately 400mm.

Indentation of the hull over an area 5200mm by 950mm set in 100mm forward in the cargo hold at the junction of the tank top to the ship's side. The shell plating was ruptured at mid length of the indentation with openings in the cargo hold and No. 1 double bottom tank.

Indentation of the hull extending 6600mm by 850mm set in 100mm extending forward from the aft hold bulkhead above the tank margin.

During the incident, approximately 35 tonnes of diesel fuel from No. 1 port double bottom tank was lost to the sea without trace.

CONCLUSIONS

In my opinion, the accident to "Cape Pillar" resulted from inadequate preparation for this survey task, taking account of the nature of these uncharted waters and the known hazards therein. These inadequacies arise from the facts that

"Cape Pillar" was not fitted with a forward sonar scanner which would have enabled early warning of this submerged rock obstruction

No precautionary aerial inspections were made to see whether possible unmarked underwater hazards, such as the rock pinnacles lying off Cooper Island', existed in the survey area.

Either of these measures may have provided sufficient information to ensure this obstruction was avoided.

"Cape Pillar" was equipped with all available charts of the area properly corrected. In addition a Landsat Imagery of the survey area was on board. This "photo" chart picked out reefs and islands but did not give any indication of the submerged pinnacles off Cooper Island.

In hindsight it can be argued that a more careful approach should be taken when surveying this area by using a launch operating ahead of the ship or running at slow speed, however, the main objective in charting the sea bottom in the scheduled time allowed could only be achieved by generally operating the vessel at normal speeds.

It is possible that the accident would have been avoided if the helm had not been put to port when the sudden shoaling of the soundings was first observed. The vessel safely traversed the survey line close to Cooper Island passing close to this same position only hours before hand. However, turning away from the 'visible' danger was a natural reaction in the circumstances.

The action taken subsequently by the Master and crew together with assistance provided by the Navy damage control party was instrumental in saving the ship from foundering. In particular the efforts of the two divers, G. Pretsel, AB/Diver from the "Cape Pillar" and M. Spellacy, ST01, Department of Resources and Energy, in stemming the inflow and of the ship's engineers in maintaining pumping systems, are to be commended. Also the quick response of the E.V.E.S. in providing and transporting portable pumps to the vessel, and in arranging for transport of the R.A.N. damage control unit to the ship.

The ready assembly of men and equipment together with efficient application of expertise and resources by the Navy team, backed 'by the ship's officers, enabled temporary repairs to be effected and the early despatch of the vessel to Fremantle for permanent repairs.

The bilge pumping system fitted to the cargo hold was inadequate to control the inflow of water. This was due partly to blockage of the bilge strum boxes. Water was eventually cleared from the hold using portable pumps from ashore.

The terms of the hire agreement provide for the vessel to be suitably manned and equipped for the task. In this regard, it is my opinion that the Department of Transport should ensure the vessel is fitted with an efficient forward looking sonar scanner particularly when undertaking a survey in uncharted waters known to have submerged hazards.

It is noted also that the Department of Resources and Energy is responsible for informing the Owner of any possible difficulties or dangers which may be encountered in performing the task. No special instructions were given the Master of "Cape Pillar" nor were any specific communications made to the Department of Transport regarding possible dangers in this survey area.

The responsibility for the incident must inevitably rest with the Master of "Cape Pillar", however I do not consider him blame-worthy in view of the circumstances. His task was to operate the vessel in poorly charted waters without adequate warning of specific dangers close to hand. The fact that an accident such as this has not occurred previously is to the good fortune of all concerned.

RECOMMENDATIONS

As a result of the preliminary investigation into the holing of the "Cape Pillar", it is recommended

Prior to undertaking further survey work, "Cape Pillar" be fitted with a forward sounding sonar scanner capable of ranging approximately 3,000 metres ahead and traversing 30 degrees each side of the bow.

An aerial reconnaissance be undertaken and photo-imagery provided of any detected underwater obstructions prior to undertaking surveys in areas known or believed to have possible underwater hazards.

As the Department's Nav aids vessels are required to operate in potentially dangerous areas with an increased risk of sustaining hull damage by collisions with floating aids or grounding at remote anchorages, consideration be given to the provision of

portable emergency pumping equipment
improved bilge/ballast pumping arrangements as
recommended by the Senior Marine Surveyor
suitable materials and equipment for damage control.

