Australian Government
Australian Maritime Safety Authority

Antarctic Extended Range SAR Flight Trial

ICAO Asia/Pacific Search and Rescue Working Group
7-10 May 2024

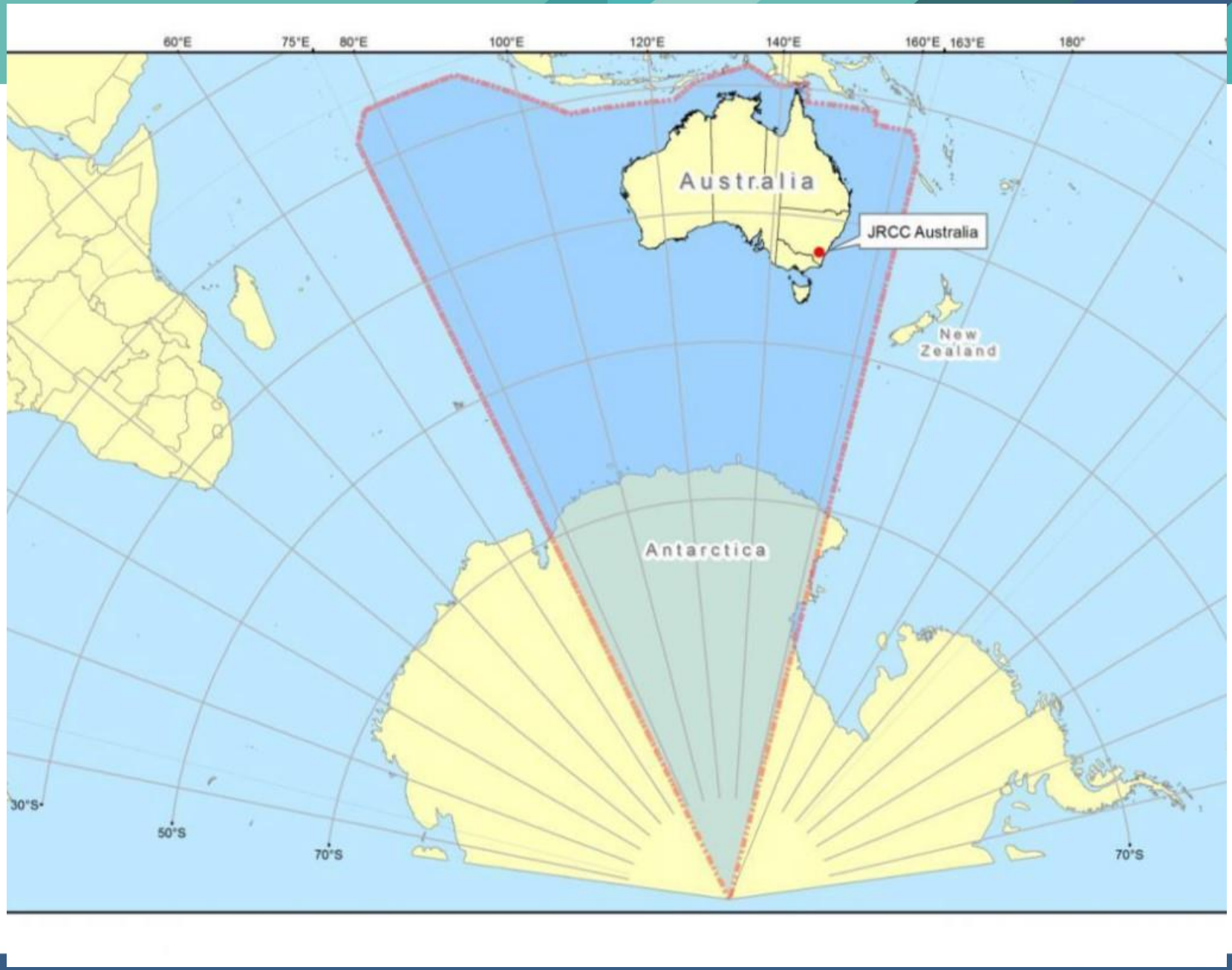
Presenter: Scott Constable, Australia

This Presentation

- Supports APSAR/WG/9 Information Paper IP 05 (Australia)
- Outline of flight trial and imagery
- Highlights an example of improving SAR capability using existing resources
- Highlights benefits of trialling potential SAR system improvements

Australian SRR

- Nearly 53 million km^2
- Large area of Antarctic SAR responsibility
- Growth in Antarctic activity = potential for increased polar SAR response



Overview of Australian aviation SAR unit arrangements – Antarctica

Various aircraft for SAR response

- Australian Antarctic Division (AAD) program
  - fixed-wing and helicopters on station in Antarctica
    - Basler BT-67 (air drop capable), DHC-6 Twin Otter, BK117
  - transport between Australian mainland and Wilkins ice runway
    - Airbus A319
  - AMSA/AAD MoU for cooperative SAR efforts in Antarctic area
- long-range aircraft from mainland Australia
  - commercial operators – mainly business jets with trained visual SAR observers
  - Defence – such as C-17, possibly others

Overview of Australian aviation SAR unit arrangements – Antarctica

Airborne SAR stores delivery options

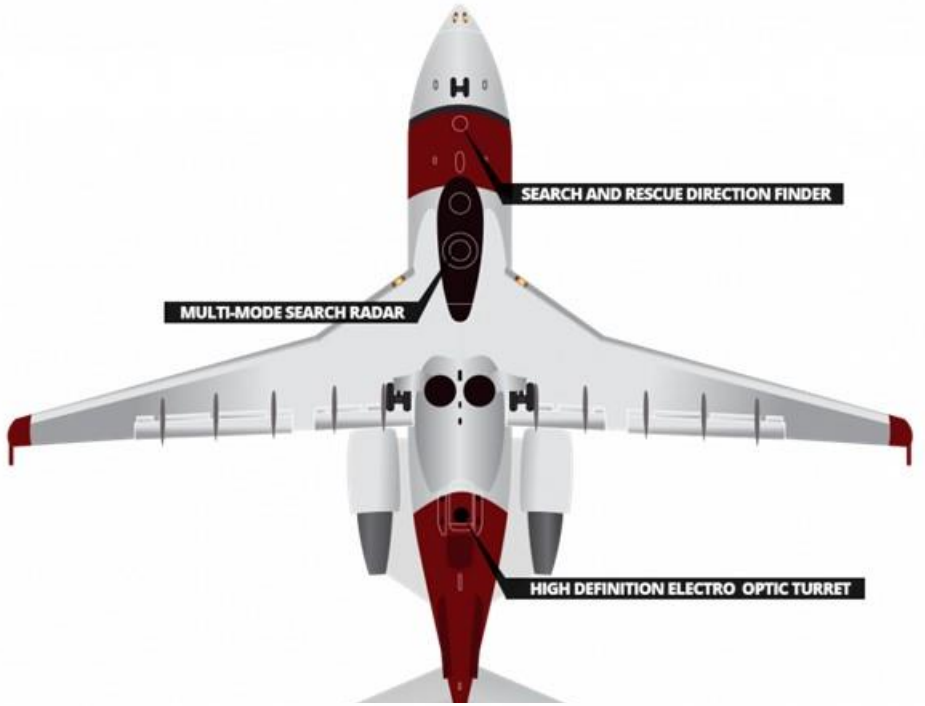
- AMSA support to AAD's aviation program for SAR response
  - specialist SAR training for AAD fixed-wing (BT-67) operator
  - AMSA SAR equipment located at Australian Casey and Davis bases

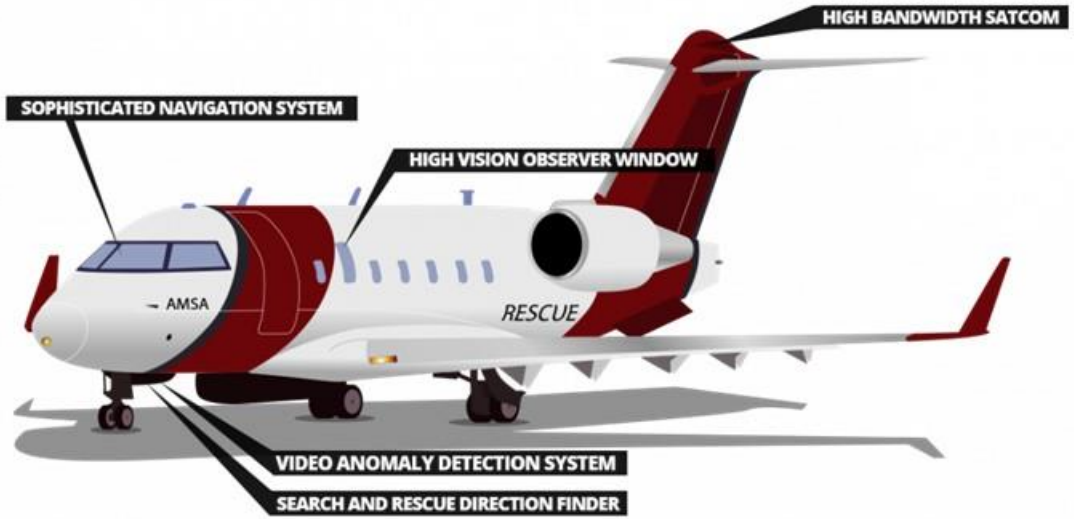
AMSA training includes:

- Search and Rescue Systems
- Operational Planning, Safety and Risk Management
- Operational Communications
- Search Pattens and techniques (Air Search Observer training)
- Preparing for aerial stores delivery
- Aerial delivery of stores

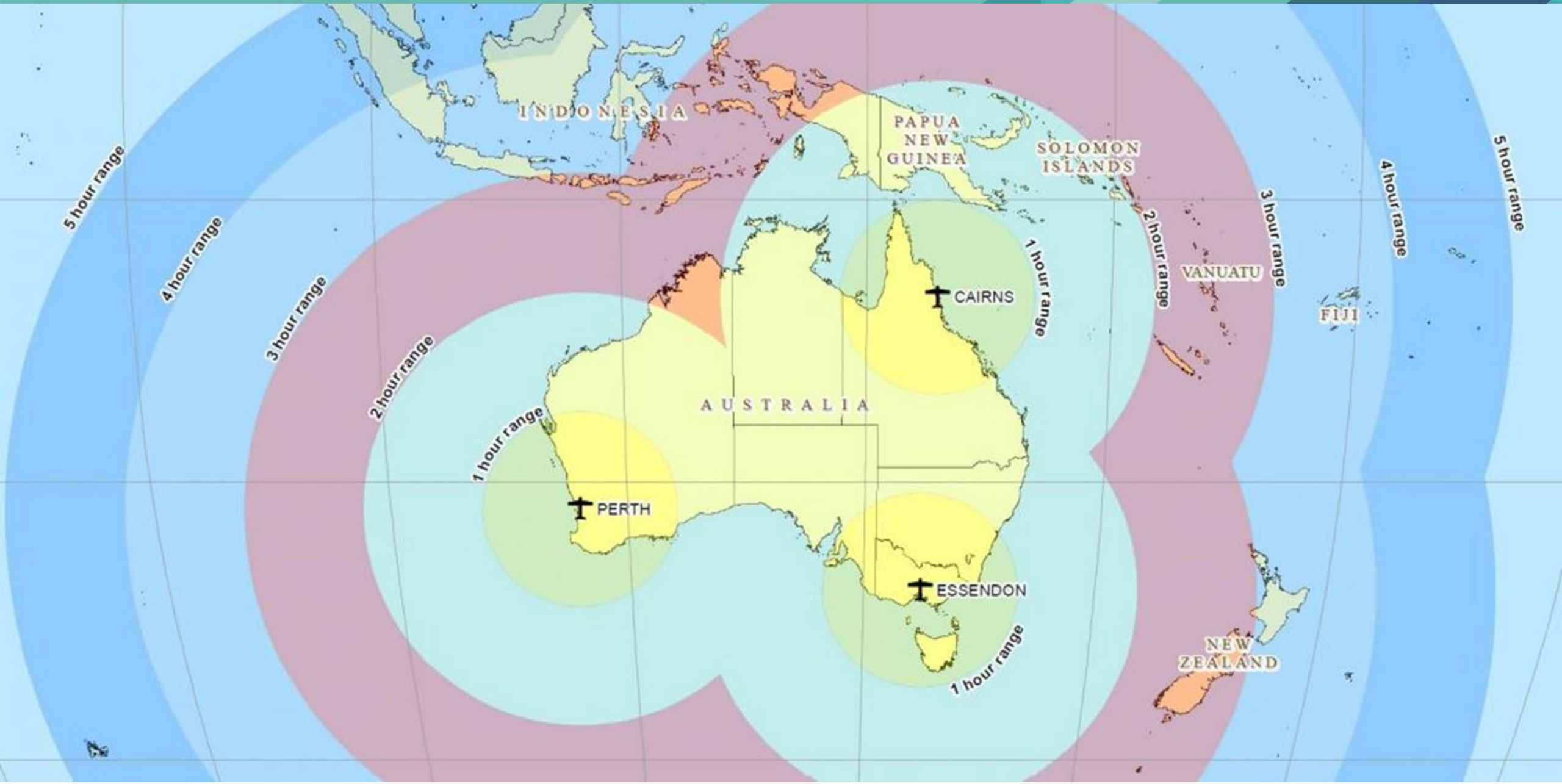
AMSA Challenger SAR aircraft

- 4 contracted Bombardier CL-604 Challengers – modified for SAR
- Based in mainland Australia
  - Cairns, Melbourne, Perth
- Not able to conduct missions to Antarctica and return in a single flight due to operational limitations in standard SAR configuration





Source and further details - https://www.amsa.gov.au/safety-navigation/search-and-rescue/challenger-aircraft



Source and further details - https://www.amsa.gov.au/safety-navigation/search-and-rescue/challenger-aircraft

Extending Challenger normal operating radius

- AMSA requested CL-604 contractor to investigate extending the aircraft's normal operational radius into Antarctic region
  - to augment existing Antarctic area aviation SAR capability.
- Normal operating radius dependent on pressurised transit.
- For drop operation – depressurised. Rear door opened.
- Planning requirement
  - contingency for door not closing, e.g. damage during drop operation
  - Unable to close door = unable to repressurise = unable to climb to higher altitude for transit without supplemental crew oxygen = higher fuel burn = limited operating radius

Extending CL-604 range – drop operations

CL-604 High Level Depressurised Operational procedures developed and tested by contractor. Includes:

- Fitment of additional crew oxygen system
- Additional crew protective clothing suitable for polar operations
- Aircraft reconfiguration from standard SAR configuration to extended range configuration by removing all non-essential SAR stores and equipment to allow for the fitment of the additional crew oxygen packs and uplift of maximum fuel available
- Standard crew number reduction from 5 to 4
- Precise matching of aircraft performance with flight planning calculations,
- Adherence to documented aircraft performance figures, and
- Operating at the very limit of crew Fatigue Risk Management System allowances, assuming a flight duration of not less than eight hours, time to configure the aircraft pre-flight and time for post-flight debrief and administration.

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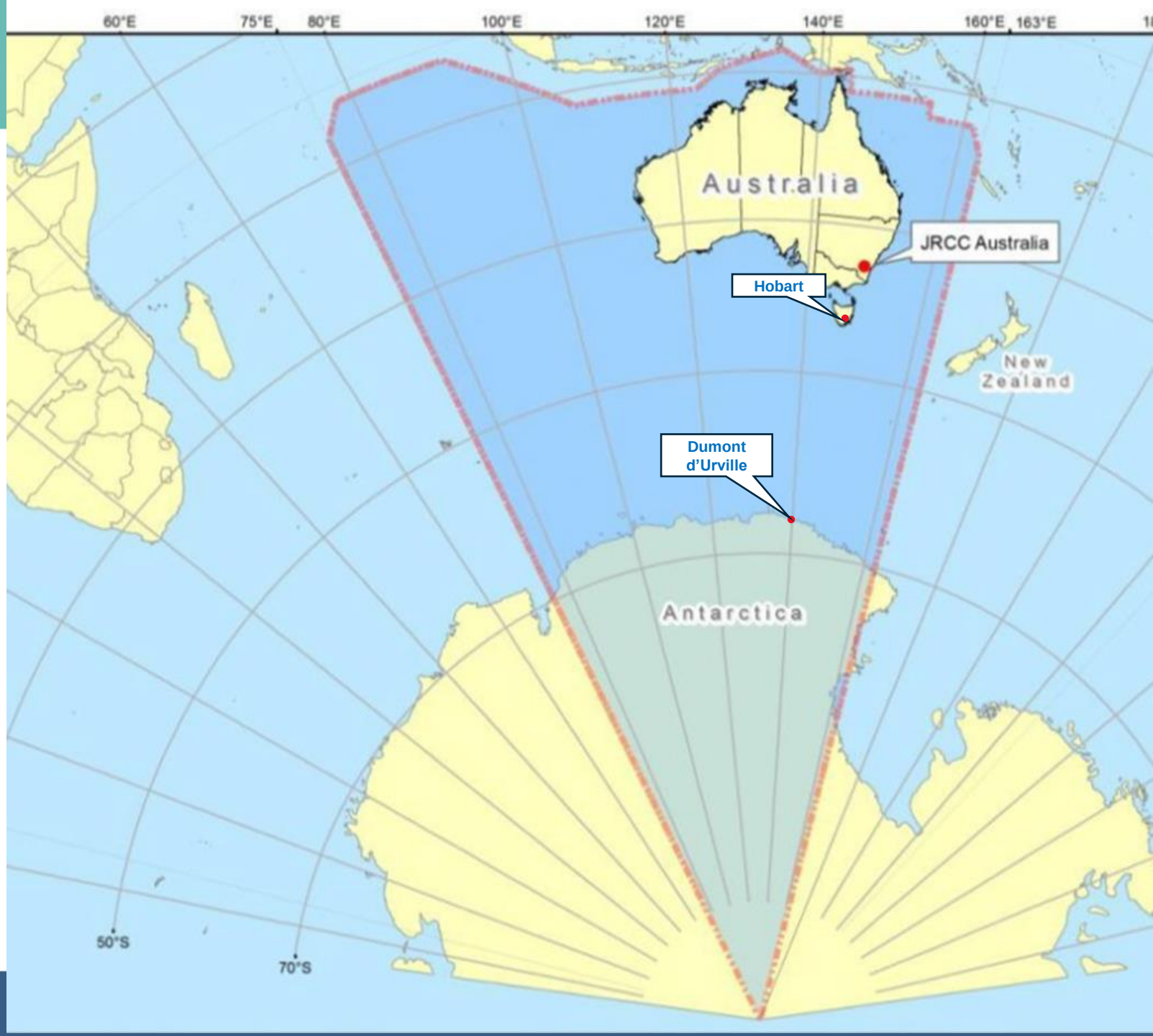
Flight Trial

New CL-604 High Level Depressurised Operational procedures

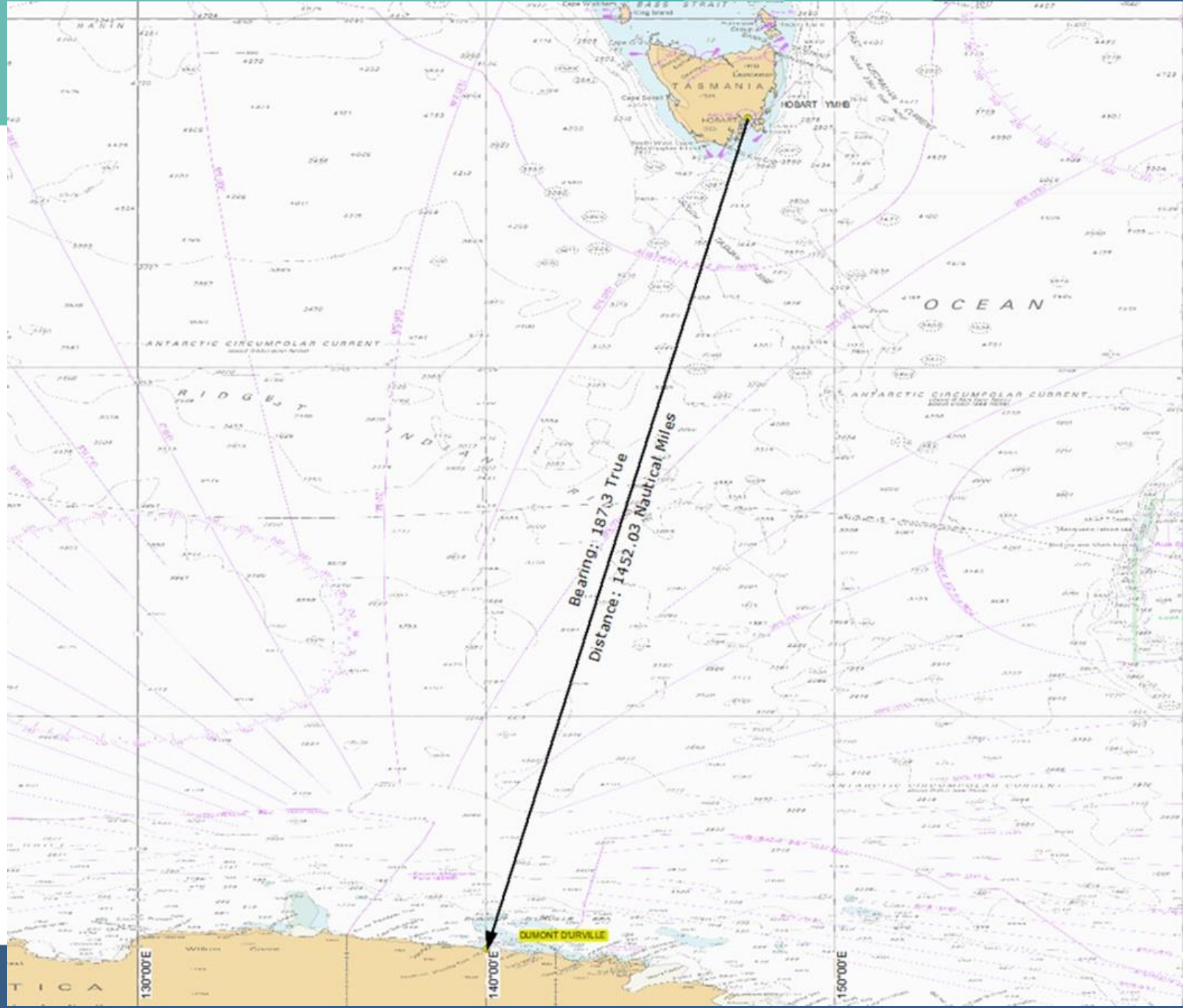
24th January 2024



HOBART to DUMONT D'URVILLE
Transit 1452NM
@ 430 KNOTS = 3 hours 22 minutes

ROUND TRIP
Transit 2904NM
@ 430 KNOTS = 6 hours 45 minutes

Supported by French personnel at Dumont d'Urville station.

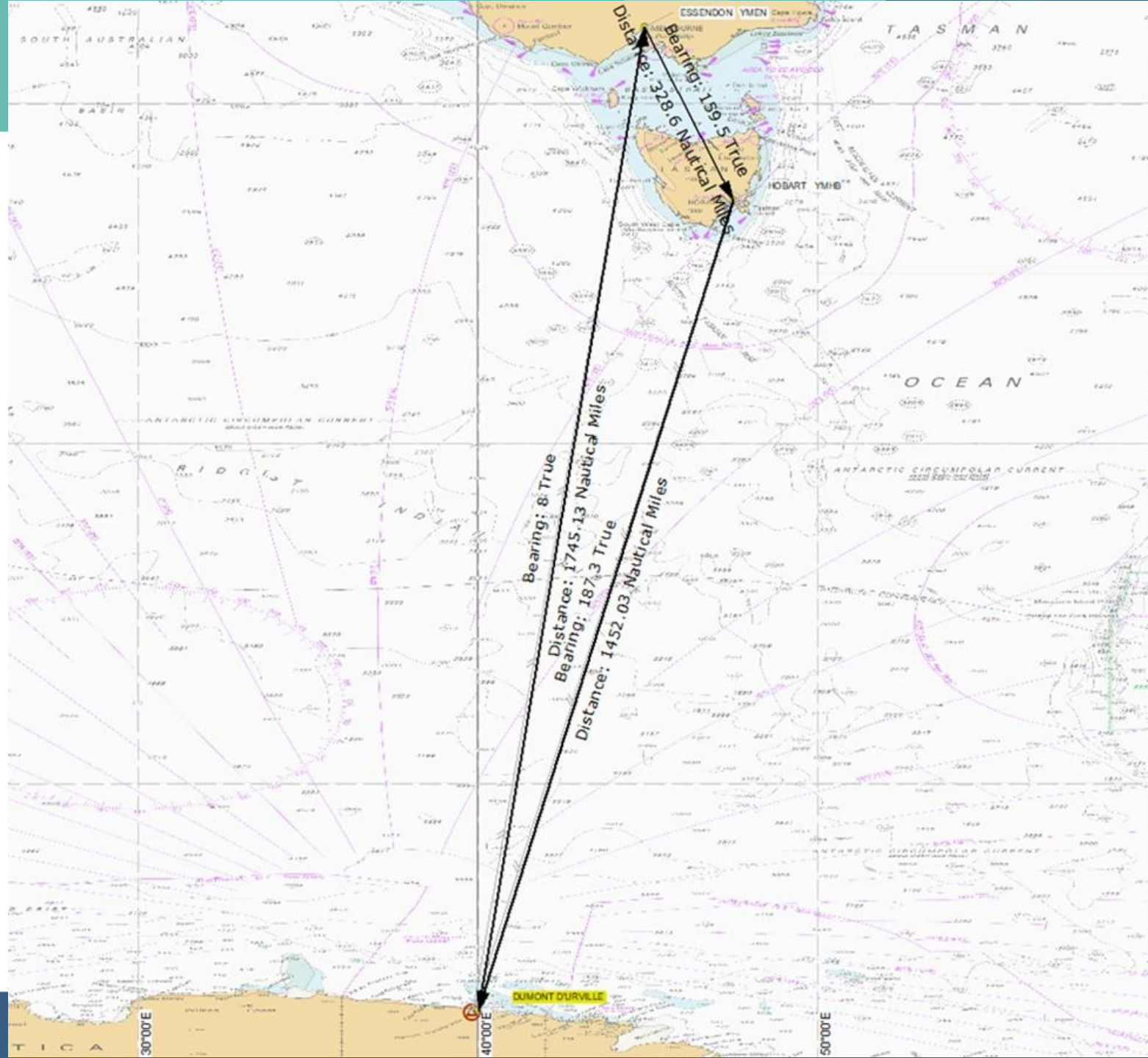


Actual Flight

ESSENDON (Melbourne) to HOBART (REFUEL) then

HOBART - DUMONT D'URVILLE – ESSENDON non-stop

Transit 3197 NM (5921 KM)

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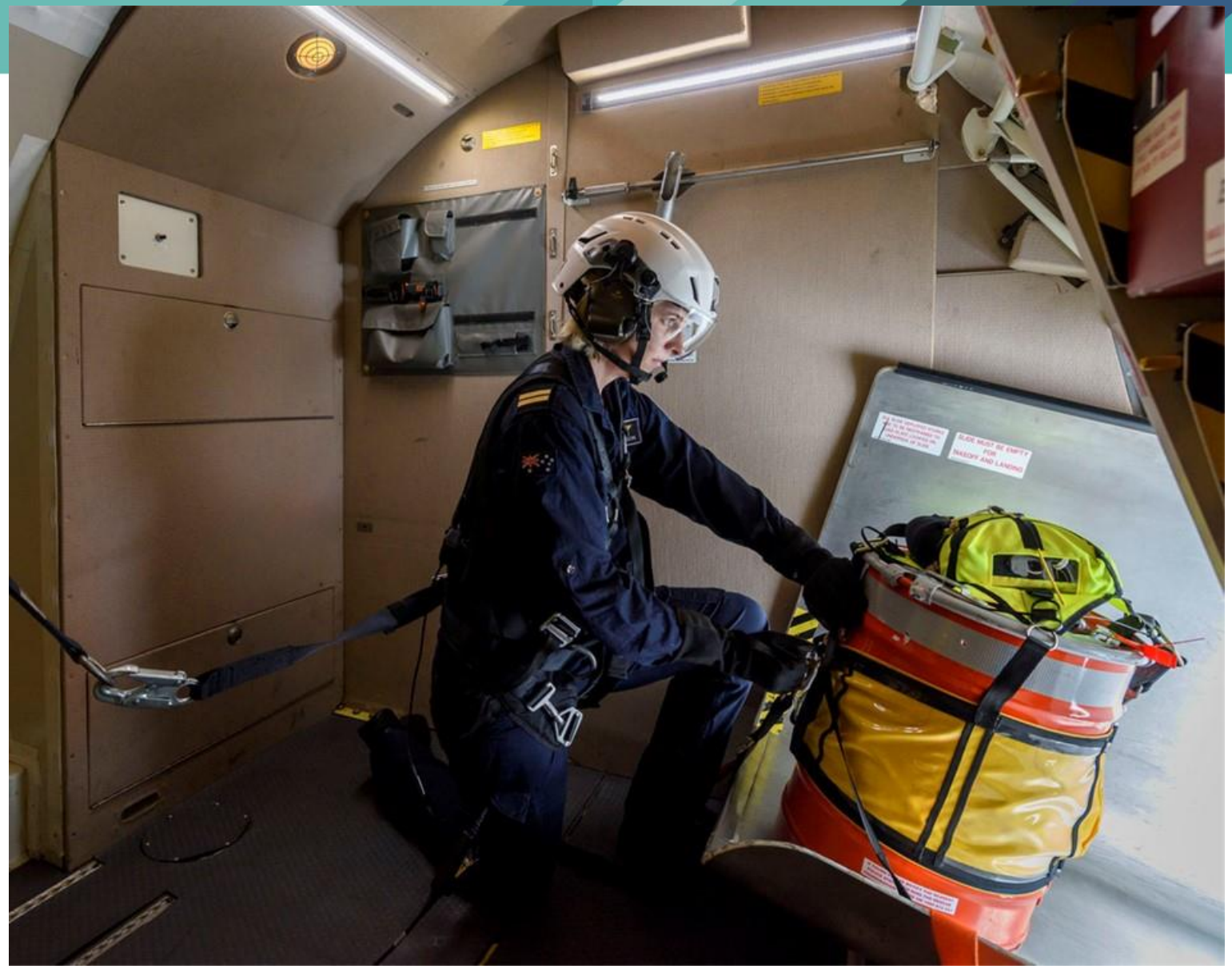
VH-XNF
RESCUE
RESCUE

View of CL-604 preparing to drop from rear door

(Not actual flight)

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325°
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66:37.74S
139:41.78E

NOTES pending confirmation by SOS team

Outcomes

- Successful extended range trial flight by operator and crew
- Successful implementation of High-Level Depressurised Operational procedures
- Identified key findings and opportunities for improvement
- Opportunity to explore CL-604 operations
  - to Antarctic ice runways
  - Additional extended range operations in other remote areas of Australian SRR

Estimated Coverage with range extension procedures applied

Questions?