

Accident

Aircraft Type and Registration:	AW189, G-FSAR	
No & Type of Engines:	2 General Electric Co CT7-2E1 turboshaft engines	
Year of Manufacture:	2015 (Serial no: 89004)	
Date & Time (UTC):	22 July 2024 at 2050 hrs	
Location:	Approx 190 nm East of Stanley Airfield, Falkland Islands	
Type of Flight:	Search and Rescue	
Persons on Board:	Crew - 4	Passengers - 1
Injuries:	Crew - 1 minor	Passengers - 1 missing
Nature of Damage:	None reported	
Commander's Licence:	Airline Transport Pilot's Licence	
Commander's Age:	45 years	
Commander's Flying Experience:	4,257 hours (of which 1,260 were on type) Last 90 days - 28 hours Last 28 days - 2 hours	
Information Source:	Aircraft Accident Report Form submitted by the pilot	

Synopsis

During a Search and Rescue operation a casualty was being recovered to the aircraft by rescue hoist. As the crew attempted to bring the casualty aboard, he slipped from the rescue strop and the crew could not hold him. The casualty fell into the sea and due to fuel limitations for the aircraft no further rescue was attempted.

History of flight

The AW 189 Search and Rescue (SAR) aircraft in the Falkland Islands (Figure 1) are contracted to the Ministry of Defence (MOD) and their operations are directed by the military Joint Operations Centre (JOC) at Mount Pleasant Airport (MPA). At the SAR shift handover briefing on 22 July, the commander was informed that a fishing vessel was in distress 213 nm east of MPA. With the option of a refuel at Stanley Airfield the commander considered that it may be possible to operate to that range with sufficient time on scene to recover at least some of the crew. Non-essential equipment was offloaded from the aircraft to allow it to pick up eight casualties without exceeding its maximum permitted mass. The vessel was 187 nm from Stanley. The commander calculated that with a forecast wind of 270° at 40 to 50 kt the aircraft could achieve 190 nm max range with 20 minutes on task. The commander asked the off going duty pilot to confirm his calculations before offering the capability to the JOC. Shortly after receiving the information the JOC tasked the crew to respond and informed them that the engine room of the vessel was taking on water and that the ship's crew were preparing to abandon the vessel.



Figure 1

AW 189 SAR Aircraft

The aircraft departed MPA at 1600 hrs and flew to Stanley for a rotors-running refuel to maximum capacity of 2,000 kg. Once this was complete the aircraft departed Stanley at 1629 hrs and routed to the position of the fishing vessel. An A400 Atlas fixed wing aircraft had also been launched from Mount Pleasant to provide “top cover” for the operation. The A400 crew passed initial information to the helicopter that the vessel was listing 45° to starboard and that there were two fully inflated life rafts, one partially inflated life raft and one floating lifejacket. The crew planned to prioritise the life jacket once on scene, anticipating that it would be on a person in the water. The A400 later confirmed that the lifejacket was empty, so the crew priority became the personnel still aboard the vessel.

Upon arriving at the scene of the incident, the crew faced challenging operating conditions, at night and in severe weather. The crew assessed the mean height of the waves to be approximately 8 m and the wind on scene was 270° at 40 gusting 50 kt.

The aircraft was positioned into a hover alongside the vessel for an initial reconnaissance. The vessel was estimated to be listing to starboard by 50°, with the front end submerged, which caused the aft port quarter to lift out of the water. The vessel’s orientation and the prevailing wind conditions caused concerns about potential loss of visual references for the commander while manoeuvring over the vessel. The vessel was experiencing significant and irregular movement due to swell.

To reduce risk, the crew discussed the possibility of deploying empty rescue strops. There were concerns that these could become entangled on the vessel or that survivors could make attempts to grab the strops and compromise their own security. The crew identified

four casualties, all in precarious positions on the vessel: three at the highest point of the stern and one just beneath them. Given the challenging nature of the winch operation, the crew agreed to conduct an overhead check to assess the feasibility of a rescue. This check was flown manually with the aircraft moving laterally to the right over the vessel's stern. However, the winchman assessed that, due to the position of the casualties and excessive deck movement, attempting a rescue was unduly hazardous for both the casualties and the aircraft's crew.

With limited time on scene, the crew moved to the closest life raft to attempt a rescue. The radar height hold (RHT) was engaged at 80 ft, but the actual height fluctuated between 50 and 80 ft due to the swell. Despite these fluctuations, the mean vertical position was maintained, and the co-pilot closely monitored the radar altimeter. The commander controlled the horizontal position of the aircraft manually. The winchman was deployed, but a large wave submerged him, causing pain to his neck and shoulder. He was recovered to the aircraft. With only five minutes of fuel left on scene and 190 nm to Stanley, the crew decided that another attempt on the life raft was not feasible.

As they prepared to depart, a person was spotted floating in the water near the aircraft's nose. The casualty was face-up with arms and legs outstretched in a star shape, showing no movement other than that caused by the swell. The crew decided to attempt a recovery. The winchman was lowered by hoist again, quickly gaining contact with the casualty. He planned to place two rescue strops around the casualty but stated that due to the severe conditions and the casualty's "oversized suit because of water ingress, I could not get the second strop into position." The winchman also stated that the casualty's suit had been contaminated with fuel and was very slippery.

As the casualty was lifted clear of the water his left arm slipped out of the rescue strop. The winchman maintained the strop in place with physical force and the casualty was brought to the aircraft door. While trying to bring the casualty onboard, the winchman and winch operator had significant difficulties due to the casualty's low position and his greater than normal weight. Despite their efforts, the casualty slipped out of the strop and fell back into the sea. With their time on scene exceeded by two minutes, the crew had no choice but to depart for Stanley.

The route back to Stanley was challenging, with heavy rain and low temperatures necessitating the activation of the anti-ice system, increasing fuel consumption. The significant headwind of up to 50 kt increased the transit time to over two hours. The crew discussed their intentions upon arrival, with a desire to refuel and relaunch to attempt another rescue, as they expected the vessel to have sunk. However, concerns about the injured winchman, increased fuel consumption, survivor drift, and crew fatigue were also considered.

During the transit, a message was received to contact JOC upon arrival at Stanley. Due to water ingress, the winchman's helmet communications had failed, but his worsening neck and shoulder symptoms were relayed by the winch operator. On arrival at Stanley, the co-pilot remained in the cockpit with the aircraft rotors running while the commander assessed the winchman's condition and contacted the JOC to update the Air Commander/Tasking Authority on the crew's status, conditions on the scene, and time constraints.

The commander requested an update on the survivors' position from the top cover aircraft, noting a drift of one nautical mile east since the incident. Considering all factors, it was decided with the Air Commander that the crew should return to base. The aircraft recovered to Mount Pleasant at 2116 hrs after a total flight time of 4 hours and 22 minutes, with rotors running for 5 hours and 24 minutes.

A further meteorological update was arranged for 0530 hrs the following morning to assess the potential for a relaunch, aiming to arrive back on scene at daybreak. However, the forecast included a frontal system moving from west to east, bringing freezing rain, a freezing level at sea level, and full cloud cover from the surface to above FL100. The adverse weather conditions prevented a second rescue attempt. The first vessel on the scene the following morning reported winds from the south-west at 75 kt and swell heights of 7-8 m, further complicating rescue efforts.

Recorded information

The aircraft was fitted with a CVR which could record for 2 hours. The CVR was recovered but the information from the time of the incident had been overwritten due to the long transit back to Stanley. Information was recovered from the cctv cameras on board and the aircraft's sensor system.

Aircraft information

The AW 189 aircraft on the Falkland SAR contract are fitted with a Limited Ice Protection System (LIPS) to allow limited operation in icing conditions. The limitations of the LIPS system require a minimum 500 ft deep layer of positive air temperature above the surface into which the aircraft can always descend to de-ice naturally. With the LIPS system fitted, flight in freezing rain, freezing drizzle or super cooled liquid droplet conditions remains prohibited. While the LIPS system itself has no effect on fuel consumption, conditions which require it will also require use of engine anti-icing which does increase fuel consumption.

Aircraft performance

The commander used the following method to determine the aircrafts radius of action (ROA). The calculation was based on maximum useable fuel of 2,000 kg and allowed for 180 kg reserve fuel and 153 kg to permit 20 minutes on scene. Due to the severe conditions, the commander purposely used a pessimistic figure for the calculation, ie a lower than anticipated groundspeed for both outbound and inbound legs. Fuel burn figures are taken from the operator's operations manual (OMB). A contingency of 10% was included to allow for unanticipated changes in the weather or technical issues. No diversion airfield was available and Stanley also represented the closest point of land.

'Fuel Burn + 10% / GS Out = Fuel required per nm Outbound

Fuel Burn + 10% / GS Home = Fuel required per nm Inbound

Combined these give the fuel required per nm for a return journey. Total useable is fuel divided by that number to provide ROA.

Using 460 kg/hr (cruise below 5000' - OMB 5.1.2) and 460 kg/hr hover consumption (estimated with additional Auxiliary Power Unit burn but high winds reducing power required). The commander's calculations in this instance were:

$$460+46 = 506 / 170 \text{ kt} = 2.98 \text{ kg/nm (pessimistic - 40 kt tailwind)}$$

$$460+46 = 506 / 85 = 5.95 \text{ kg/nm (pessimistic - 45 kt headwind)}$$

$$\text{Fuel required per nm on return journey} = 2.98+5.95 = 8.93 \text{ kg/nm}$$

Total useable fuel 2,000 kg (only able to achieve 1,970 kg pressure fuelling at SFAL)

$$-180 \text{ (IFR FRF OMB 5.1.1)} = 1,820 \text{ kg}$$

$$-153 \text{ (Time in hover } 460 / 60 \times 20 \text{ min)} = 1,667 \text{ kg Useable Fuel}$$

$$1,667 / 8.93 = 186 \text{ nm ROA.}'$$

As the aircraft was only able to refuel to 1,970 kg, the ROA was reduced to 183 nm.

The actual distance from Stanley to the reported position of the vessel was 189 nm.

Meteorology

The weather situation in the South Atlantic was reviewed after the event by the Met Office. The forecast low level weather chart, which was available to the crew, is shown at Figure 2.

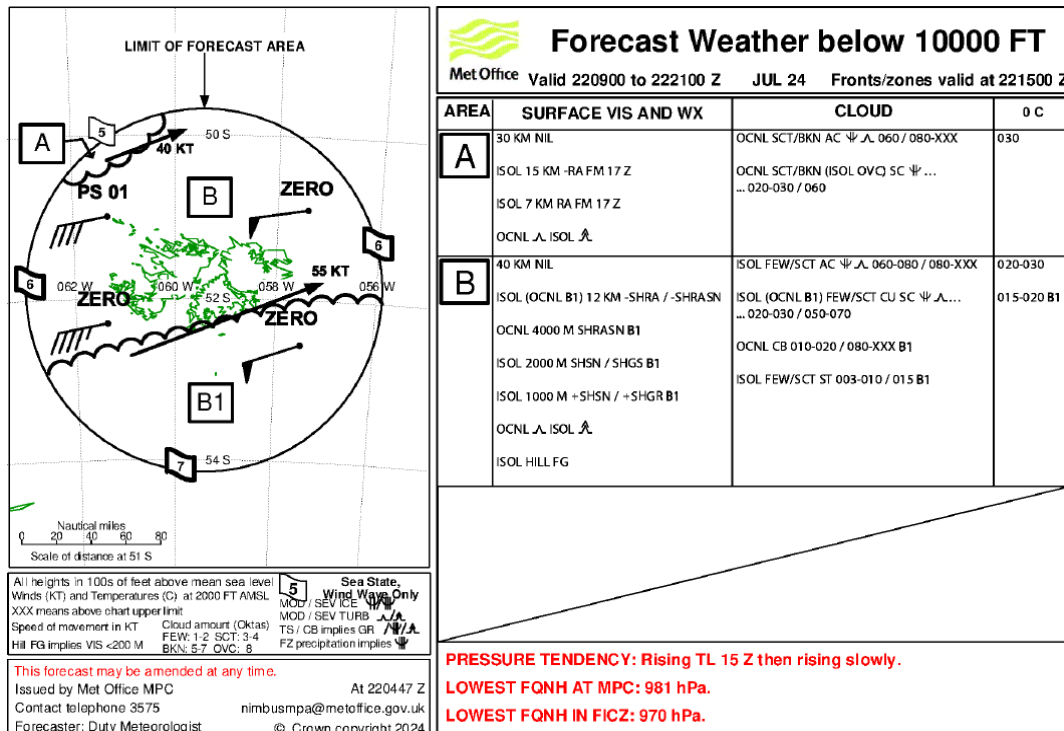
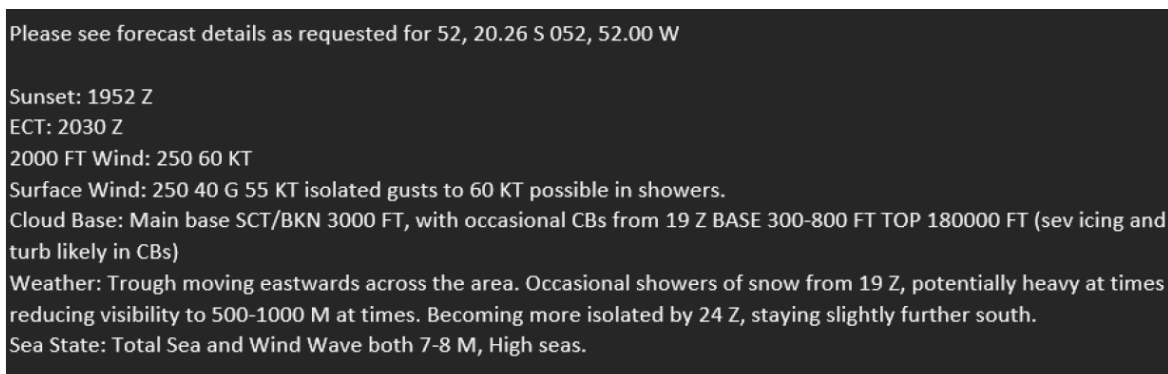


Figure 2
Forecast Low level weather chart 0900 to 2100 22 Jul 2024

On the chart the route flown would be within Zone B. The general forecast conditions were for good visibility with Few or Scattered (FEW/SCT) cloud between 2,000 and 3,000 ft. Isolated light showers or showers of rain and snow (ISOL -SHRA / -SHRASN) were forecast reducing visibility to 12 km at times. Occasional (OCNL) moderate showers of rain and snow (SHRASN) were also forecast reducing visibility to 4,000 m. There was also a risk of isolated (ISOL) showers of snow or small hail (SHSN / SHGS) or even heavy showers of snow or hail (+SHSN / +SHGR) reducing visibility to as low as 1,500 m. Associated with this was a risk of occasional cumulonimbus cloud (OCNL CB) between 1,000 and 2,000 ft with isolated (ISOL) lower cloud between 300 and 1,000 ft. The risk of the showers of rain or snow continued overnight, although visibility values were expected to be lower.

The Met Office in the Falklands produced a bespoke forecast for the operational area and this is shown at Figure 3.



Please see forecast details as requested for 52, 20.26 S 052, 52.00 W

Sunset: 1952 Z
ECT: 2030 Z
2000 FT Wind: 250 60 KT
Surface Wind: 250 40 G 55 KT isolated gusts to 60 KT possible in showers.
Cloud Base: Main base SCT/BKN 3000 FT, with occasional CBs from 19 Z BASE 300-800 FT TOP 180000 FT (sev icing and turb likely in CBs)
Weather: Trough moving eastwards across the area. Occasional showers of snow from 19 Z, potentially heavy at times reducing visibility to 500-1000 M at times. Becoming more isolated by 24 Z, staying slightly further south.
Sea State: Total Sea and Wind Wave both 7-8 M, High seas.

Figure 3

Bespoke operational forecast

The bespoke forecast refers to sea state High with wave heights of 7 to 8 m. The sea state chart is at Figure 4.

In their review the Met Office stated:

'The area of interest is a very data sparse area, with little or no observation data available. All of the forecast information available was indicating Gale Force Southwesterly winds with very high sea conditions. There was also a risk of very, low cloud and visibility in the area due to the presence of Heavy Snow Showers. Satellite derived surface winds were obtained from the NOAA ASCAT system. This is indicating a large area of 30 to 35 knot winds between the Falkland Islands and South Georgia, with an area of 40 to 45 knots winds near 54S'.

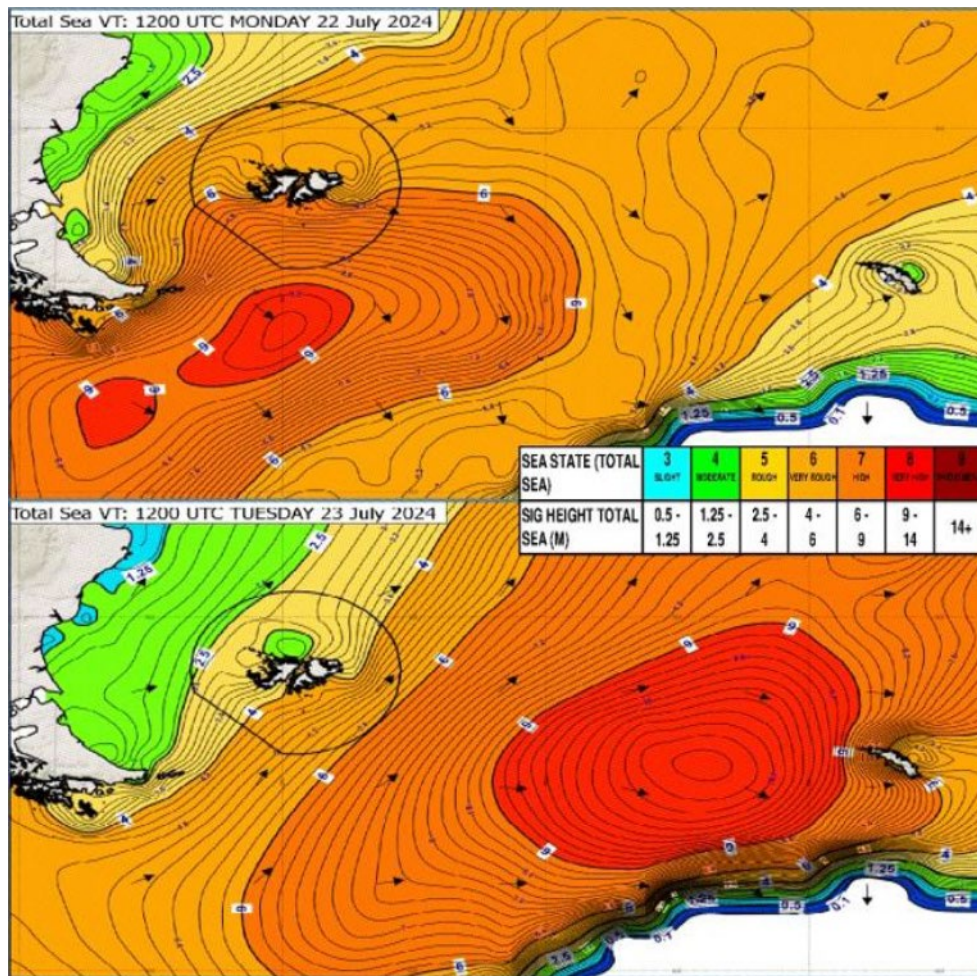


Figure 4
Sea state chart

Organisational information

The SAR helicopters in the Falkland Islands are contracted by the MOD and operate as assets of the British Forces South Atlantic Islands (BFSAI). BFSAI exercises control of the aircraft via the Air Commander at the JOC. Requests for use of the SAR aircraft for civilian rescue must be made by the Falkland Island Government. The Stanley Harbour Master was appointed as the Incident Commander by the Falkland Islands Government and it was they who made the request for SAR assistance to BFSAI. The first information of a vessel in difficulties was provided to the JOC at 1400 hrs. At 1535 hrs the Stanley Harbour Master informed the JOC that the crew of the vessel were preparing to abandon ship and formally requested SAR support. At 1536 hrs the JOC tasked the SAR helicopter and an A400 Atlas aircraft to the operation. The A400 Atlas remained on scene until 2048 hrs when it was replaced by an A330 Voyager aircraft also from MPA. The A400 refuelled at MPA and then returned to relieve the Voyager at 0830 hrs on 23 July 2024, remaining on scene until the limit of its endurance. Severe weather at MPA on 23 July 2024 led to unacceptable conditions for the A400 to land and the aircraft diverted to the South American mainland.

Further rescue efforts

At 0915 hrs on 23 July 2024 surface vessels tasked by the Falkland Islands Government reached the scene with guidance provided by the fixed wing aircraft. Those vessels rescued 14 survivors and recovered the bodies of nine deceased members of the vessel's crew. Four casualties remained missing. Search and Recovery operations continued until 0730 hrs on 24 July 2024 at which time all vessels departed the scene.

Analysis

When informed of the incident the commander recognised the operation would be close to limit of the aircraft's operating range. He was aware of the severe weather conditions for the transit and at the scene of the incident. Having confirmed the position of the vessel he calculated that 20 minutes on scene would be achievable and that if able to maximise effectiveness on scene it may be possible to rescue eight casualties. He informed the tasking authority of the available capability. A short while later the crew were tasked to respond to the incident and were informed that the vessel's crew were preparing to abandon ship. It was therefore clear that the situation was grave, with 27 lives in imminent peril. Although aware that their response was limited in scale, given the situation for the vessel, the decision to launch was made.

The aircraft flew from Mount Pleasant to Stanley, which was closer to the vessel, in order to refuel and maximise its endurance for the operation. During the refuel the aircraft was only able to take on 1,970 kg of fuel rather than the planned maximum of 2,000 kg. This reduction in fuel would have reduced the ROA by approximately 3 nm. As the track to the vessel was downwind the aircraft was at relatively high groundspeed and so reached the vessel in a little over an hour. It therefore had burned approximately 660 kg of fuel when arriving on scene. Aware of the relatively low fuel burn on the outbound leg the commander had offloaded non-essential equipment prior to departure to ensure that on scene the aircraft had the capacity to lift eight casualties without exceeding the maximum weight limit.

With the information supplied by the fixed wing top cover the crew's priority once on scene was to attempt a rescue of those still aboard the vessel. The crew conducted a reconnaissance and then the commander flew the aircraft to a hover above the vessel. However, once in the overhead the winchman assessed that due to the motion of the vessel and the precarious position of the casualties it was not safe to attempt the rescue.

Due to the short time now available on scene the crew shifted their focus to the closest life raft. The winchman was deployed to try and make contact with the life raft, but he sustained injuries to his neck and shoulders and signalled to be brought back aboard the helicopter. As the crew were assessing the situation the co-pilot informed them that fuel remained for only five more minutes on scene. Given the conditions and the injuries to the winchman the crew decided that another attempt on a rescue from the life raft was not feasible and they prepared to depart the scene. While doing so the commander spotted the person in the water. Given the risks to a person in the water, an attempt was made to affect the rescue of this individual despite the winchman's injuries. The winchman planned to use two rescue strops as would be usual for a casualty in the water. However, he was unable to place

the second strop due to the severe sea conditions, so the casualty was lifted in one. The casualty was unresponsive and so lacked any muscle tone. Additionally, his survival suit had been contaminated with fuel and inundated with water. He was therefore much heavier than anticipated. As the casualty was brought toward the aircraft door, due to the slippery suit and lack of muscle tone his left arm slipped from the rescue strop. While he remained held, the casualty's position in the strop became lower than usual. This meant the crew was faced with a significant physical lift rather than just swinging the casualty through the door. With the excess weight of the casualty this proved impossible and after a struggle the casualty slipped from the strop and fell into the sea. The aircraft was already beyond the calculated time for departure to Stanley and departed the scene.

Conclusion

A casualty fell from the rescue hoist of a SAR AW189 during a rescue operation near the limit of the aircraft range in severe weather. The casualty was unresponsive throughout and his survival suit had been inundated with water and contaminated with fuel making him slippery and much heavier than expected. The crew was unable to recover him into the aircraft and he fell into the sea. Having exceeded its calculated time on scene the aircraft was forced to depart without further attempts at a rescue.