



AEA AEROSPACE GROUP

Tailoring Aeromedical Retrieval Systems To Suit The Resources Available

Andrew Moore – Operations Manager
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AEA AEROSPACE GROUP

Part of the Nova Group:

- **AEA** **Multirole Sector (Australia)**

- CASA AUS and PNG Certified for Modifications and Repairs.
- Role Conversions / Special Mission Operations STCs.
- APMA and Production Approvals for Bolt-On Parts Kits.

- Airline Technical Services Airline Sector (Australia)
- BAC Civil Sector (Europe / EASA)
- Nova Systems Defence
- Catops Recruitment
- Auspace Satellite Communications



OVERVIEW

- Aeromedical Roles.
- Establishing System Requirements.
- Tailored Solutions
 1. Dedicated Air Ambulance - Fixed Wing.
 2. Dedicated Air Ambulance - Rotary Wing.
 3. Part Time / Quick Change / Hybrid.
 4. Mass Casualty.
- Questions.



SCENARIOS.....

Geography ?

Critical Care Required En Route?.

More than one Casualty ?



- Patient winched from a cliff face with multiple fractures / head trauma.
- Multiple patients from an Road Accident.
- Mass Casualties from an Offshore Platform.



Successful outcome depends on:

- Speed of response
- Suitability of System.
- En Route Patient Care.

FLEXIBLE SOLUTIONS

There is not a 'one size fits all' solution to these situations. Decisions must be made...



- Is the aircraft dedicated full time or part time? Is the fit-out permanent, limited period or 'quick change'?
- Is a specialist aircraft type available or do we draw from an existing operator's fleet (normally fitted for passengers)?
- What level of care is expected in-flight?
- How many patients are carried simultaneously? One, two or even more? Is there a critical / non-critical mix?

Often overlooked questions are:

- Do we have to 'future proof' the existing solution? Are different aircraft coming?
- Are we anticipating medical technology advancement?
- Do we make provision for higher equipment weights / volume / power requirements?

MEDICAL PERSONNEL KNOW BEST

So we need to understand the operator's specific retrieval operations and limitations, hardware and provide tailored solutions to meet the best possible practice for patients ***and*** operating crew.

- Critical Input from Doctors, Flight Nurses, MICA paramedics, etc, the ***users*** the equipment.
- Available trade-offs and aircraft hazards must be discussed early:
 - Restraints / harnesses / interaction with winching (if reqd).
 - Is a zero-lift patient loader required?
 - Crashworthiness.
 - On-board oxygen hazards, volume required.
 - Weight and balance issues, max floor loads, patient orientation and working height.
 - Lithium-Polymer battery equipment hazards.
 - Equipment RF emission hazards on aircraft systems.



DIFFERENT STROKES



1. TYPICAL AIR AMBULANCE FITOUT

- Full-time fitout → Permanent modifications.
- Fixed wing, high speed, pressurised aircraft.
- Highest level of care available.
- Zero-lift stretcher loader typically required.
- Normal to carry two critical patients.
- Aircraft of older design standard → Higher approved patient weight / bariatric patients are catered for.
- Highest aircraft power requirements.
- Nitric oxide approval may be required.



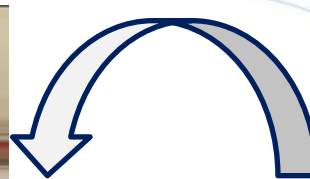
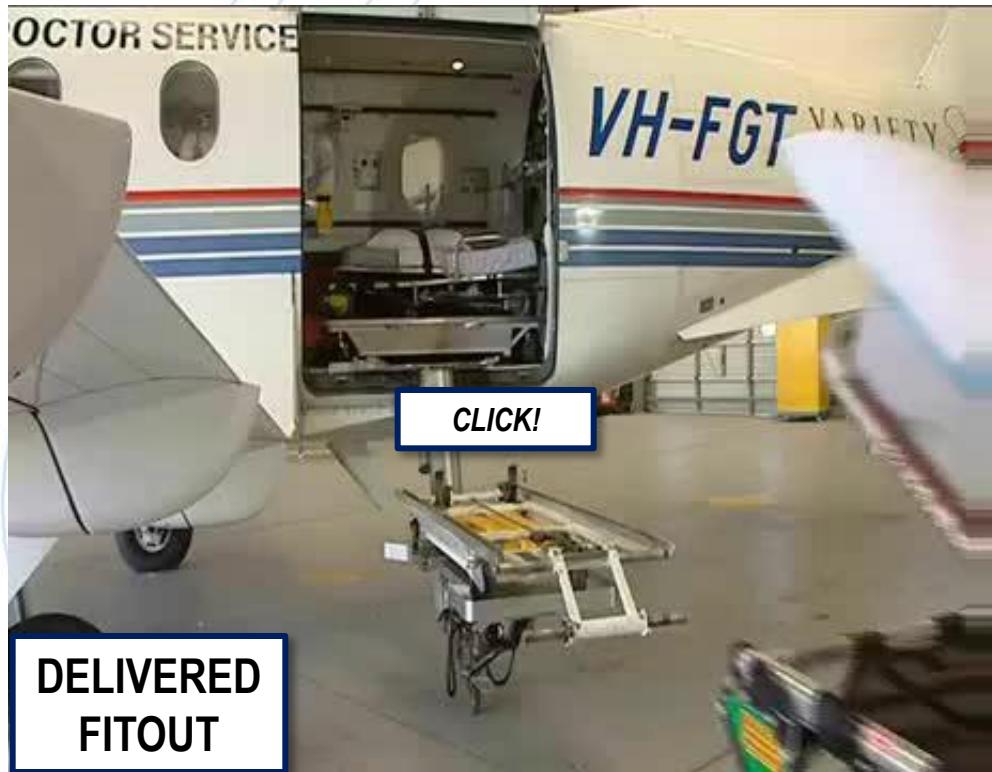
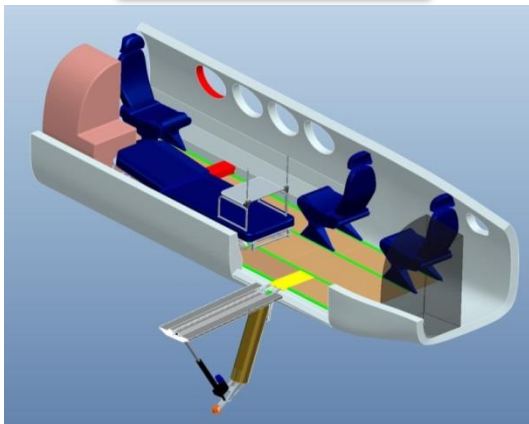
**AGREED
CONCEPT**



**FULL SCALE
MOCK-UP**



**OPERATIONAL
TRIAL**



PRODUCTION



AIR AND ROAD COMPATIBILITY

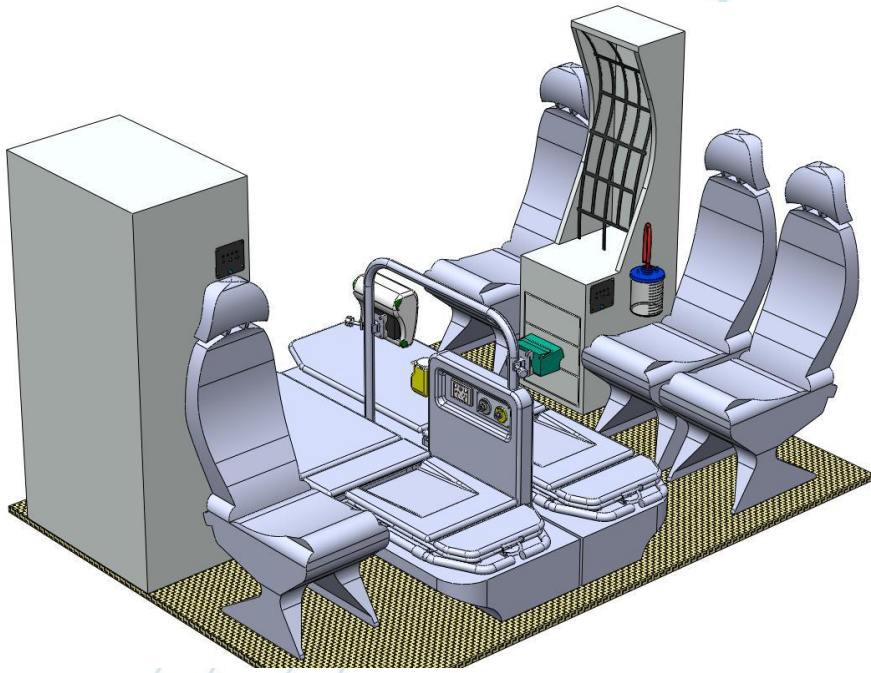
Dual Certification may be required to CASA aircraft and AS/NZS road ambulance standards.



2. DEDICATED HELICOPTER FIT-OUT

- Space and weight more critical.
- Provisions for hoisting / winching
- Typically no stretcher loader available – insufficient room
- High level of medical equipment – location in the cabin critical for available space ergonomics, headstrike / injury. It is often mounted high or overhead.





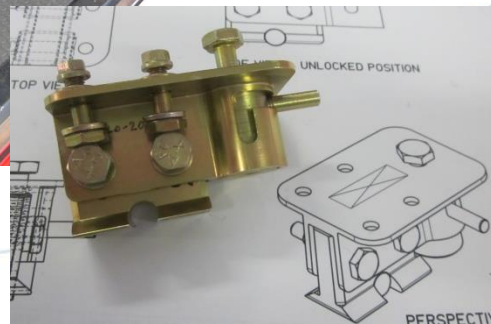
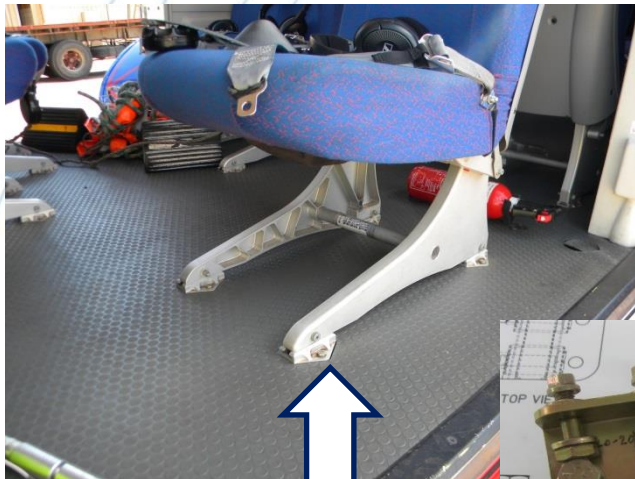
3. PART TIME - QUICK CHANGE



Multi-use stretcher systems are desirable for helicopter fitouts:

- Often an operator has two or more helicopter types.
- Floor locks should be compatible with a range of seat tracks, allowing them to be fitted to a large range of helicopters.
- Certify to highest standard likely to be encountered.
- Add services such as oxygen as modular units to reduce bulk.
- Equipment should be designed for easy storage in the aircraft when not in use.

HYBRID FITOUT – MULTI PLATFORM



4. AIRLINER MULTI CASEVAC LAYOUT

Man-made and natural disasters require high-capacity evacuation.

- Often called 'mass-casualty incidents', and are often challenging as the retrieval site is remote and timeframe is short notice.
- No dedicated aeromedical aircraft will be available.
- Aircraft must be 'quick change' to be configured for stretchers / litters.
- Modest level of care can be provided → Typically limited to carry-on equipment.
- Patients typically carried onboard via stairs.
- Mix of aircraft with older and newer design standards.



- Most seats removed.
- Some seat groups retained for medical staff.
- Direct patient contact may not be possible during take-off and landing.
- All support equipment (Oxygen, monitors, IV) must be mounted direct to stretcher on a bridge.

SUMMARY

When Designing an Aeromedical System...

- Full-time dedicated or part time quick change ?
- Intensive care or walking wounded ?
- Versatility - single aircraft type or multiple fixed and rotary wing compatibility and even road ambulance capable ?
- Certification - Airworthiness regulations are written to protect able bodied fare paying public. No specific provisions for patients who's chances of surviving the flight may already be compromised. Pragmatism and compromise are necessary, especially where circumstances dictate that the retrieval of all survivors is only marginally possible.
- Transporting a patient on a quickly configured fold-up stretcher with rudimentary en-route care may be the only viable option.



QUESTIONS?

