



Australian Government
Department of Defence
Capability Acquisition and
Sustainment Group

S-70A-9 Black Hawk: Balancing Airworthiness & Sustainment Management with the Demands of a Domestic Special Operations Capability and International Sustainment Community

Army Aviation Systems Program Office

Major Steve Wardill

S-70A-9 Sustainment Engineering Manager

Lieutenant Colonel Adam Kurylewski

S-70A-9 HoDO/DoSA/MTCH/CENGR



Major Steve Wardill:

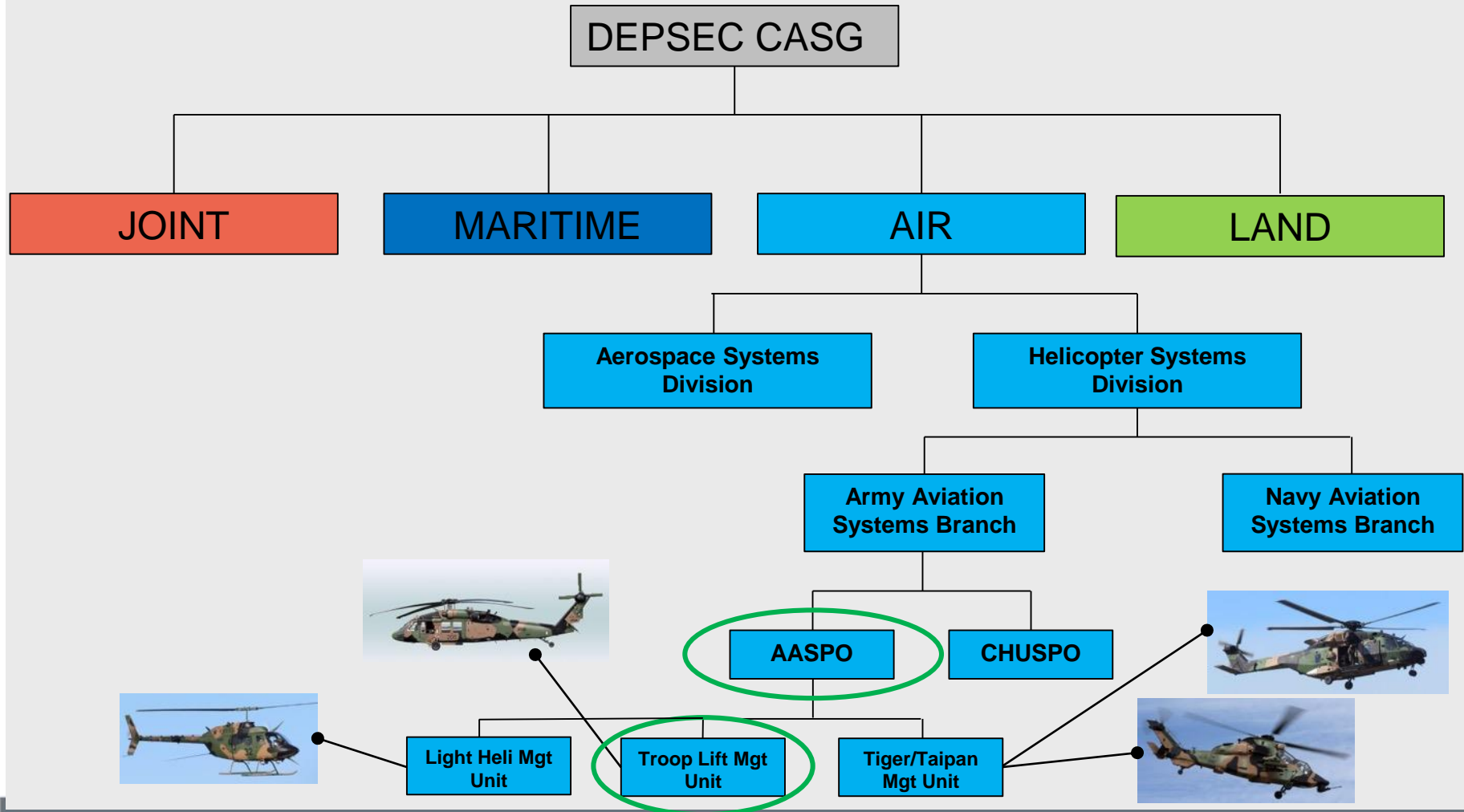
- S-70A-9 Black Hawk overview
- Three case examples:
 - Fatigue critical component suspected cracking
 - Managing the *possibility* of concealed structural corrosion
 - Critical component CRT uncertainty

Lieutenant Colonel Adam Kurylewski:

- Managing and communicating risk

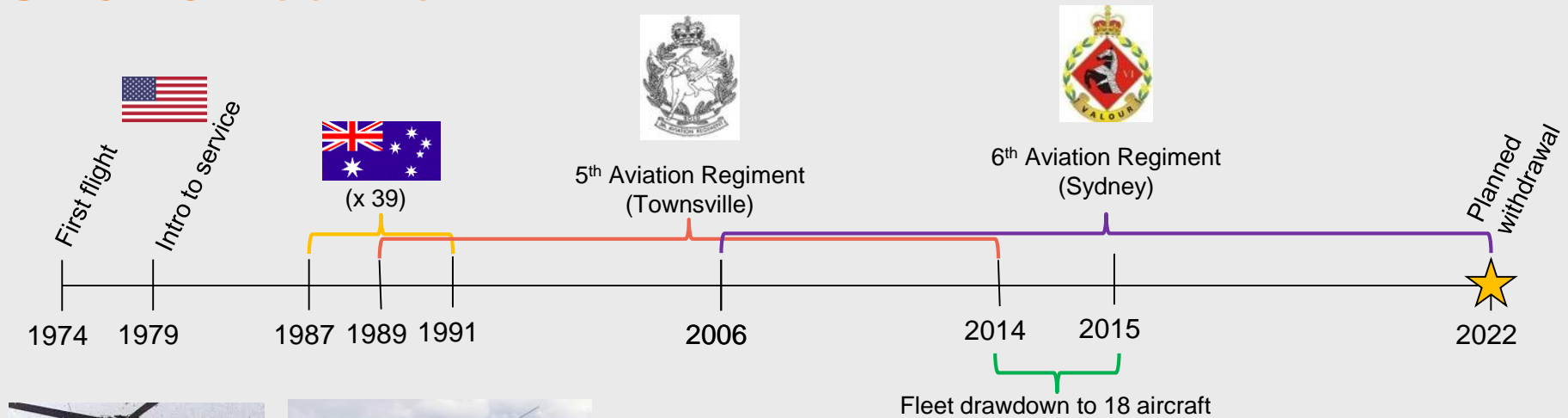
BACKGROUND


Army Aviation Systems Program Office (AASPO)



BACKGROUND

S-70A-9 Black Hawk

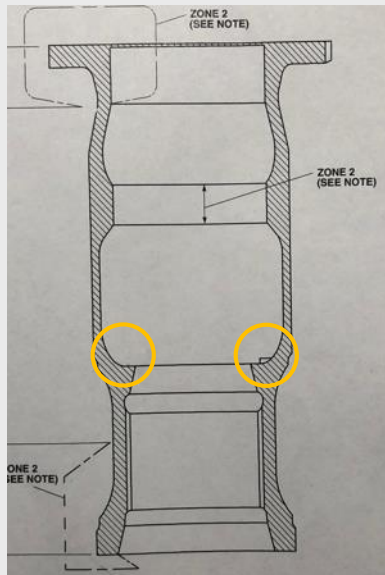
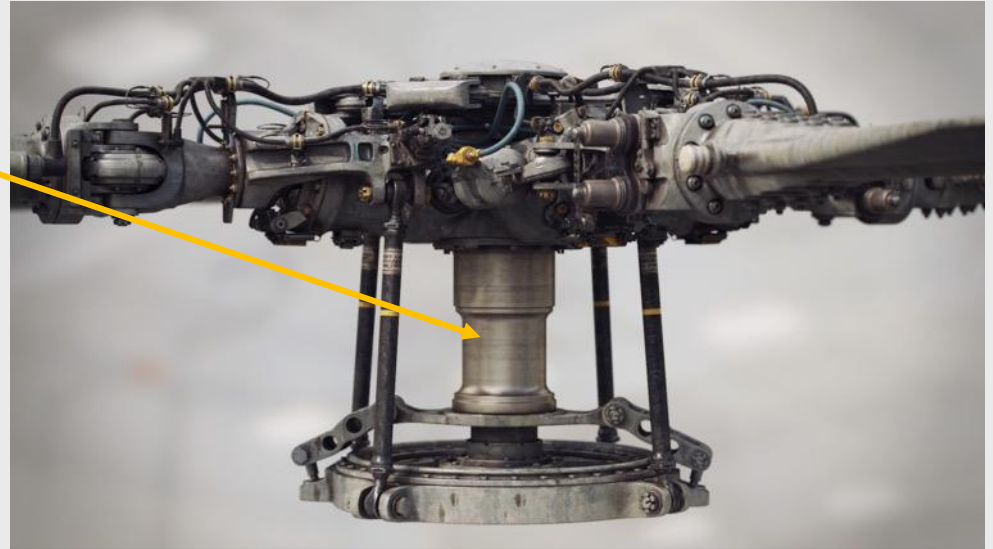




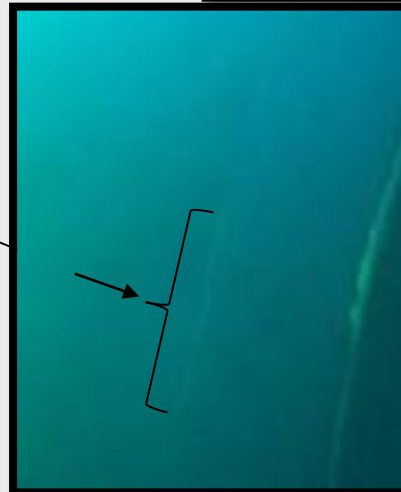
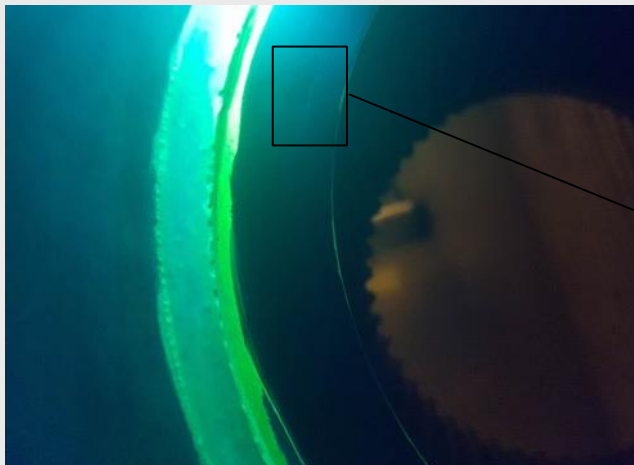
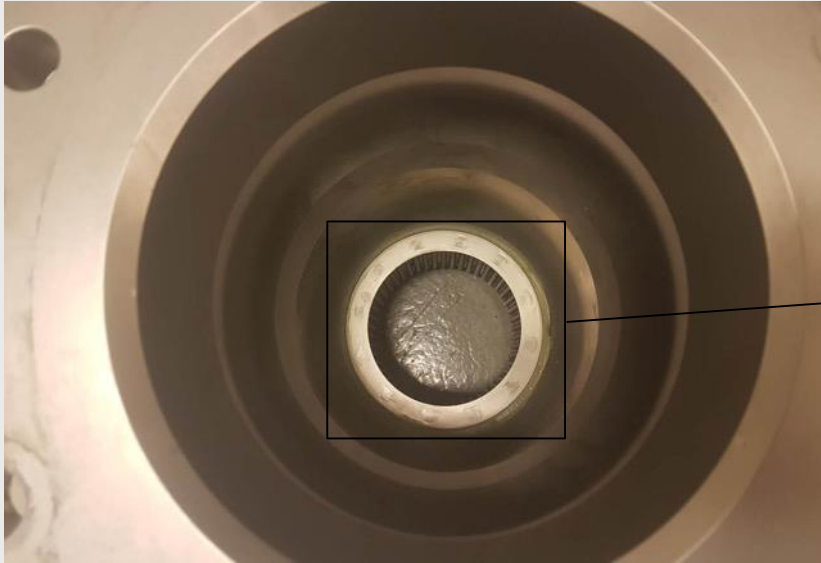
Sustainment Management Challenges

Case Examples

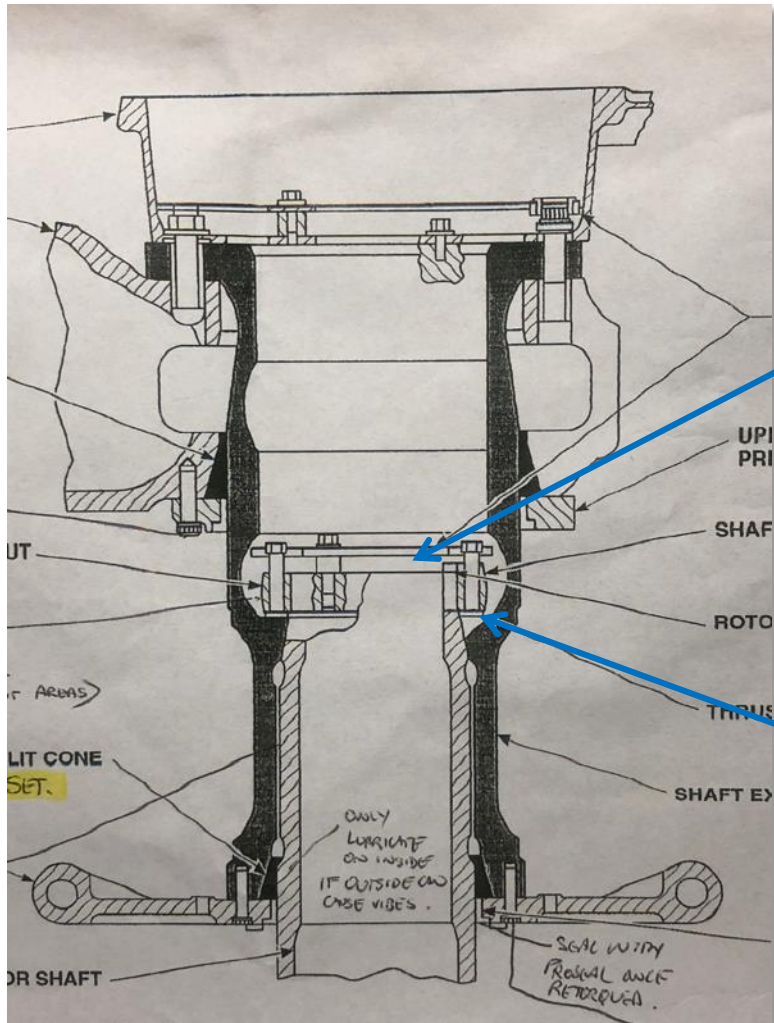
CASE 1: MAIN ROTOR SHAFT EXTENSION SUSPECTED CRACKING



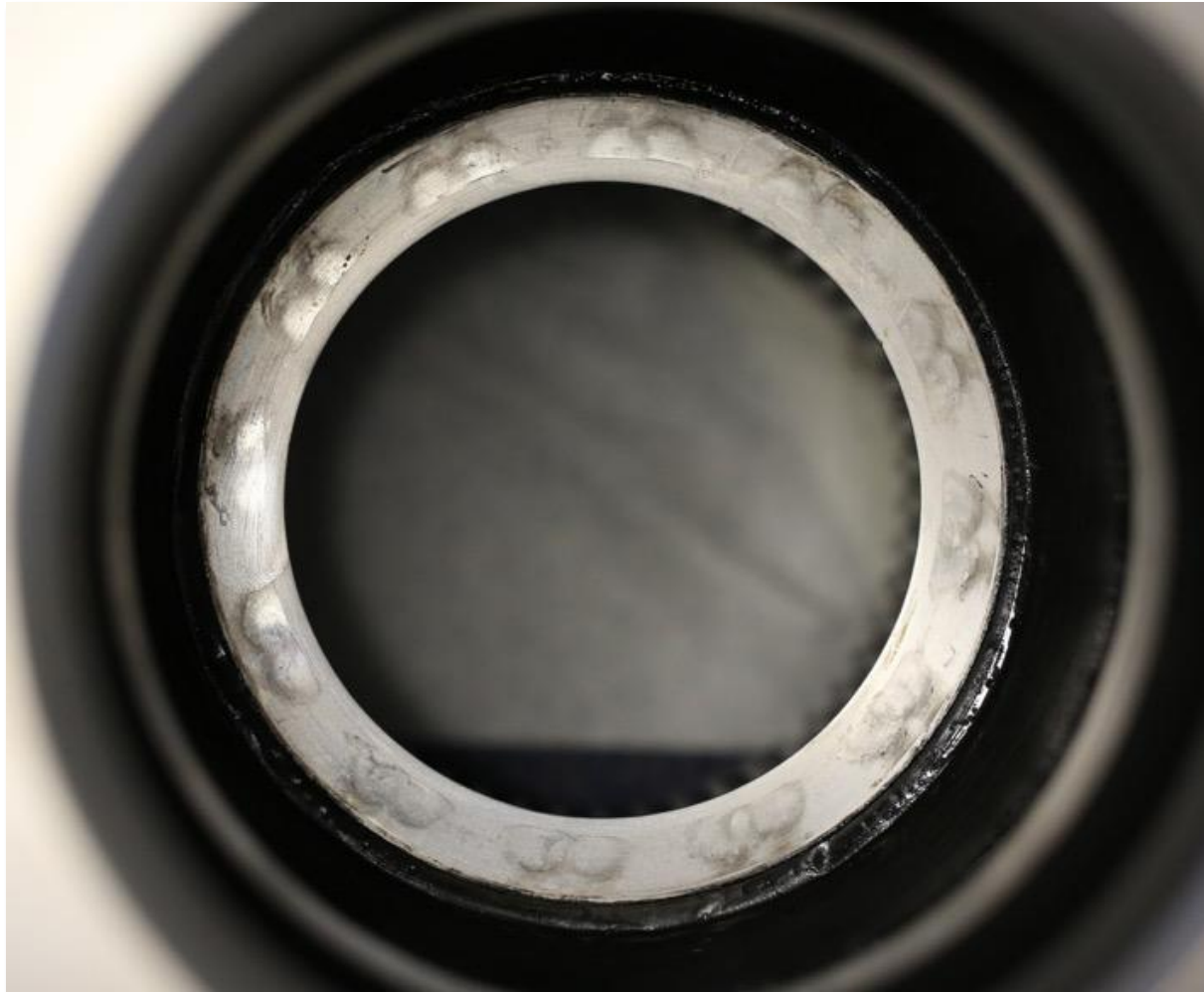
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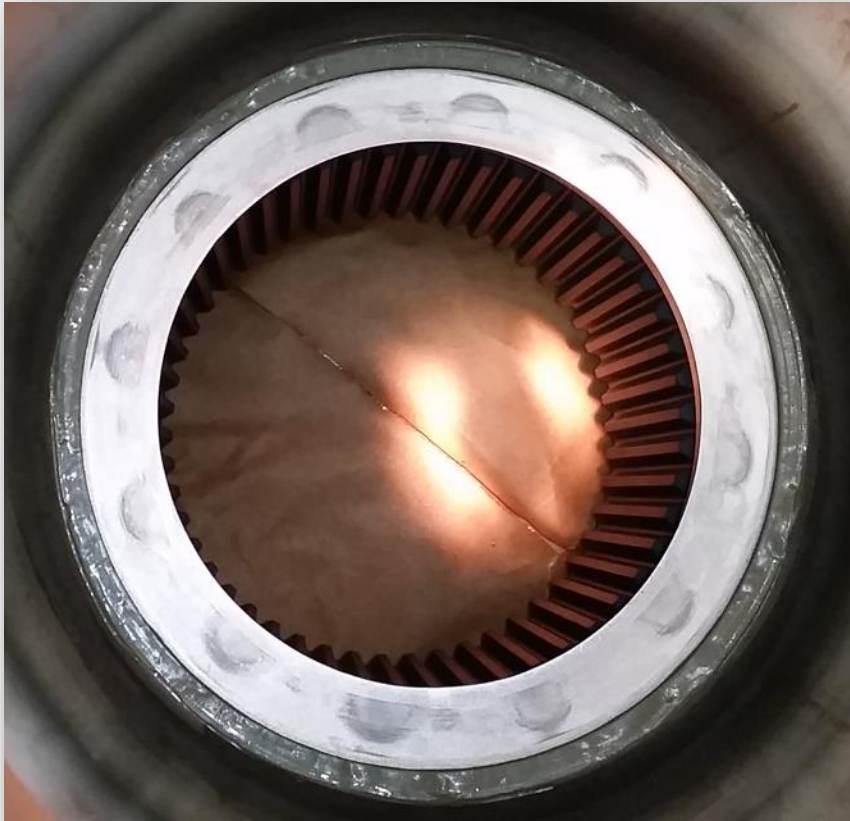


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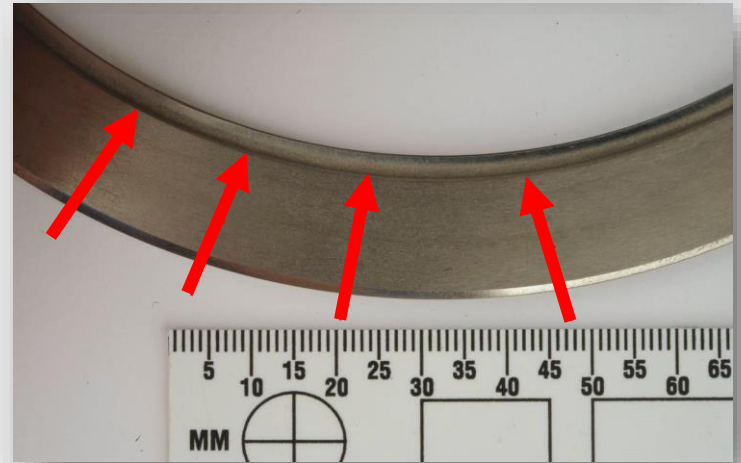
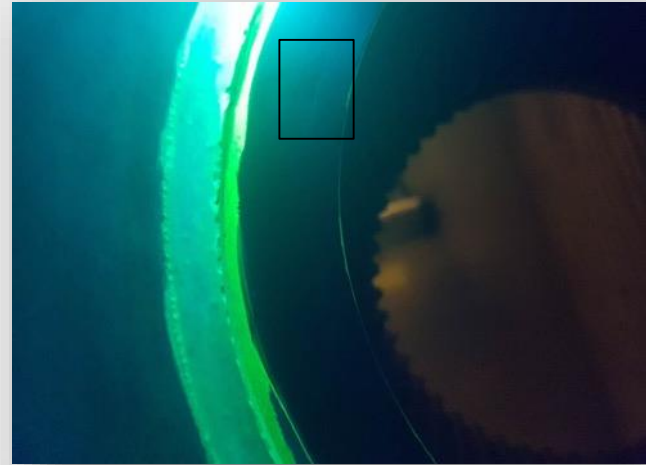
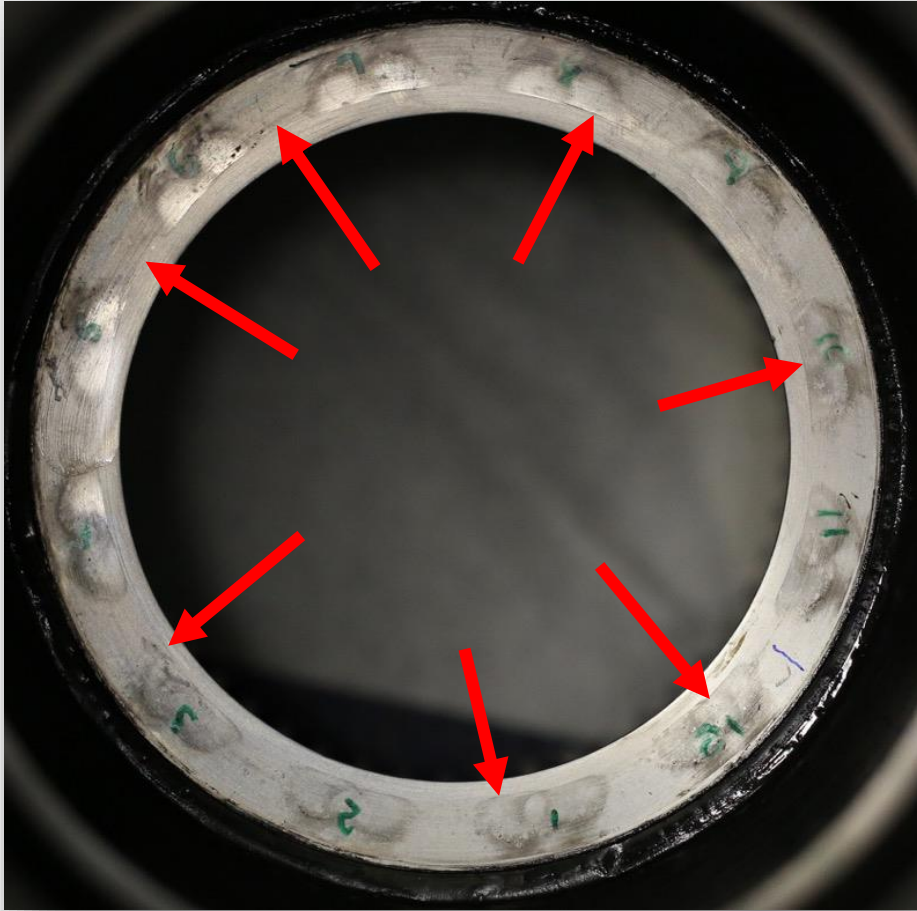


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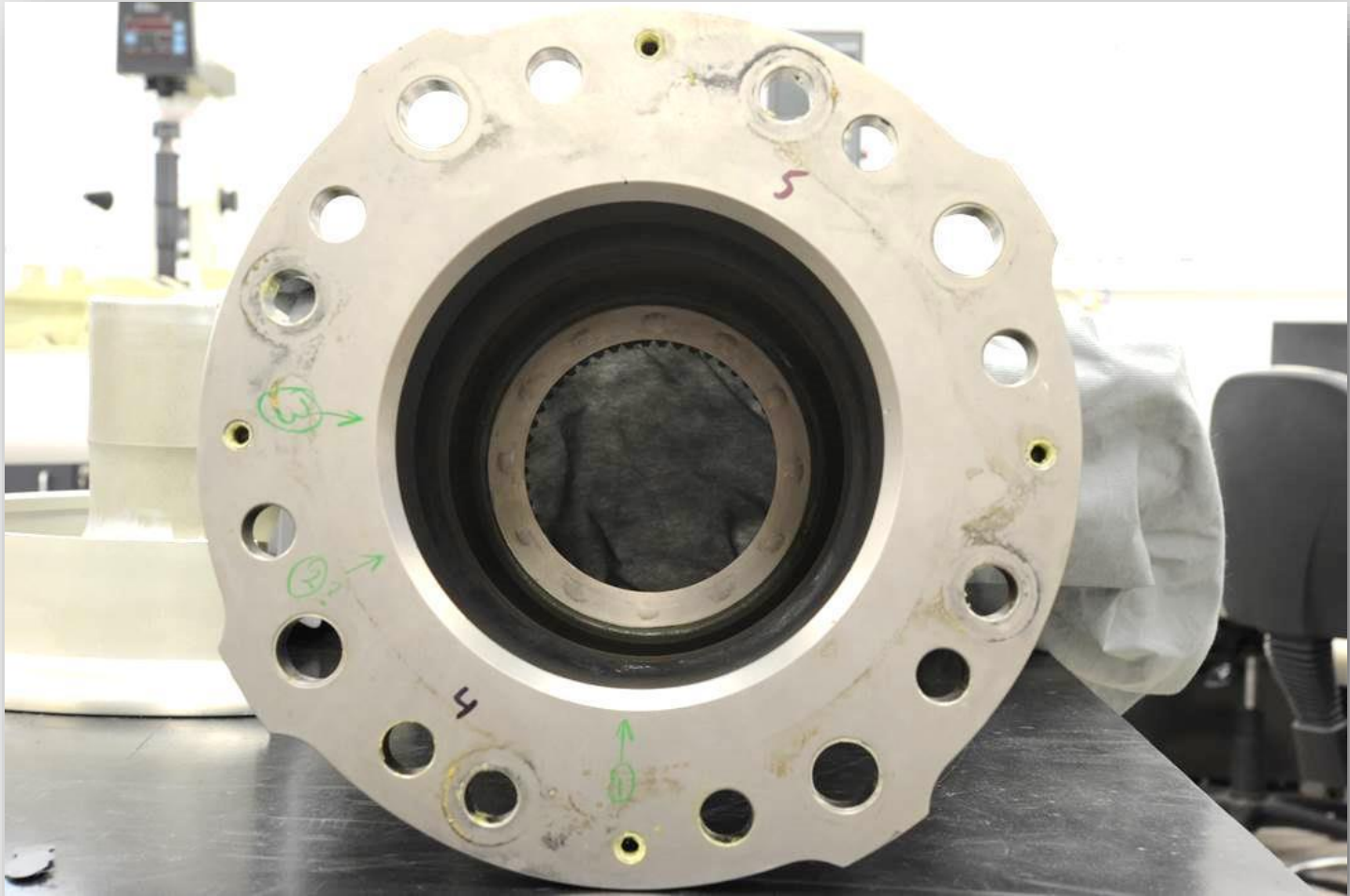
From Sea Hawk SPO:



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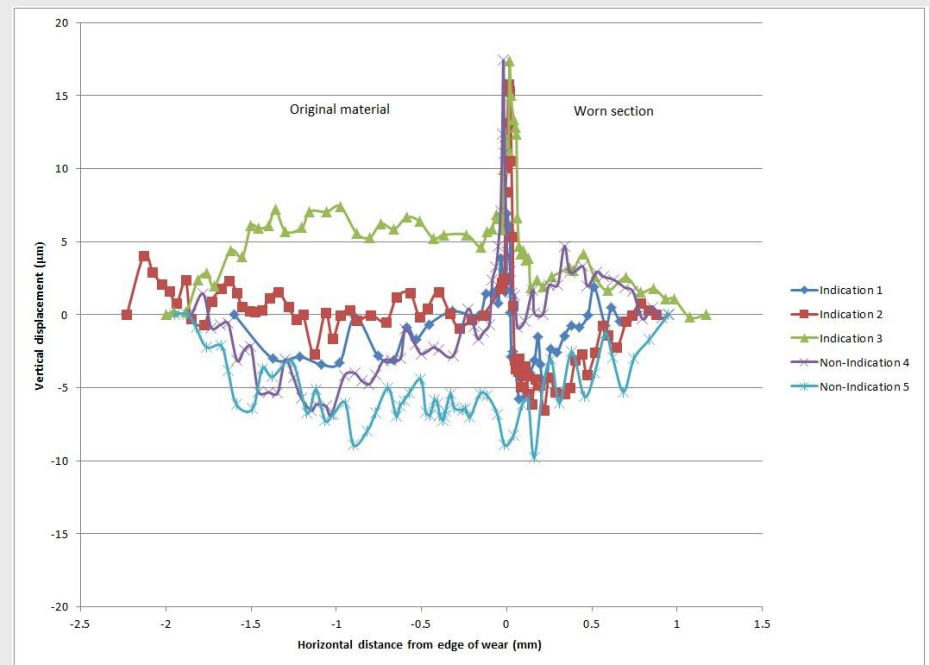
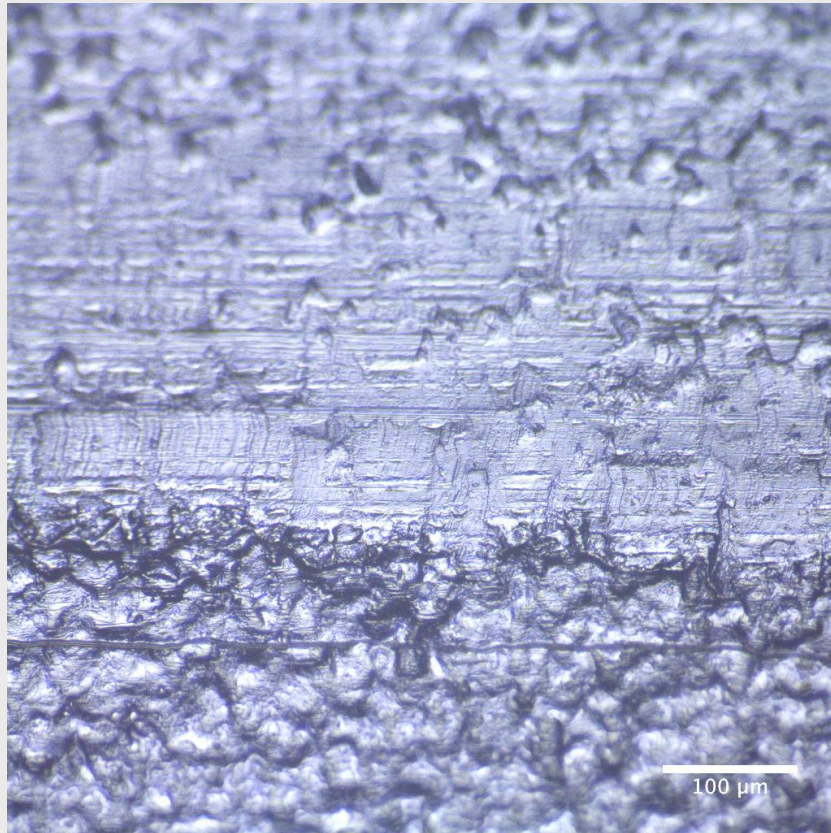
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CASE 1: MAIN ROTOR SHAFT EXTENSION SUSPECTED CRACKING



The header features a dark blue background with a faint, glowing orange grid pattern. Overlaid on this are vertical columns of binary code (0s and 1s) in a lighter blue color. In the center, there is a faint, semi-transparent image of a mechanical component, likely a shaft or rotor, rendered in a light orange hue.

CASE 1: MAIN ROTOR SHAFT EXTENSION SUSPECTED CRACKING

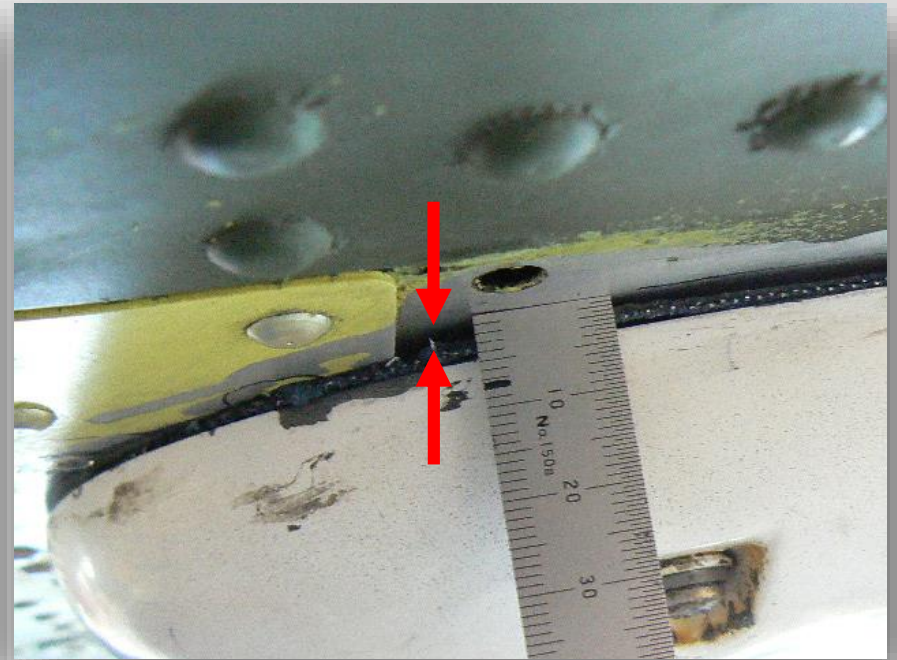
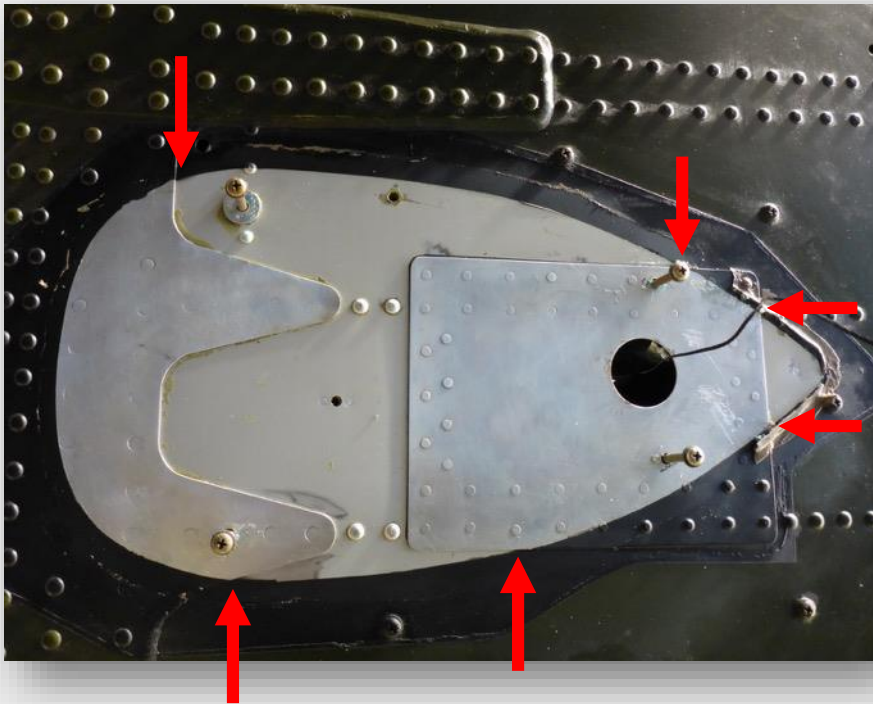
Key takeaways:

- Foster informal design support networks
- Can't rely on the OEM
- Always reproduce positive NDT results

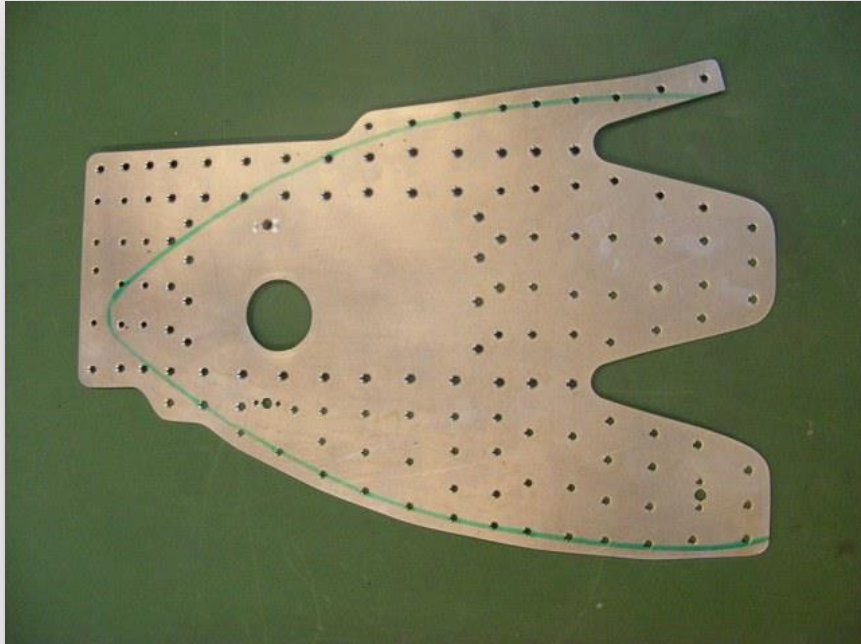
CASE 2: ADF ANTENNA CORROSION



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ANNEX
4-23.3-B(1244)
12-MAR-12

BELLY STRAP AND ANTENNA MOUNT DETAILS

1.8" X 2.2" = 3.96 Sq"
Estimate corrosion 30% area
Corrosion = 1.18sq"

1.8" X 0.95" = 1.71 sq"
Estimate corrosion 50% area
Corrosion = 0.85 sq"

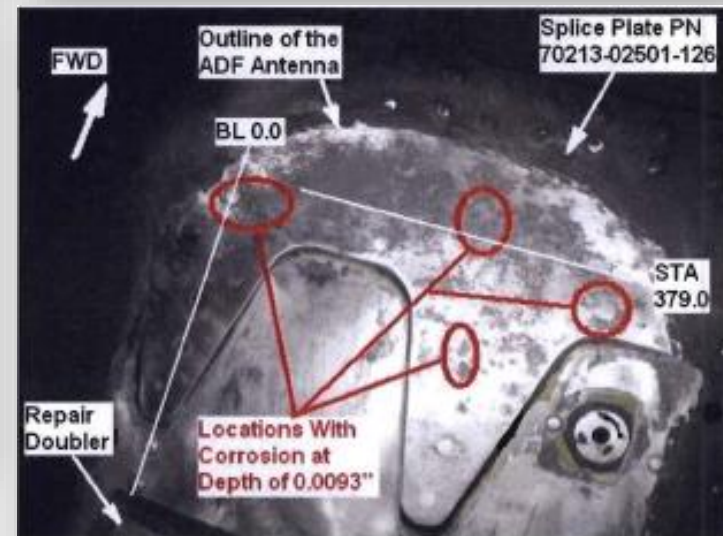
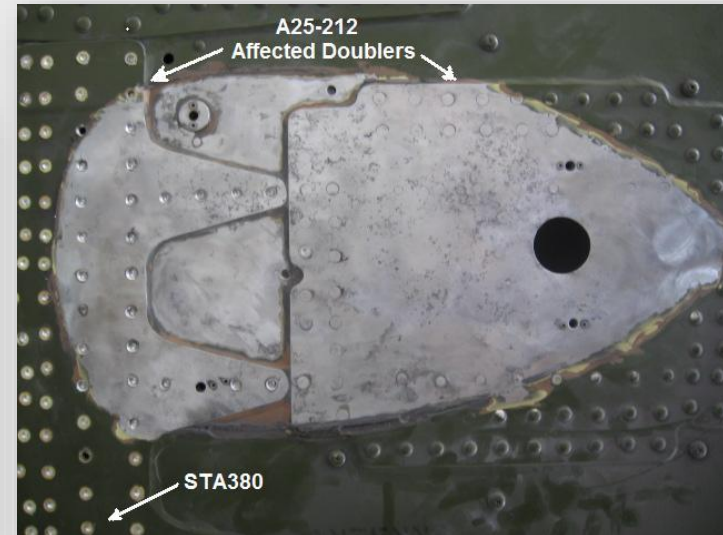
2.9" x 2.8" = 8.12sq"
Estimate corrosion 40%
Corrosion = 3.2sq"

2.3" x 1.4" = 3.22sq"
Estimate corrosion 15%
Corrosion = 0.48sq"

1.7" X 2.2" = 3.74sq"
Estimate corrosion 10%
Corrosion = 0.374sq"

1.07" X 1.7" = 1.81sq"
Estimate corrosion 10%
Corrosion = 0.181sq"

These measurements are an estimate of the severity of corrosion, more corrosion was evident in the remaining unpainted surface, the above is a capture of the worst area's.



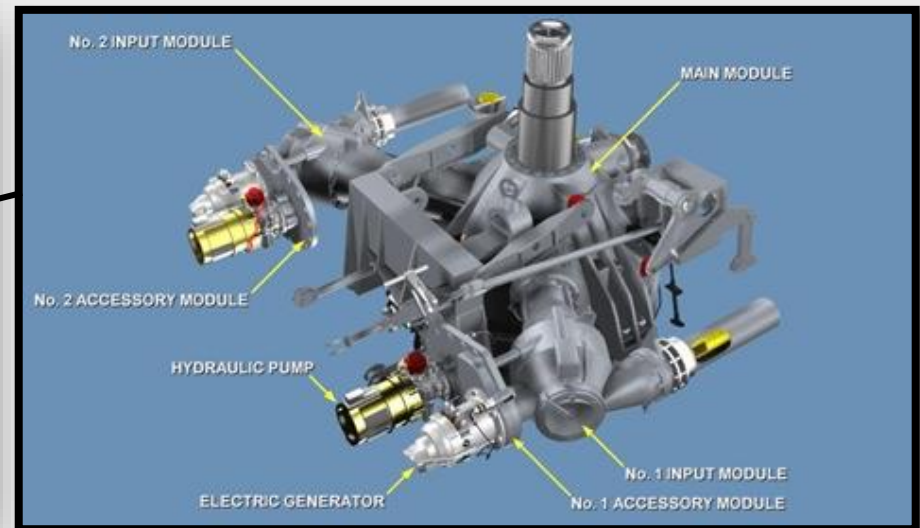
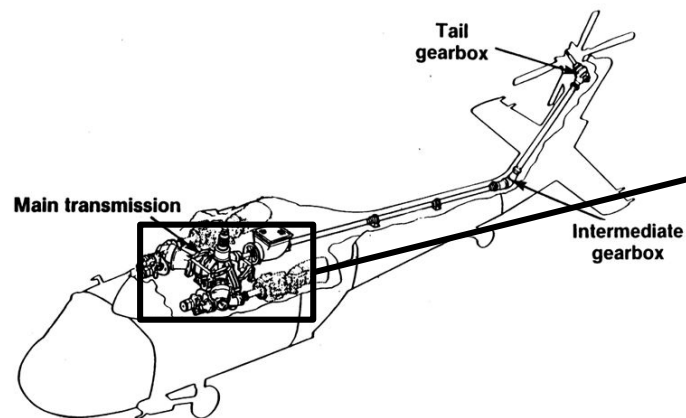


CASE 2: ADF ANTENNA CORROSION

Key takeaways:

- Cross-discipline consultation during design
- Trial modifications/designs prior to fleet roll out
- Know your MO's capabilities and limitations
- Close comms with your design support network

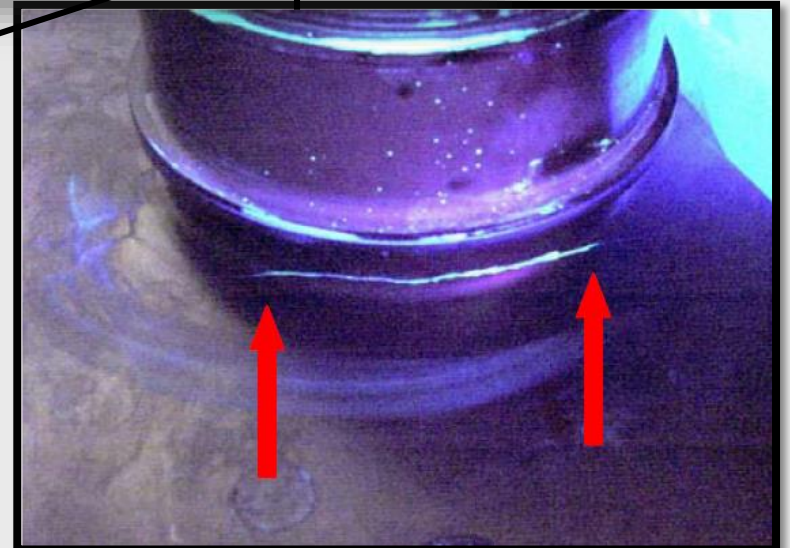
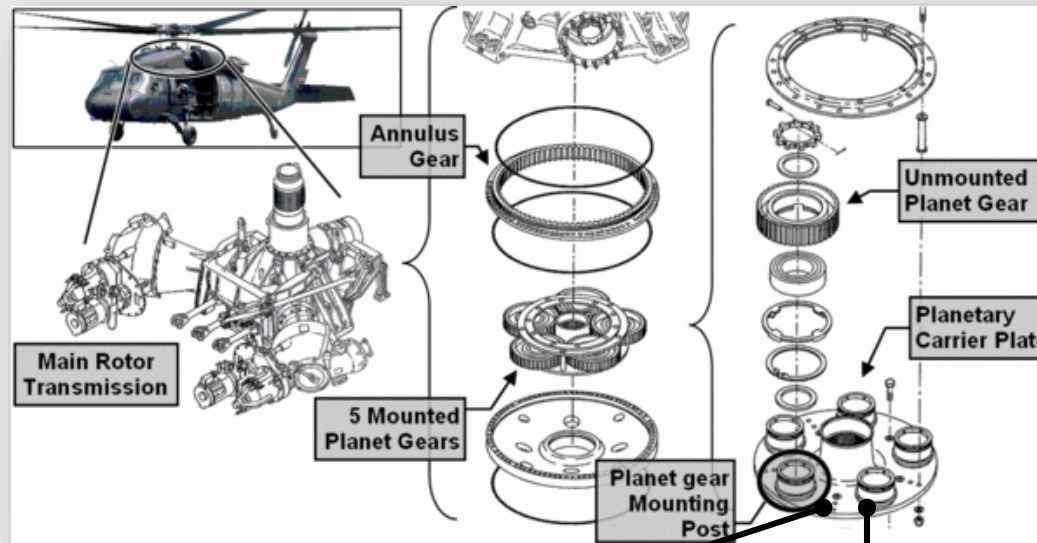
CASE 3: PLANETARY GEAR CARRIER LIFING POLICY



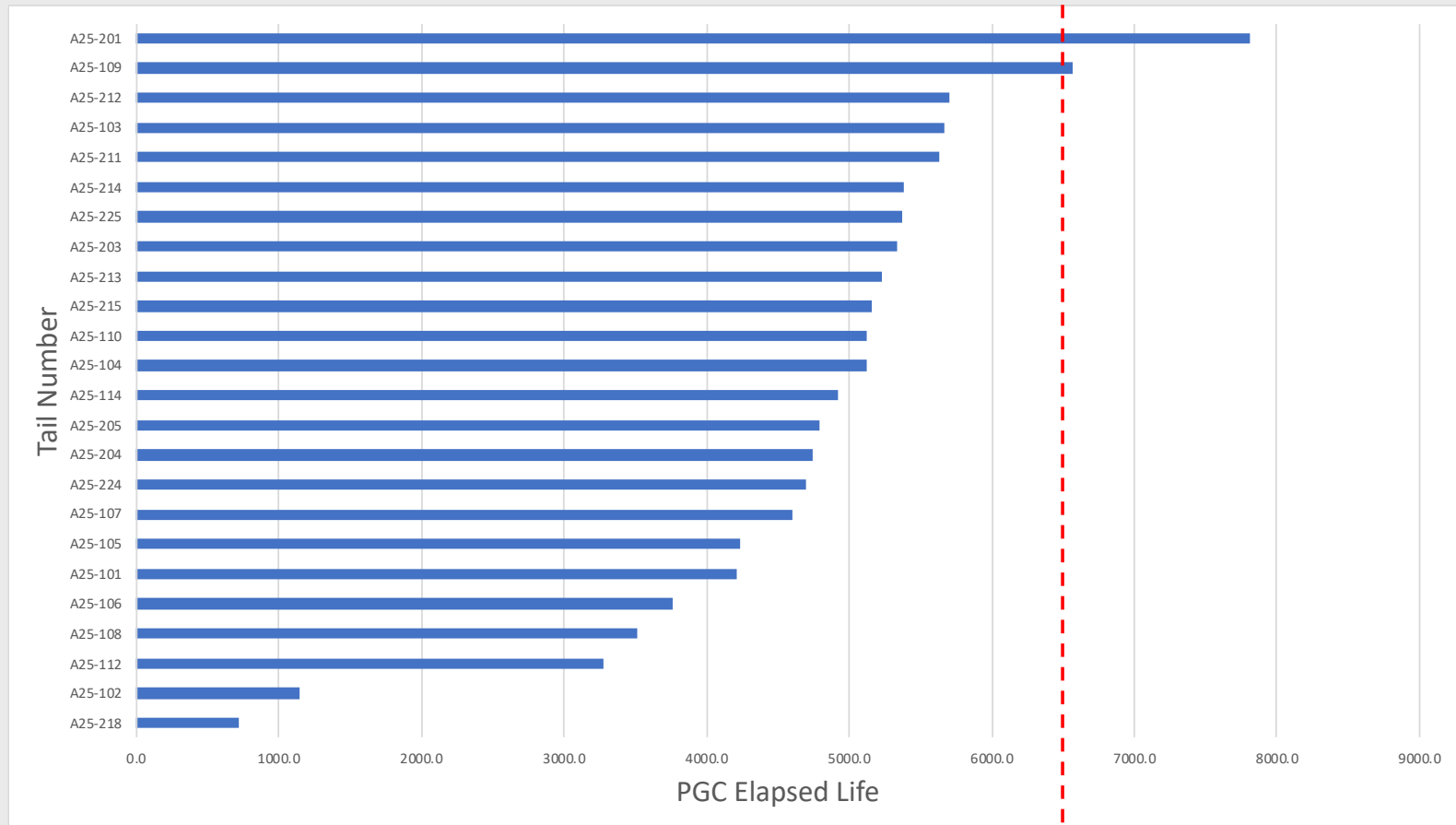
CASE 3: PLANETARY GEAR CARRIER LIFING POLICY

OEM CRT:
9800

US ARMY CRT:
6500



CASE 3: PLANETARY GEAR CARRIER LIFING POLICY



The header features a dark blue background with a subtle pattern of binary code (0s and 1s) and a faint, stylized globe or orbital path in a lighter blue color.

CASE 3: PLANETARY GEAR CARRIER LIFING POLICY

Key takeaways:

- Global design support network is a double-edged sword
- Design support arrangements need to include substantiation data
- It's all about stakeholder engagement and communicating risk

Continued Airworthiness and Capability - CENGR Perspective

- Know the ADF CRE
 - C = Configuration – MTC, TCDS, TCB, Type Design, Type Record
 - R = Role – SOIU, OpSpec
 - E = Environment - SOIU
- Understand MTCHO responsibilities
 - DASR 21.A.42 – Integration and 21.A.44 Obligations - TCAE
- Failures, Malfunctions & Defects (Occurrences)
 - Issues are rarely 'Black or White'
 - Depend on TIR – Know When It's TAAI
 - Communicate - Contact! Wait Out – MAO / DASA
 - Action Strategy – Multi-disciplinary team – revisit and update
 - System Safety, Hazard Log, ASIP/ESIP (immediate and longer-term)

Continued Airworthiness and Capability - CENGR Perspective

- 'How to SFARP' – 7 Steps

- Credible and Defensible
- Communicate - Language

- ORPR

- Experience – Mentorship, Corporate Memory
- Depend on SMS – reinforce lessons learned
 - Nimrod, Violation Behaviour – Sea King BOI (Nias 2005), Black Hawk BOI (Fiji 2006), A15-102 COI (CH-47D) Afghanistan 2011
 - Target Hot-Spots (CISM)
- Depend on Monitoring Programs – SSP, ASIP/ESIP
- Depend on DSN – Relationships with CoE, 21J – exercise capabilities – 'Capability in Crisis'