



Hawk from an Ageing (but still **Spritely**) Perspective

Ageing Aircraft & Sustainment Australian Conference



Mr David Bajramovic (TFSP0) and
Mr Nick Rawlings (PM Capability and Change, BAE)



BAE SYSTEMS

Background

- Acquired to achieve 9000hrs p.a – achieving 7000hrs
- Full Scale Fatigue Test @ 50000hrs equates to 10000 flying hrs clearance life
- Hawk 127 is approaching mid-point in life cycle – capable to go beyond 2036

BLUF: Airframe is physically capable, Maintaining its Relevance and Affordability is our Challenge



BAE SYSTEMS

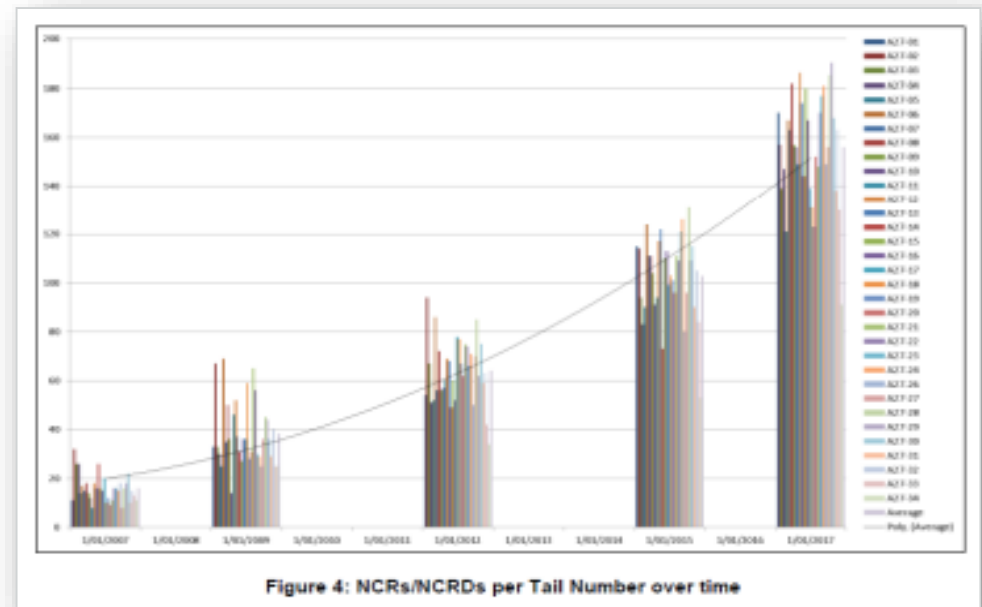
Full disclosure....

- We aren't systems engineers here to brief you on the theory of ASI, ESI, SWI.....
- There is more to it;.....(likely you more than us about that).
- **We'll present our lived experience and where Hawk is at on its ageing journey.**



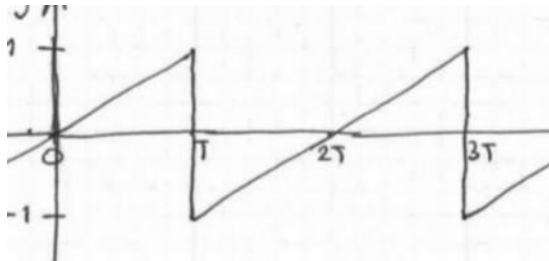
ASI

- Fatigue Life < mid-point
- Structural condition good and 19 years into a potential 40 year life span
- Full Scale Fatigue Testing programs are drawing to close
- Tailplane FSFT completed in Brough UK
- Hawk 127 FSFT at DSTG Melbourne approaching finish of cycling, residual strength assessment and teardown



ESI - Adour 871-05

- Adour 871-05 engine managed and maintained under Engine Management Guarantee (EMG).
- Group A components lived by cycle count
- No finite operating hour life limit due to overhauls effectively resetting ageing curve



- Rolls-Royce are contracted to support the engine through provision of spares for the period of the EMG.
- The EMG has been a 'good' model overall



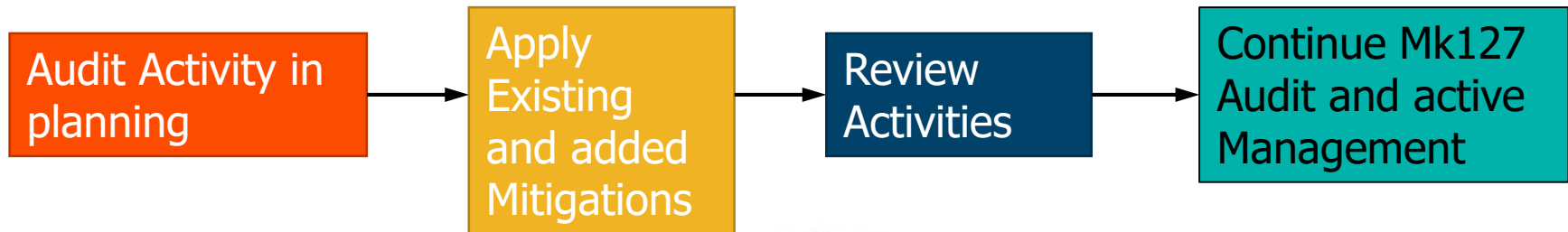
Source: CT155201 Flight Safety investigation Report, Royal Canadian Air Force, June 2014.

Ageing Aircraft Systems

- Aim of AASysA
 - System Integrity (continued airworthiness)
 - Opportunity to inform Mk127 PWD extension planning
- No strict DASR requirement for AASysA – but probably a good idea...
 - Mk127 Aircraft Maintenance Programme
- Proposed audit activities for Mk127 AASysA.



Our approach to AASys



Obsolescence – Maintaining Reliability and Affordability

- Obsolescence is inevitable, and not a sign of age.
 - Rapid changes in technology eg. COTS equipment
- Leveraging global Hawk fleet
- The continuous conversation - Active CI Management
 - Look for last time buy and security stock
 - Better equipped to identify leading indicators



Capability – Keeping the System Relevant

- From Video tapes to DTC
- Full Fleet of LIFCAP Aircraft with state of the art Full Mission Simulators
- Recent Introduction of Networked Operational Support System (NOSS)
- New capability in the pipeline:
 - Exploration of 8222 Jammer Pod
 - Expansion of Ejection Seat Boarding Mass
 - Introduction of ADSB
 - Actively exploring complimentary VR solutions



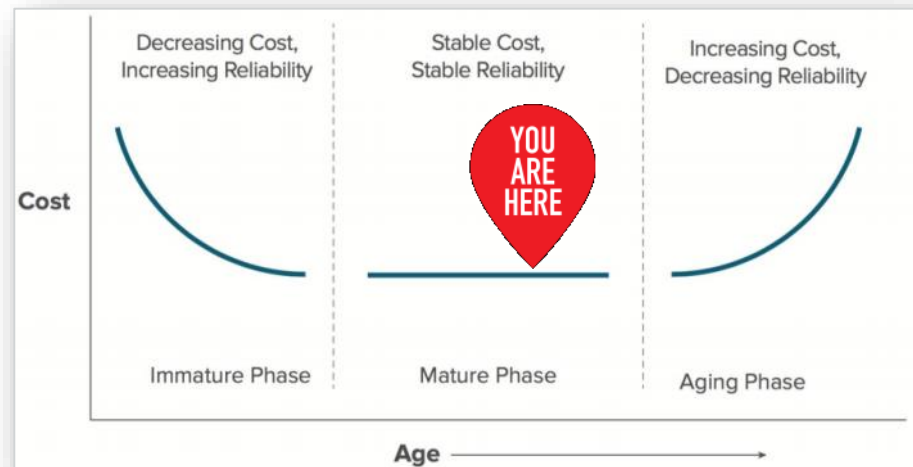
What's particular about Hawk.

- Dynamic CRE
- Harsh environment eg salt water, corrosion, low level.
- Quite different fatigue profiles across operating venues
 - Regular aircraft swaps
- Engine Management Guarantee



What does the future hold

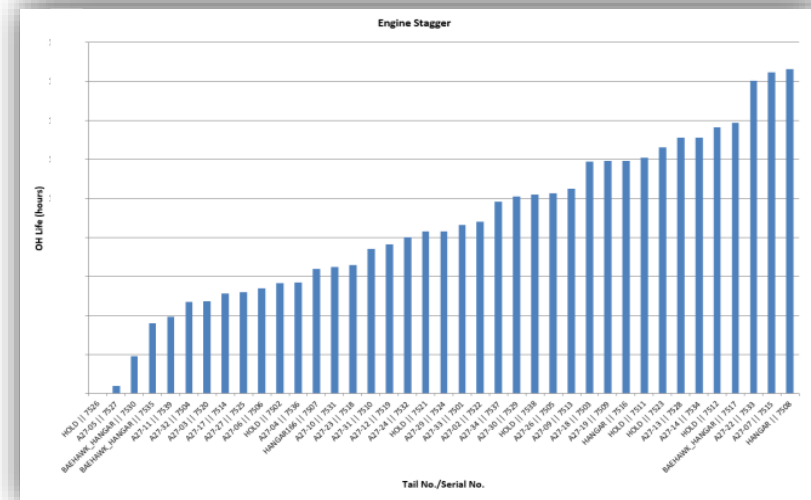
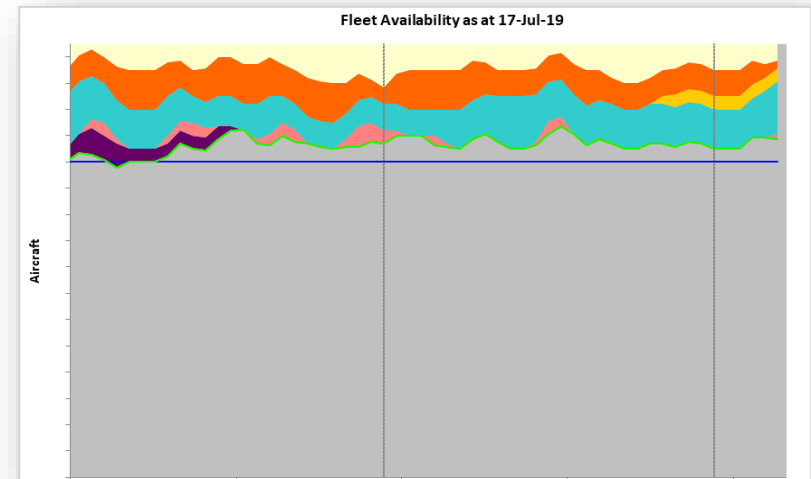
- Due to historic underutilisation, the platform has effectively banked life prior to its PWD.
 - We also have a number of attrition aircraft
- We are not naive about the future effects we are likely to see – we just aren't seeing them yet.
- Challenges:
 - Mission Equipment Lifing
 - Life after the EMG
 - Fatigue Management



Source: K.R. Sperry and K.E. Burns, Life Cycle Cost Modeling and Simulation to Determine the Economic Service Life of Aging Aircraft (October 2001).

Fleet (Asset) Management Tools

- Market gap in effective technology solutions
- Critical sub-Asset classes
Eg. Engines
- Management of Fatigue Accrual
- Enterprise level tools



Opportunities

- Pull already existing threads into an Aging Aircraft Systems Program
- Collaborate more with other users, in particular UK MoD
- Longer Contracts providing longer investment paybacks
- Co-funding capability upgrades



Our focus:

- Leverage our foundation programs (ASI, ESI, AASys etc.) and introduce Asset Management systems to extract the full benefit from the platform using banked life and extended the PWD.....

.....But we can only do this if the platform remains current for the operational environment

