



Class A Accident Report

Southern Winds Grounding

At Charles Sound on 14 October 2004

KEEPING YOUR SEA SAFE FOR LIFE



Maritime Safety

MARITIME SAFETY AUTHORITY OF NEW ZEALAND
Kia Maanu Kia Ora



REPORT NO: 04 3581

VESSEL NAME: SOUTHERN WINDS

Ship Type: Passenger / Non-Passenger

Certified Operating Limit: Enclosed, Inshore, Offshore Restricted
Within 100 nm of NZ Coastline.

Port of Registry: Bluff

Flag: New Zealand

MSA No.: 130955

Built: 1995

Construction Material: FRP

Length Overall (m): 22.25

Maximum Breadth (m): 6.1

Gross Tonnage: 45

Registered Owner: Department of Conservation, NZ

Ship Operator/Manager: Department of Conservation, Te Anau

SSM Company: SGS-M&I

Accident Investigator: Domonic Venz

SUMMARY

On Friday 8 October 2004 the Department of Conservation (DOC) workboat departed Bluff. The vessel steamed to Preservation Inlet and anchored for the night in Revolver Bay. During the next 6 days the vessel was involved in various DOC activities spread throughout the greater Fiordland area.

On Thursday 14 October at 1915 hours New Zealand Standard Time, the Skipper anchored the vessel in Gold Arm of Charles Sound (*See Figure 1*). At 1928 hours, after the vessel had settled at anchor, the Skipper shut down the main engines and the electronics. He then joined the other DOC staff and had a barbeque on the main deck of the vessel.

By 2100 hours, dinner had finished and all DOC staff had gone to bed. At this juncture the wind had started to increase and the Skipper decided to initiate anchor watches for the duration of the night. Shortly after this, the vessel dragged its anchor. The anchor was reset a number of times but to no avail. After a crewmember was blown over on deck the Skipper decided to steam out of the Arm to seek better shelter.

As the vessel passed by Catherine Island she struck a submerged rock and started taking on water. The vessel was stabilised by all the DOC staff onboard. A helicopter met the vessel the next morning and temporary repairs were made enabling the vessel to return to Bluff for slipping and permanent repairs.

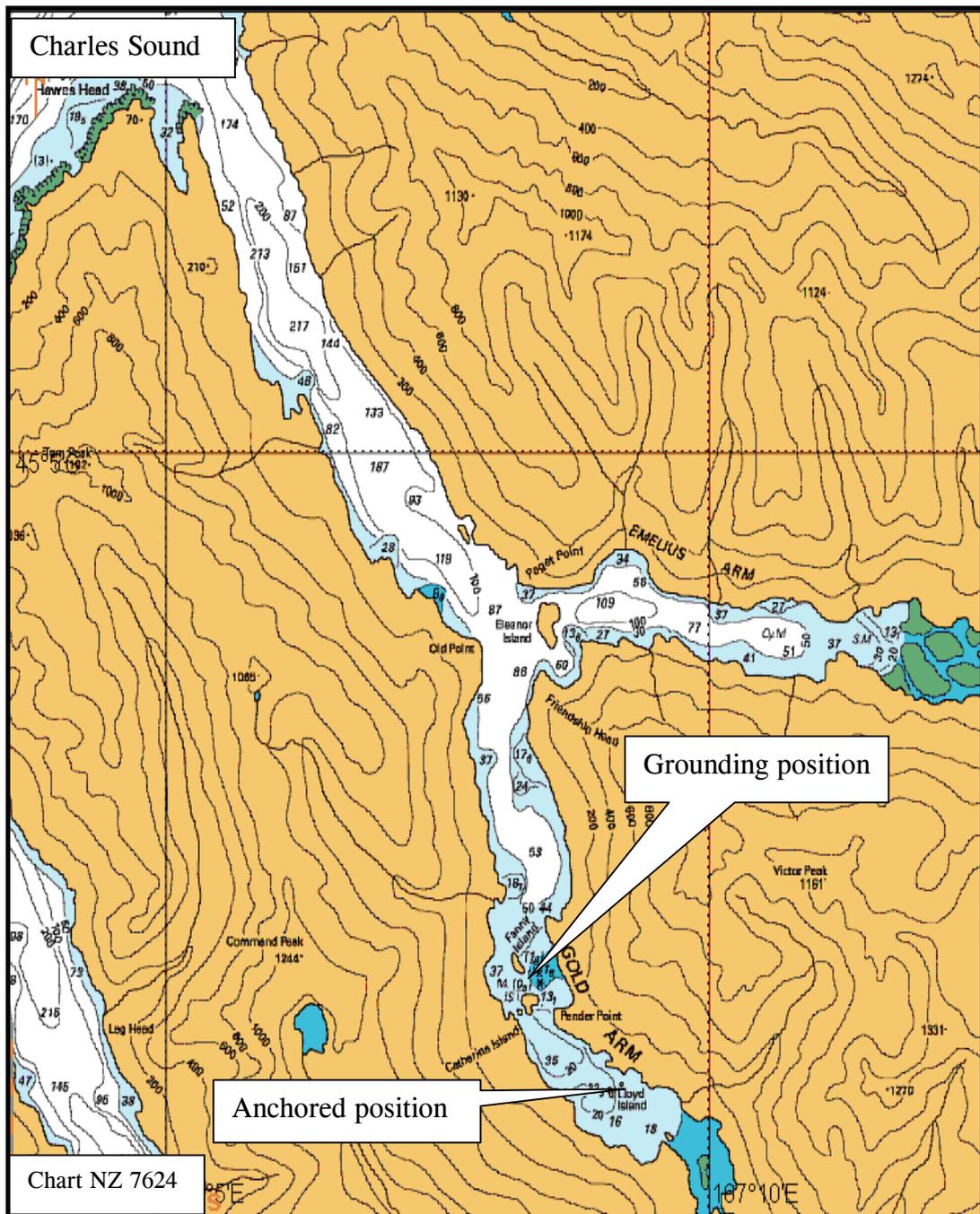


FIGURE 1

The report's conclusions include: -

- The anchor and cable were unsuited to the vessel.
- No readily available locking mechanism on the windlass.
- No company operating procedures for anchoring the vessel.
- No risk analysis completed for the operational area of *Southern Winds* with regard to identifying areas needing special vigilance by Skipper and crew.

- The Skipper was unable to let out more scope of anchor chain due to the high winds and available sea room astern necessitating the need to ‘tie off’ the anchor chain on the foredeck bitts. He was reluctant to ‘swing off’ the windlass in high winds.
- The Skipper did not use the inbound GPS plotter track for reference during the outbound voyage.
- The erratic movement of the vessel while at anchor in high winds.

The report makes eight recommendations involving the production and implementation of DOC nationwide vessel operating procedures, windlass design, carriage of appropriate anchor and cable, risk evaluation of the vessel, area of operation and remedial training for the Skipper in the operation of the GPS plotter.

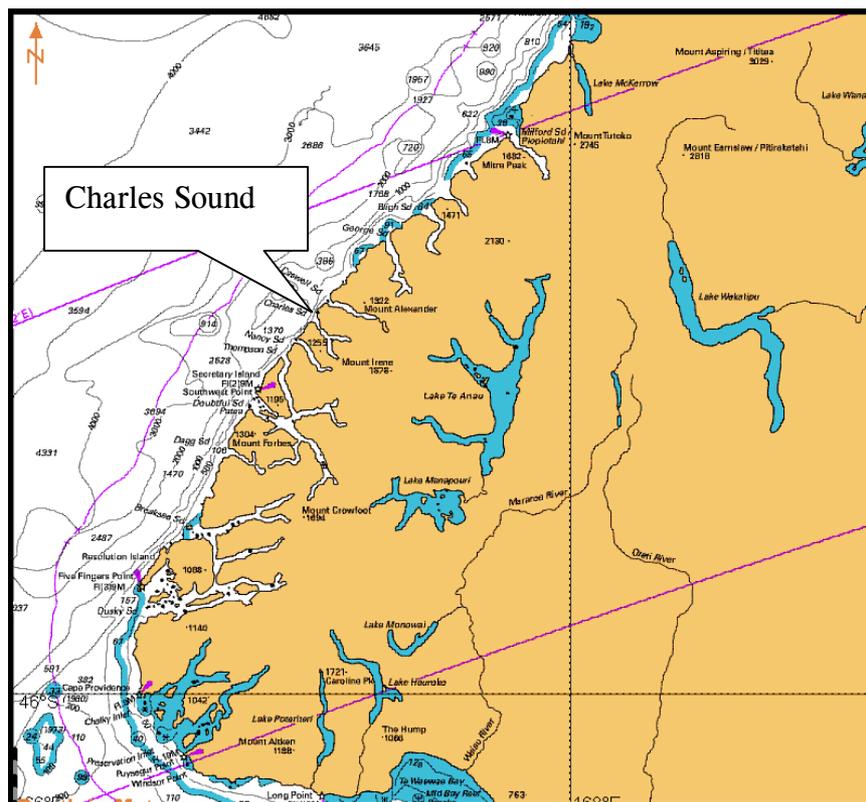


CHART OF FIORDLAND

NARRATIVE

Southern Winds is a passenger and non-passenger workboat of fibreglass reinforced plastic construction. She has an overall length of 22.25 metres, a breadth of 6.1 metres and a gross tonnage of 45. She is powered by two V12 183 MTU diesel engines. These are de-rated to 588 kW (800 horsepower) each. They are direct coupled to ZF marine reduction gears and drive two five bladed fixed pitch conventional propellers.

The Department of Conservation of New Zealand owns the vessel. The vessel is based in the Southland Conservancy and is managed from the Te Anau area office of the Department of Conservation.

The vessel had a valid Safe Ship Management (SSM) Certificate with S.G.S M&I. She was fit to ply as a non-passenger vessel within offshore-restricted limits within 100 nautical miles (nm) of the New Zealand coast including Stewart Island. She was also able to ply as a passenger vessel within inshore and enclosed limits of Foveaux Strait and Fiordland.

The vessel had been imported from Western Australia in June 2004 and had been accepted into Safe Ship Management as an existing ship by the S.G.S M&I Surveyor.

The Skipper holds a New Zealand Coastal Masters (NZCM) Certificate obtained in 1992, a Commercial Launch Masters (CLM) Certificate obtained in 1989, and an Engineer Local Ship (ELS) Certificate obtained in 1998.

He has been employed by DOC for 16 years, with 10 of those as Skipper on the previous vessel, a 16 metre steel workboat.

There were 3 DOC staff as dedicated vessel crew for this trip. Two held a DOC under 6 metre small boat qualification and one of them had undergone some vessel specific training for *Southern Winds* by her Skipper.

THE INCIDENT

At 1430 hours New Zealand Standard Time (NZST), on Friday 8 October 2004, *Southern Winds* departed Bluff bound for Fiordland. On board were the Skipper and ten other Department of Conservation (DOC) staff.

The vessel made passage to Preservation Inlet where the Skipper picked up two DOC staff members and then anchored the vessel in Revolver Bay.

On the morning of 9 October, the vessel started its marine reserves boundary survey and weed and stoat eradication projects within the Preservation Inlet, Chalky and Dusky Sounds area.

On the evening of 9 October, the Skipper anchored the vessel in Cornworth Cove in Dusky Sound. Work continued in Dusky Sound, Dagg Sound and Doubtful Sound during the days of 10,11,12 and 13 October. The Skipper anchored for these nights in Sportsmans Cove in Dusky Sound, Anchorage Cove in Dagg Sound, Deep Cove in Doubtful Sound and Deep Cove wharf in Doubtful Sound respectively.

On 14 October, the Skipper dropped two DOC staff off at Deep Cove in Doubtful Sound and then steamed out to continue working in Thompson, Nancy and Charles Sounds.

At approximately 1800 hours, the Skipper conned the vessel into Gold Arm of Charles Sound. He passed Fanny and Catherine Islands, leaving them both to starboard. The Skipper made passage towards Lloyd Island and came to anchor at approximately 1915 hours, 1.3 cables south east of Lloyd Island in 16 metres (m) of water (*See Figure 2*).



FIGURE 2 - INBOUND *SOUTHERN WINDS* GPS TRACK FROM VESSEL.

At 1928 hours, after the vessel had settled at anchor, the Skipper turned off the electronics, shut down the main engines and joined the rest of the DOC staff on deck for a barbeque dinner.

During dinner the wind strength increased to approximately 30 to 40 knots. By 2100 hours all the DOC staff had gone to bed. The Skipper decided to initiate anchor watches for the duration of the night. He went to the wheelhouse with another DOC staff member to start the first watch. He activated the GPS plotter and echo sounder and put the radar on standby.

While monitoring the position of the vessel using the electronics, he noted the vessel had started to drag the anchor; he observed this for about 5 minutes then decided to retrieve the anchor and reset it. The Skipper woke another crewmember who went onto the fore deck and operated the anchor windlass. The Skipper set the anchor in a similar position where a partial lee could be expected from Lloyd Island.

During the next two hours the vessel experienced sustained winds of between 60 and 70 knots at times. The vessel was swinging with an erratic nature on the anchor cable. The vessel dragged a further two times and the anchor was reset each time. During the fourth reset the crewmember on the foredeck was blown off his feet onto the deck by the strength of the wind.

At this point the Skipper decided to abort deploying the anchor, instead electing to steam the vessel at steerage speed north towards Pender Point (See Figure 3). Steerage became difficult to maintain however as the bow of the vessel was blown off track repeatedly due to the high wind speed. The Skipper decided to steam out of Gold Arm and look for a more sheltered position within Charles Sound.

The Skipper attempted to retrace his inbound track past Catherine and Fanny Islands. While at anchor the GPS plotter had been shut down and when restarted it had opened a new file with a clean chart display and he did not recall the inbound track.

Using the radar and GPS plotter, the Skipper positioned the vessel midway between Catherine Island and the area of shallow ground to the immediate northeast.

At approximately 2330 hours, as the vessel was midway between Catherine Island and the shoal ground, the vessel struck a submerged rock, rode up and then slipped off the side of it.



FIGURE 3 - OUTBOUND *SOUTHERN WINDS* GPS TRACK FROM VESSEL

The Skipper conned the vessel to the south west of Fanny Island (*See Figure 3*) while all staff donned lifejackets. The damage was assessed and a check made for any ingress of water. Initially, no water was found on board. However, about 5 minutes later, crew reported that water was coming out of the deck floorboards in a forward space near some access stairs. They made some temporary repairs to reduce the flow of water using a bedroll, foam and sealant. The level of water could be controlled using the vessel's pumps. The Skipper made passage towards Eleanor Island and turned into Emelius Arm of Charles Sound (*See Figure 1*). At this juncture the Skipper slowly steamed up and down Emelius Arm. At about 0030 hours, on 15 October the Skipper was able to make a radiotelephone contact to his wife notifying her of the accident and asking her to contact the DOC project manager.

At 0600 hours, the Skipper contacted Fiordland Fisherman's radio on very high frequency (VHF) radio. He asked them to arrange for a helicopter to bring out an independent standby pump as soon as possible.

Shortly after this the helicopter arrived and directed the Skipper via VHF radio to steam the vessel back into Gold Arm to a helicopter pad used by fisherman. The Skipper was not aware of the position of the pad so was guided there by the helicopter pilot. The helicopter departed with two DOC staff. The helicopter made a second trip with an engineer, two divers and relief Skipper. Five other DOC staff returned with the helicopter.

A watertight bulkhead was constructed on board and more secure temporary repairs carried out. The vessel spent the night of 15 October on a mooring near the helicopter pad.

On the morning of 16 October, the vessel underwent sea trial in Charles Sound and then returned to Deep Cove in Doubtful Sound for fuel. She then steamed back to Bluff, arriving at 2400 hours that night. During the day of 17 October, a diver made more secure temporary repairs to the hull. The vessel was slipped on 18 October for permanent repairs.

COMMENT & ANALYSIS

Evidence

On 19 October 2004 a Maritime Accident Investigator from the Maritime Safety Authority attended *Southern Winds*, on the slipway at Island Harbour in Bluff.

The Skipper and DOC Te Anau Area Manager were interviewed and provided accounts of the incident along with copies of all the vessel documents and operating procedures. The three dedicated DOC vessel crew were also interviewed and their evidence taken into account. Local fisherman familiar with the area were spoken to and further evidence gathered about the nature and hydrography of Charles Sound. Hydrographic evidence from Land Information New Zealand (LINZ) was also collected.

Photographic evidence was taken of the vessel and the damage sustained during the grounding.

Analysis

Manning Details

The vessel was fit to ply as a passenger vessel within the Fiordland and Foveaux Strait inshore limits. The manning for this class of vessel is listed in **Maritime Rule Part 31B.9 Inshore Limits Passengers vessel:**

Passengers on Board	Minimum Required Qualifications	Minimum Crew
20 to 49	Master – LLO up to 20 m in length overall and ILM if 20 m or more; Engineer not required if under 200 GRT and under 750 kW engines.	2
Less than 20		1

- LLO Local Launch Operator
- ILM Inshore Launch Master
- GRT Gross Registered Tonnes
- kW Kilo Watt

The Skipper held a NZCM and ELS Certificates of Competency.

The New Zealand Coastal Master (NZCM) Certificate exceeds the requirements as set out in Maritime Rule Part 31 B.9. The holder of a NZCM certificate is allowed to operate as Master of this class of vessel up to 45 metres in length and out to 100 nautical miles from the NZ coast.

The Engineer Local Ship (ELS) Certificate exceeds any engineering requirement for this class of vessel. ELS is the equivalent of marine Engineer Class 5 which allows the holder to operate as Chief Engineer on vessel over 750kW in coastal waters.

Navigation and Equipment

The vessel was equipped with the following navigation equipment:

- Olex 4.1 Computer based GPS Plotter
- Simrad radar
- JRC JLR 10 GPS receiver
- Simrad EQ42 echo sounder
- Robertson AP35 Autopilot
- Simrad rudder angle indicator.

The Skipper had the radar, the echo sounder and the GPS plotter operating at the time of the grounding. He had transited the area immediately adjacent to Catherine Island at 1800 hours earlier that evening. Both he and the relief Skipper of *Southern Winds* had independently transited through the same area before. This Skipper had been into Gold Arm about 8 to 10 times before, 6 of those as Skipper. When the GPS plotter was re-started, the computer opened a new file for the area; the Skipper could not recall the previous inbound track for ready reference.

The Investigator spoke to two local Fiordland fishermen, both of whom had in excess of 25 years experience in the area. They stated that the accepted and only safe course past Fanny and Catherine Islands was to stay east of the dangerous rocks and west of a rock close in to the eastern shore (*See Figure 4*). They said that without local knowledge this passage should only be made during daylight hours, when the rocks to the west area easily visible above the sea surface. After making the passage several times during the day the passage can be safely made at night.

The Skipper stated in his comments on the draft report that *“I first entered Gold Arm with the previous Skipper I worked with. This has been the course we have taken and always with caution. The relieving Skipper, an experienced seaman also enters Gold Arm using this course. I am not sure how he came to use it. Skippers who work inshore have two primary sources of information about the area, charts and information from other users. This information is refined by one’s own*

experiences in the area. If I had been fortunate enough to have received the information from fisherman about the safer track to use, I would have used it”.

They independently expressed concern that the Skipper of *Southern Winds* took a track that was close in to Fanny and Catherine Islands, as this was particularly dangerous and risky. The Skipper of *Southern Winds* stated that he did not know of the western track or the helicopter pad until shown by the helicopter pilot.

The fisherman said that there is a stern rope near the helicopter pad, which allows a vessel to anchor offshore, using the stern rope for a secure anchorage in rough conditions.

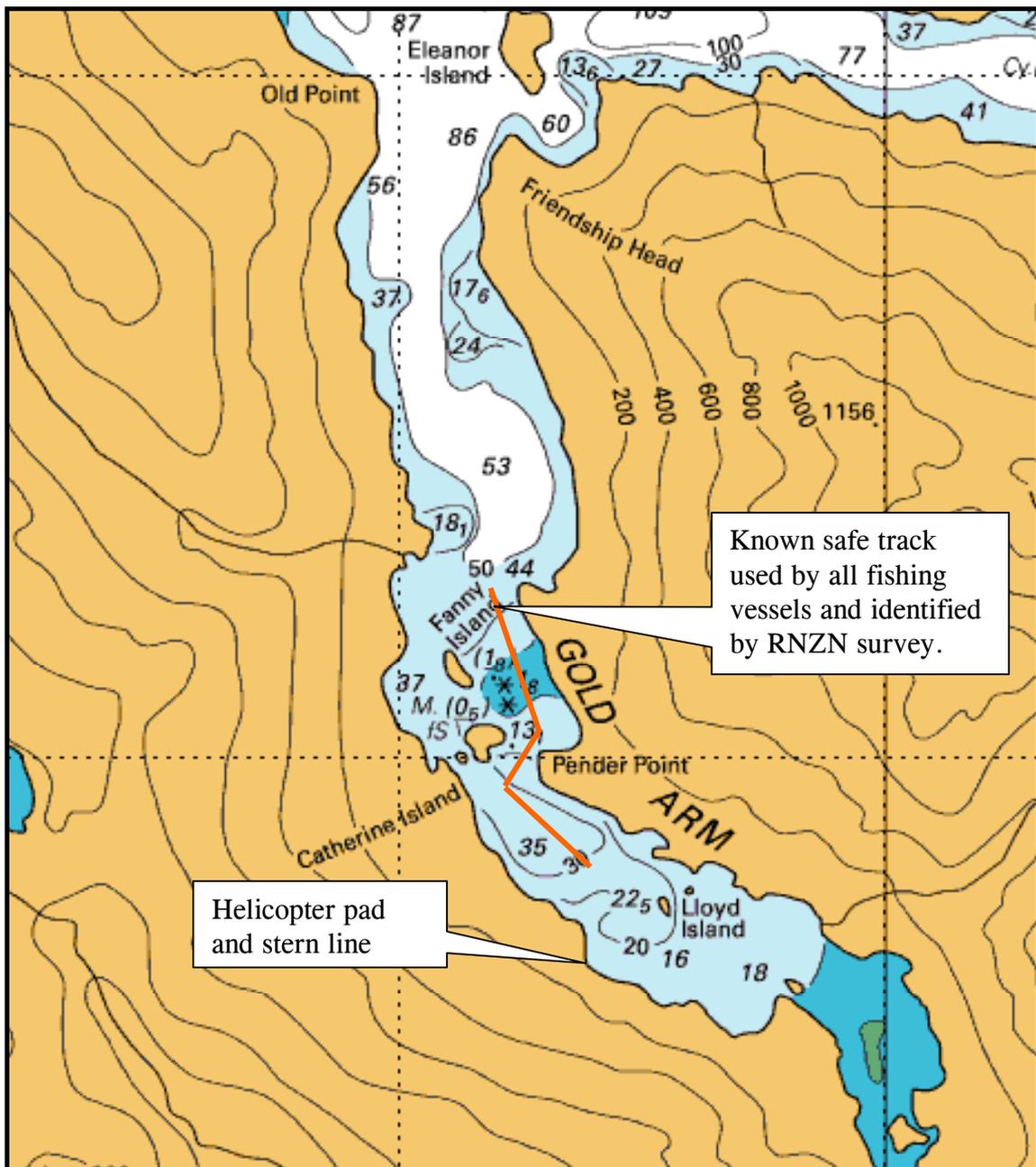


FIGURE 4

Weather Details

The Skipper states that he received the 1333 hours Metservice weather broadcast on VHF radio, as follows:

Milford.

Northwest 15 knots rising to 30 knots this evening and easing to 20 knots in the morning. Sea becoming rough for a time. Westerly swell 4 metres. Poor visibility in occasional rain. Outlook following 12 hours Northeast 10 knots.

In a report of the weather conditions compiled by Metservice for the Maritime Safety Authority they state that the strong wind experienced at the time was probably a katabatic wind. *“This phenomenon is very localised, and in a meteorological situation when a katabatic wind there would not be expected. It is below the Metservice horizon of detection in either forecasting before, or analysis after the event”.*

Katabatic winds are described as winds that flow from high elevations of mountains, plateaus and hills down their slopes to the valleys or planes below. Gravity causes cooling parcels of air to be driven down slopes, the landscapes can then channel and force the airflow to converge, causing it to strengthen.

The Skipper stated in his comments on the draft report, *“The above definition is considered inappropriate to describe the conditions. Conditions that night were also experienced in the general Fiordland area”.*

If the Skipper’s statement is correct then he should have taken more steps to passage plan an exit from the anchorage in the event of some unforeseen circumstances.

The weather conditions at the time were described as winds gusting at about 50 to 60 knots with a rough sea and white caps.

Anchoring Details

Upon arrival in New Zealand, the vessel was equipped with two 64 kg stockless anchors and 110m of 12mm short-link anchor chain. The Skipper changed the anchor to a 73 kg stockless and then to a 101 kg stockless hall anchor.

When the vessel was inspected by the Maritime Safety Authority Investigator on the slipway in Bluff, it was found to have a 101kg stockless ‘Hall or Patent’ anchor. The second anchor was a Danforth of undetermined weight.

The vessel held a Certificate of Survey from the Government of Western Australia. The vessel was surveyed in Australia using the **‘Uniform Shipping Laws (USL) Code’**. SGS-M&I accepted the vessel into SSM as an existing vessel.

Under section 13, Miscellaneous Equipment, appendix H of the USL code, the vessel was required to be equipped with two 135 kg stockless anchors and 110m of 16mm short-link anchor chain. The anchors could be alternatively comprised of a 94.5 kg high holding anchor, with a second high holding anchor being 10% less in weight than the main.

Under **Maritime Rule Part 40A.59 New Vessel**, the vessel would have been required to carry two 164 kg stockless anchors and 110m of 16mm short-link anchor chain. Alternatively it could carry one 115 kg high holding anchor and a second being 10% less in weight than that of the main.

The vessels anchors were accepted into SSM using **Maritime Rule Part 40A.62 (2) Existing Ships**. This states “.. *if the owner retains its existing anchors and cables and a surveyor is satisfied that those anchor and cable arrangements do not compromise the safety of the ship and its crew, and remain in a condition satisfactory to a surveyor*”.

The Skipper anchored the vessel in a depth of 16 metres of water, and states he had a scope of about 5:1 out at the time. This is the minimum amount of prudent scope when anchoring. The Skipper states that he was reluctant to let out more due to the lack of deep water and confines of the anchorage.

Southern Winds underwent some moderate structural conversions before going into service for DOC. Approximately 4 metres of accommodation was added to the aft end of the wheelhouse. This had the effect of increasing the windage at the forward end of the vessel. This extra unbalanced windage caused the vessel to ‘sail’ while at anchor and did not lie down wind of the anchor with the bow into the wind. This erratic movement of the vessel caused the anchor chain and anchor to work while on the seabed, reducing its effectiveness.

DOC Procedural Details

The SSM manual for *Southern Winds* did not contain any procedures relating to anchoring the vessel or any reference to high or low risk anchorages in Fiordland. The manual did refer to an incorrect procedure which was the ‘DOC Standard Operating procedure for Departmental Ships (QD Code HS 1286)’. This procedure is designed for vessels under 6 metres only.

DOC Auckland area operates a vessel of 18.2 metres in length and has a comprehensive operations procedure manual. This contains detailed procedures for anchoring the vessel, anchor watches and has identified areas of special vigilance where a higher risk has been noted.

Chart Survey Details

The Royal New Zealand Navy (RNZN) vessels *Tarapunga* and *Takapu* undertook a hydrographic survey of the area between September 1997 and May 1998. The survey identified various rocks in the immediate area of Gold Arm including the 1.8m and 0.5m dangerous drying rocks to the east of Fanny and Catherine Islands. They compiled amendments to the Admiralty Sailing Directions of the New Zealand Pilot NP51. Included in the amendments was the following “*An alternative channel, surveyed between the rocks to the east of Fanny Island and the eastern shore, provides satisfactory depth of water but a 2.1m shoal close to the eastern shore requires care*”. This was not included in the amendments for the NP51. The Hydrographic Adviser of LINZ states that they will determine why this has not occurred. The Skipper did not have the current New Zealand Pilot onboard at the time.

Damage

The keel was damaged and the keel holed near the forefoot with moderate scraping extending over most of its length to the stern. The keel had a steel protective shoe on the aft end which was damaged from aft, forward for about 2½ metres. The port side chine suffered some major abrasions above the echo sounder transducer.

CONCLUSIONS

N.B. These are not listed in order of importance.

- The Skipper states that the vessel is still equipped with a 101 kg stockless Hall anchor. They have 43 metres of 16mm chain and a further 67 metres of 13mm chain. He said that they have trialled this new system in excess of 40 knots and are happy with the results. This type of anchor is not high holding and would require a 164 kg anchor of the same design.
- No formal documented operating procedures existed for anchoring this vessel.
- No risk analysis was completed for the operational area of *Southern Winds* with regard to identifying areas needing special vigilance by Skipper and crew. A risk analysis has been completed for DOC Auckland.
- The Skipper was unable to let more scope out due to lack of sea room astern and the high winds, necessitating the need to ‘tie off’ the anchor chain on the foredeck bitts. He was reluctant to swing off the windlass in high winds.
- The Skipper could not use the inbound GPS plotter track for reference during the outbound voyage.
- The erratic movement of the vessel while at anchor in high winds.
- The GPS plotter computer program does allow for past tracks to be recalled and displayed along with the current track.
- The Skipper not being familiar enough with the area. Had he been he would have known about the good anchorage and stern line available to him in the immediate vicinity.
- On 3 November 2004, key practical recommendations were sent by the MSA in a letter to the Department of Conservation that covered the issues of anchor and cable suitability, windlass design, lack of scope and the vessel sailing around while at anchor in strong winds, as set out below:

3 November 2004

Lionel Brock / Reg Kemper
DEPARTMENT OF CONSERVATION

Dear Gentlemen,

Re Key practical recommendations pertaining to *Southern Winds*.

I was asked by Reg Kemper to make some early key recommendations that can give DOC a head start on ensuring accidents don't happen again on any of their vessels.

I have a number of more practical physical recommendations that I think will help with the anchoring issues that Bob Walker had that night.

1) The first issue I have is with the anchor weight and the anchor chain. My records show that the vessel was accepted into Safe Ship Management (SSM), by S.G.S M&I as an existing vessel from Western Australia. The vessel's anchor did not comply with the Uniform Shipping Laws Code (this is the Australian survey system). The vessel's anchor also does not comply with the NZ Maritime Rule part 40A.58. Both of these rules are very similar.

Bob Walker had replaced the light 75 kg anchor with a 101 kg anchor before the grounding. I have calculated that the vessel must carry a stockless anchor of 164 kg or a high holding anchor of 115 kg; it must also have 110 metres of 16mm anchor chain. So I believe that had the anchor and cable been the correct size then the vessel may not have so readily dragged the anchor.

2) Bob Walker said he could not let out more anchor cable because his main way of securing it was to take a turn around the bitts on the foredeck. He said the windlass does not have a locking device so he can easily let out more cable when needed. Please see the attached photographs of a locking pin which can be easily installed.

3) Bob walker said that he had about 5 times the depth of water in anchor cable out at the time. This is a good rule of thumb for when anchoring in average conditions but not particularly prudent for when anchoring in areas where strong katabatic winds can be expected. I feel DOC should implement procedures for anchoring within Fiordland which should include the risk of katabatic winds and the need for extra scope when anchoring to at least 7:1. If the recommendations in 2 above are done then the crew can easily let out more scope when the wind picks up.

4) The vessel has been described as 'sailing around' when at anchor. There are a couple of suggestions I have to help combat this. If possible' a steady sail be employed on the stern area. Secondly' another anchor or heavy weight is deployed over the stern to help arrest this movement.

I will include all the above in the report when it is completed. Do not hesitate to contact me regarding the above recommendations.

Yours faithfully

Domonic Venz
Maritime Accident Investigator
PO Box 5015
Port Nelson"

SAFETY RECOMMENDATIONS

1. That DOC implements within 2 months of this report being finalised, a comprehensive national vessel operations manual for this vessel bringing it into line with the Auckland based 18-metre vessel.
2. That DOC either fit a locking pin or are able to demonstrate to the MSA that they can effectively lock off the anchor cable on the windlass that will allow the crew let out more anchor cable in any weather condition.
3. That DOC explores options to reduce the ‘sail’ of *Southern Winds* while at anchor in high winds. This could include a stern weight lowered over the stern, a steady sail erected aft, anchoring where a stern line is available to the shore or the removal of the screens around the fly bridge to lessen the windage forward.
4. That within 1 month of this report being finalised; the vessel complies with **Maritime Rule Part 40A** with regard to carriage of the correct size anchor and chain.
5. That DOC undertakes a risk evaluation of the area of operation of *Southern Winds* and that particular thought is given to identifying areas where good and bad anchorages are to be found in various weather conditions.
6. That the Skipper is censured for his navigational failures and to correctly plan this particular passage, endangering those on board.
7. That the Maritime Safety Authority, Operations Division contact SGS-M&I requiring them to modify their procedure for approving vessels coming in under the USL Code. This is to ensure that vessels comply with the requirements of the USL Code before bringing them into the SSM system.
8. That DOC obtain a current New Zealand Pilot NP 51 for the vessel.

ACTION TAKEN

- DOC are seeking to acquire a 115 kg high holding anchor as recommended.
- DOC are in the process of rectifying formal anchoring procedures.
- DOC have removed the screens around the fly bridge which has significantly reduced the amount of ‘sail’ while at anchor.