



Australian Government
Australian Transport Safety Bureau

ATSB: Some recent experience in underwater recovery

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AVIATION | MARINE | RAIL

www.atsb.gov.au

Today's presentation...

1. Loss of control and impact into water
Cessna 172 aircraft
Maingon Bay, Tasmania
2. Recovery of a Westwind 1124A aircraft
near Norfolk Island
3. Lessons Learned from these activities



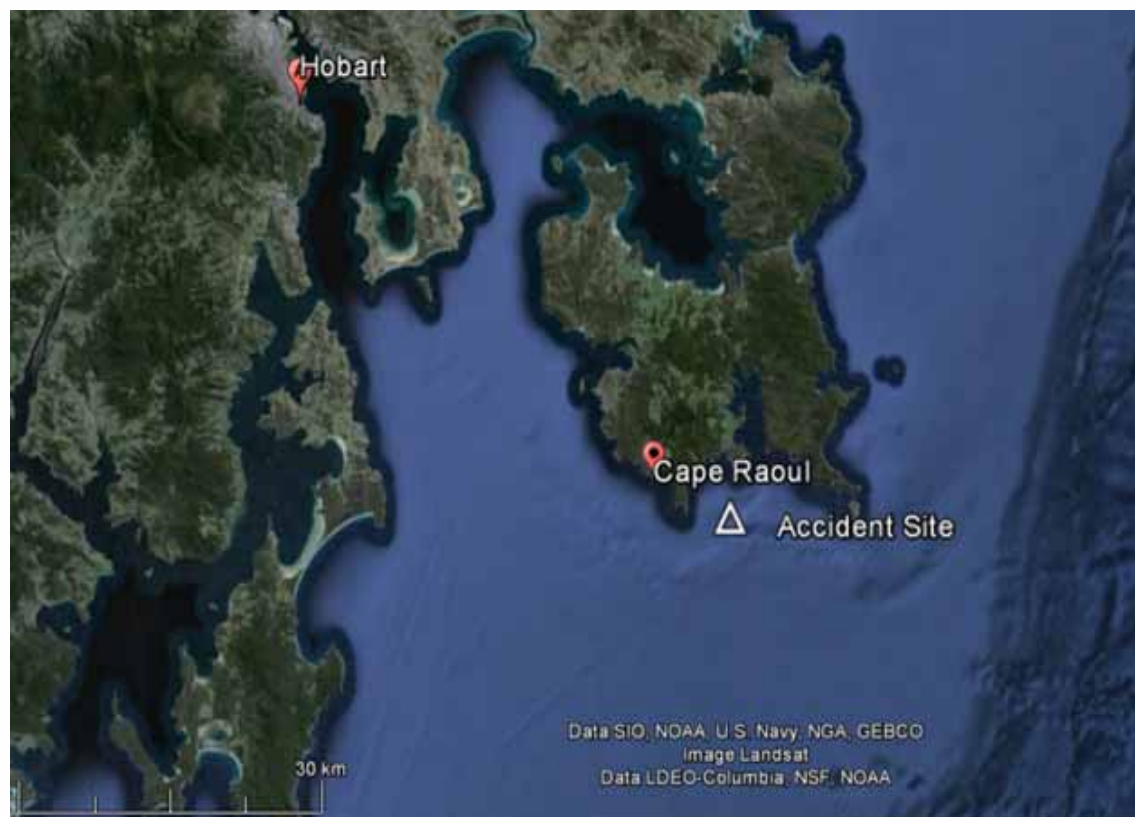
Recovery of a Cessna 172 aircraft from Maignon Bay, Tasmania

- 29 December 2014
- 2 POB, pilot and photographer
- Accident occurred during the sailing of the 2014 Sydney Hobart yacht race
- Aircraft was being utilised for aerial photography



Recovery of a Cessna 172 aircraft from Maignon Bay, Tasmania

- Intent of the flight was to photograph the racing yachts as they rounded Cape Raoul
- Obtaining the magnificent 'money shot' was a primary objective.
- VH-PFT conducted a photo flyby of the racing yacht, Mistraal
- After passing abeam Mistraal, the aircraft turned steep left, sharply dropped its nose, and impacted the ocean.



Recovery of a Cessna 172 aircraft from Maignon Bay, Tasmania

PV Van Diemen

- 22.58m LOA
- 2 tonne deck crane (tender launch)
- 8 crew
- 98.76t gross tonnage
- Class 2B (limited to 200nm to seaward)
- Range 1,000nm

MV Kulanda

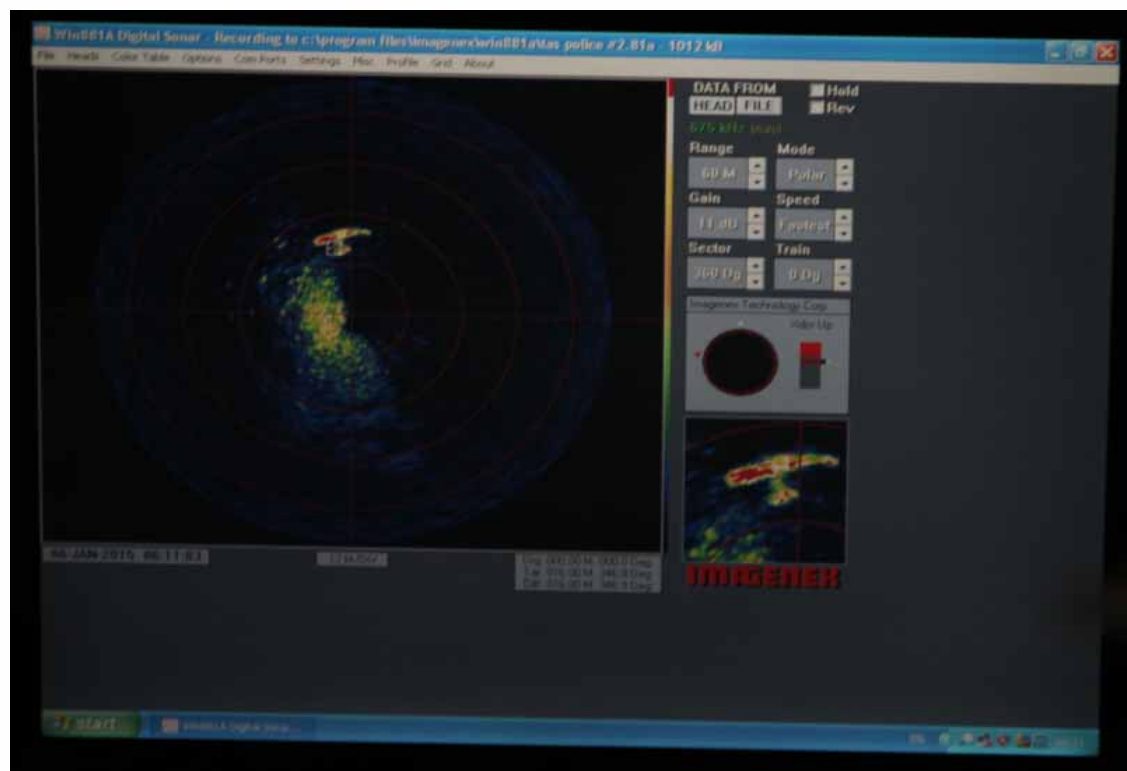
- 32.35m LOA
- derrick capacity 8t / 6t
- motorised landing vessel
- 95t deck capacity
- landing vessel capable of negotiating shallow waters 1.5m draft



Recovery of a Cessna 172 aircraft from Maignon Bay, Tasmania

Recovery attempt #1

- 31 Dec 2014
 - PV Van Diemen Falcon ROV
- Aircraft located by ROV sonar in 92m of water
- Aircraft rigged, however lifting equipment failed at 30m water depth
- Photographer's camera successfully recovered from the sea floor using the ROV



Recovery of a Cessna 172 aircraft from Maignon Bay, Tasmania

Recovery attempt #2

- 6 Jan 2015
 - PV Van Diemen
 - Falcon ROV
 - Kulanda barge
- Aircraft relocated using ROV sonar and rigged using lifting strops
- Success with the lift, recovery and stowage onto Kulanda working deck



Recovery of a Cessna 172 aircraft from Maignon Bay, Tasmania

Low level operations in a Cessna 172 aircraft:

- the principal consideration was stable flight
- radical manoeuvres at low height were to be avoided
- manoeuvres involving large pitch attitude changes should not be performed at low level.



Recovery of a Cessna 172 aircraft from Maignon Bay, Tasmania

Summary of VH-PFT recovery operation from 92m water depth

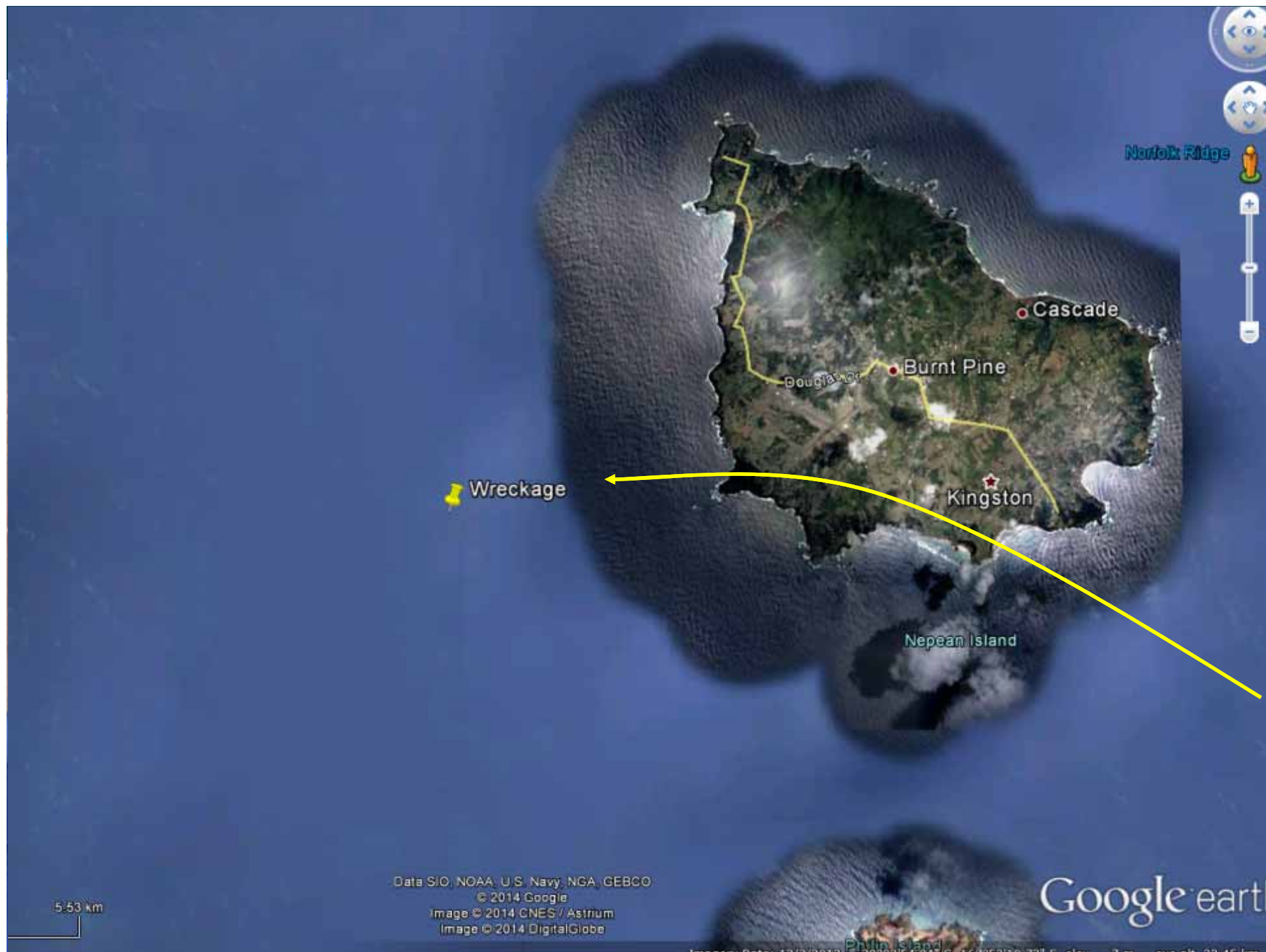
- The Tasmanian Police Service funded and coordinated the recovery operation. ATSB tasked as specialist advisors to the Police Service.
- Dive Works, a Victorian-based ROV and Commercial Diving Company, supplied equipment and personnel



Recovery of a Westwind 1124A aircraft near Norfolk Island

- Pel-Air Westwind 1124A aircraft, VH-NGA
- 2 flight crew and 4 PAX
- Sydney – Norfolk – Apia – Norfolk
- Weather conditions deteriorating
- 4 attempts at landing
- Flight crew elected to ditch the aircraft





Ditching of a Westwind 1124A aircraft near Norfolk Island

- *Dec 2009 wreckage located 4 km West of Norfolk Island:
S 29 03.2700
E 167 52.4160*
- *ATSB Benthos hydrophone used to
locate and triangulate ULB signal*
- *water depth: 48m*
- *VicPol Seabotix LBV300 ROV survey
confirmed that the aircraft had
broken into two main pieces*
- *Tail section containing flight recorders
was intact*



LBV /
V6 L5
H6 EL

342HD+0 CA-15 21DEC09
0048.1MS 17C 08:30:48

Project Timeline

- 4 December 2014: The investigation into the ditching of Pel-Air Westwind 1124 was reopened
- January 2015: The ATSB Commission endorsed the recommendation from the investigation team to look at possible options to recover the aircraft flight recorders
- 28 March 2015: ROV survey of wreckage conducted by ATSB / AFP / NSW Police



The Challenge

1. Wreckage at 48 m water depth
2. Remote location - 1400km from Sydney / Brisbane
3. Major OHS considerations (water depth)
4. No suitable vessels or barges on Island
5. Recorders remain within the aircraft tail structure
6. No deep water harbour (limited facilities)
7. Marine wildlife.....
8. Limited budget.



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- 14 May 2015: Offer made to ATSB by Border Protection to use their vessel, the Ocean Shield (offer redacted 2 June 2015)
- 12 June 2015: Open Approach to market via AusTender
- 11 Sept 2015: Tender Evaluation Report Sign-off by ATSB Chief Commissioner

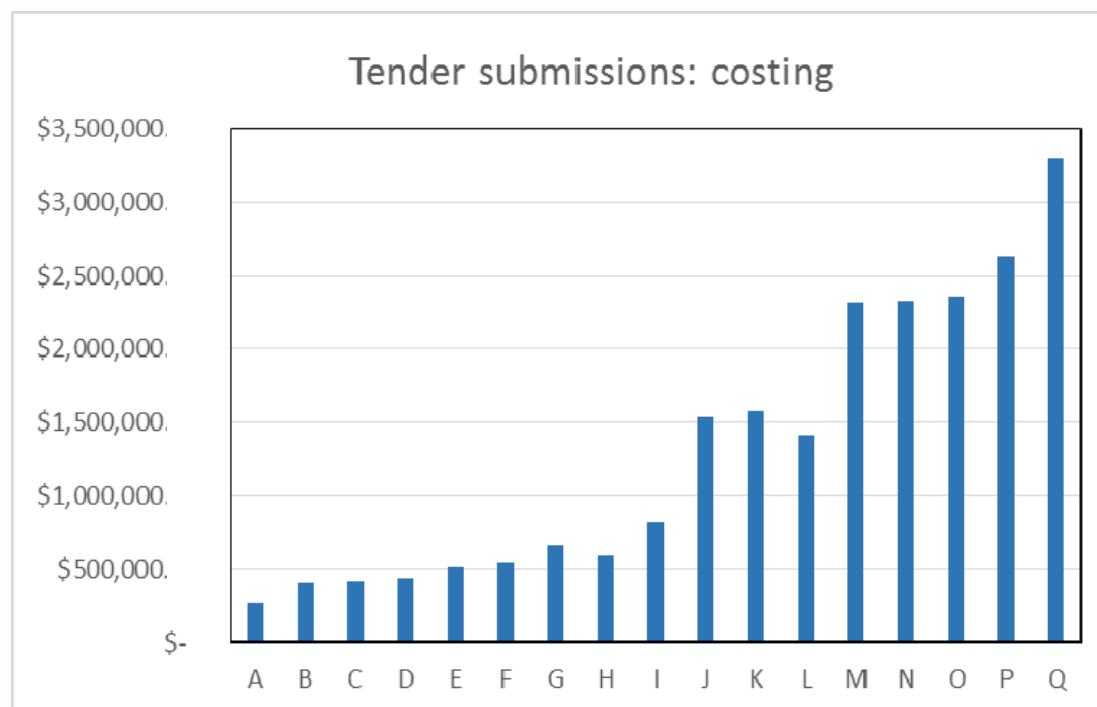
Recovery of a Westwind 1124A aircraft near Norfolk Island

Tender bids numerically scored and ranked:

- Compliance
- Technical solution
- Price

Value for money solution =

technical capability + price + risk



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(offer redacted 30 May 2015)
- 12 June 2015: Open Approach to market via AusTender
- 11 Sept 2015: Tender Evaluation Report Sign-off by ATSB Chief Commissioner
- 14 October 2015: Contract award to Pacific Marine Group
- 10 November 2015: Commence on-site salvage operations



PACIFIC MARINE GROUP PTY LTD
AUSTRALIA



PMG Pride

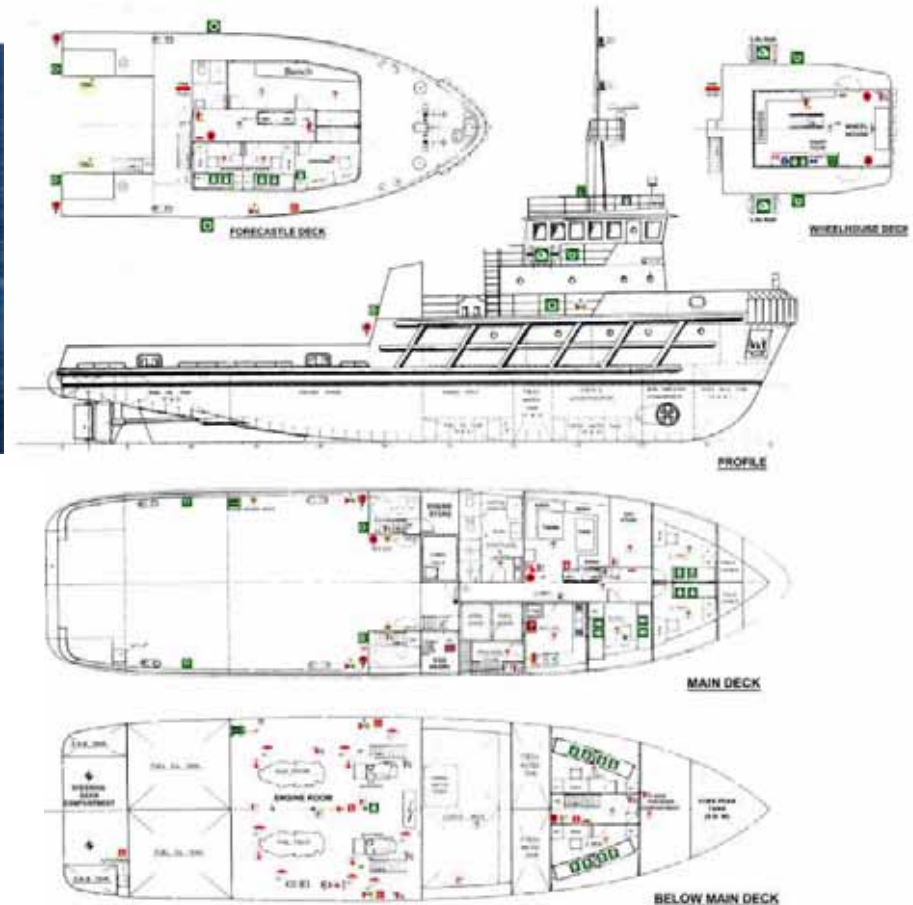
Class: ABS A1 AMS Circle E

LOA: 31.48m

Deck space: 110m²

Useful Equipment: 10 t A-frame and 15 t winch
1.75 t deck crane
bow and stern thrusters
3 point mooring

Accommodation: 22 person

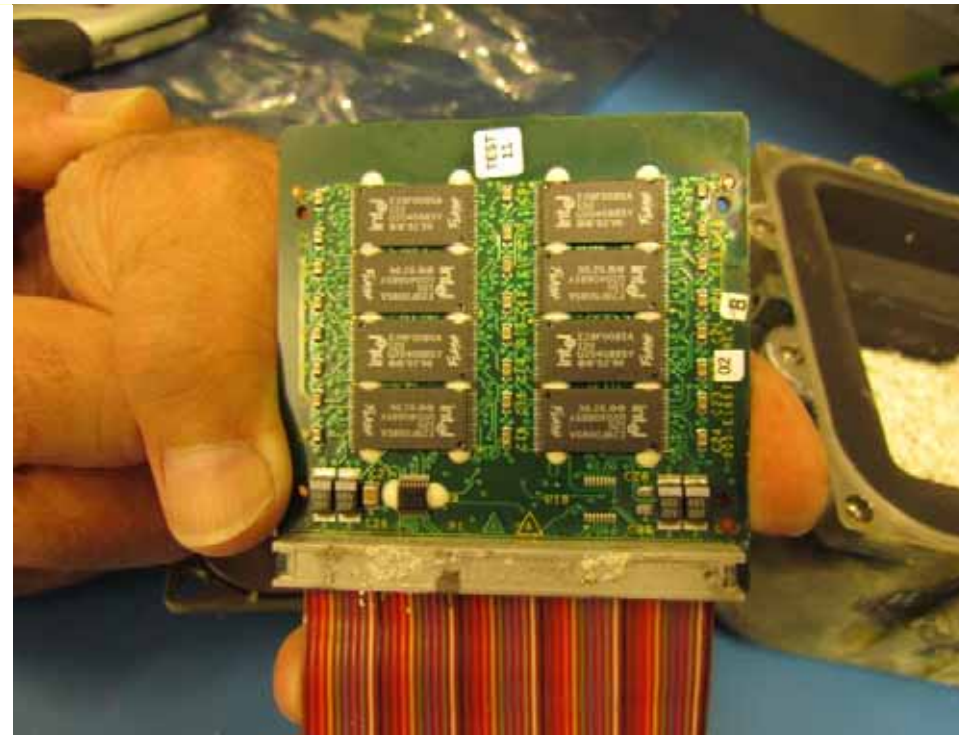




Recovery of a Westwind 1124A aircraft near Norfolk Island

Flight data recorder (FDR)

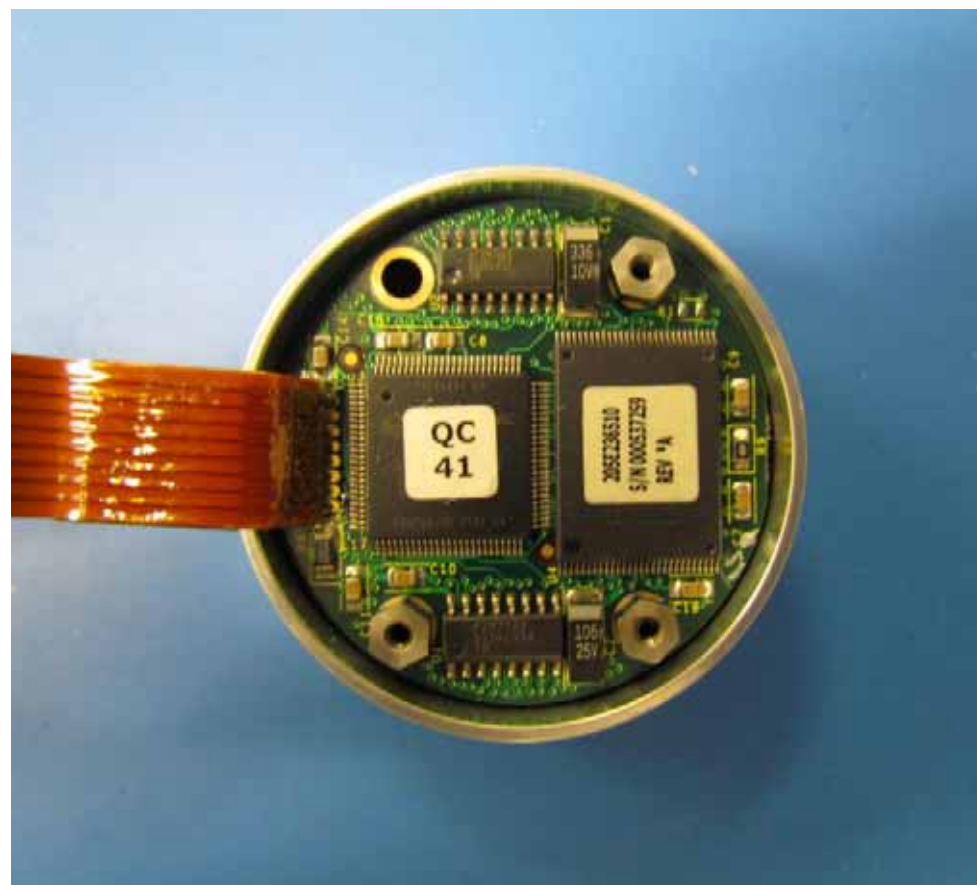
- Loral Data Systems F1000
 - solid state memory modules
 - 5 parameters:
 - elapsed time
 - pressure altitude
 - indicated airspeed
 - magnetic heading
 - vertical acceleration
- About 100 hours of data was recorded, including the entire accident flight
- **data OK**



Ditching of a Westwind 1124A aircraft near Norfolk Island

Cockpit voice recorder (CVR)

- L-3 FA2100
- solid state memory modules
- 120 mins hours of audio information
- endless loop principal
- Audio inputs
 - pilots' headsets
 - cockpit area microphone
- **Data was successfully recorded and downloaded OK**



Lessons Learned

Procurement

- Open Tender procurement can absorb significant chunks of your time.
(Protect yourself: conduct a well documented, transparent and ethical assessment leading to a contract that best fits the budget)
- Early in the Project timeline seek Legal / Financial / Probity / Technical Specialists
- Seek to Minimise Risks (**Fixed Price Contract**)
- Establish your KPIs: (**No win = No fee**)
- Seek a value-for-money solution (**Price + Technical + Risk**)

Lessons Learned

Project

- Much time can be spent liaising for a Government solution (**No guarantees**)
- Seek your expert
(**experience is king and so is a good vessel, equipment and salvage personnel**)
- Ensure you have a well documented project plan with appropriate risks assessed and documented.
(**sea salvage is rarely straight forward and is conducted in a potentially high risk environment**)

Lessons Learned

Working at Sea

- Weather and / or sea state can delay or halt the project
(these contractual risks can be managed through a fixed price agreement)
- You are the client representative. Assist where you can, but once the salvage operation is underway let the experts control the worksite and the safety of their crew
- Bring your sea sickness tablets!







Questions?

Presenter: Simon Grummett