Lessons Learnt from 30 Years of RAAF F/A-18 Hornet Usage Monitoring

9th DSTO International Conference on HUMS

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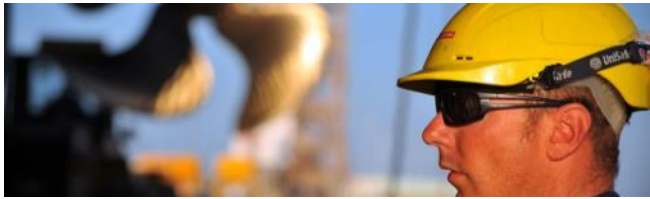
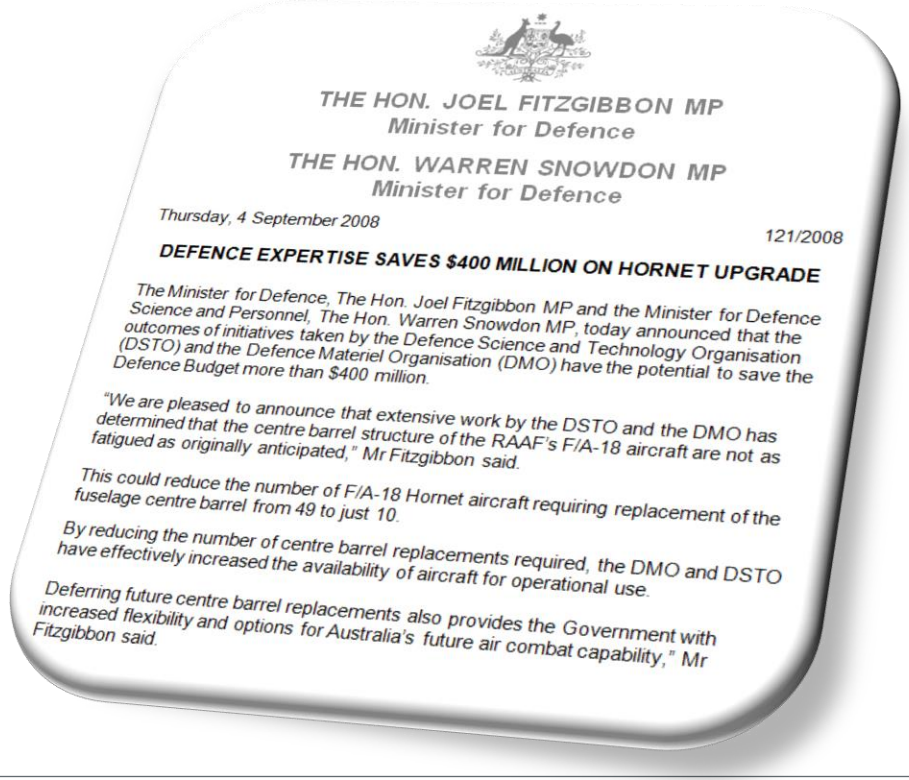



Introduction

HUMS contributes to:

- $400 million of savings
- Increased aircraft availability
- Increased flexibility and options for Australia's future air combat capability



THE HON. JOEL FITZGIBBON MP
Minister for Defence

THE HON. WARREN SNOWDON MP
Minister for Defence

Thursday, 4 September 2008

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DEFENCE EXPERTISE SAVES $400 MILLION ON HORNET UPGRADE

The Minister for Defence, The Hon. Joel Fitzgibbon MP and the Minister for Defence Science and Personnel, The Hon. Warren Snowdon MP, today announced that the outcomes of initiatives taken by the Defence Science and Technology Organisation (DSTO) and the Defence Materiel Organisation (DMO) have the potential to save the Defence Budget more than $400 million.

"We are pleased to announce that extensive work by the DSTO and the DMO has determined that the centre barrel structure of the RAAF's F/A-18 aircraft are not as fatigued as originally anticipated," Mr Fitzgibbon said.

This could reduce the number of F/A-18 Hornet aircraft requiring replacement of the fuselage centre barrel from 49 to just 10.

By reducing the number of centre barrel replacements required, the DMO and DSTO have effectively increased the availability of aircraft for operational use.

Deferring future centre barrel replacements also provides the Government with increased flexibility and options for Australia's future air combat capability," Mr Fitzgibbon said.

Presentation overview

Background

- “HUMS” on F/A-18 Classic and Super Hornet and Hawk Mk127

Lessons learnt

- Acquisition phase
- Early years of service
- Later years of service

Close and questions

Background

Three decades… four companies

- Commonwealth Aircraft Corporation
- Hawker de Havilland
- Tenix
- BAE Systems Australia

Design, construct, maintain and operate HUMS for:

- F/A-18 Classic Hornet
- F/A-18 Super Hornet
- Hawk Mk127 Lead-In Fighter

What is HUMS in our context

- Airframe and engine data from aircraft → Fatigue accrual reports
- Ground based data management, processing and reporting system
- Engine operating time, and low cycle fatigue, creep and thermal counts
- Airframe strain or flight parameter data (e.g. airspeed, altitude, weight, N_Z)
- Web reporting to enable maintenance and operations planning for cost/time effectiveness and to maximise service life
- Routine processing and development activities

Lessons learnt – acquisition phase

Assess the proposed OEM HUMS against project-unique airworthiness and operational requirements

- Do not assume that tools used elsewhere are sufficient for your needs

Lessons learnt – acquisition phase

Establish Life of Type data retention and protection policies

- You never know when you will need to re-process

Lessons learnt – acquisition phase

Ensure the HUMS capability is ready to operate from first flight

- Make sure the early flights are captured

Lessons learnt – acquisition phase

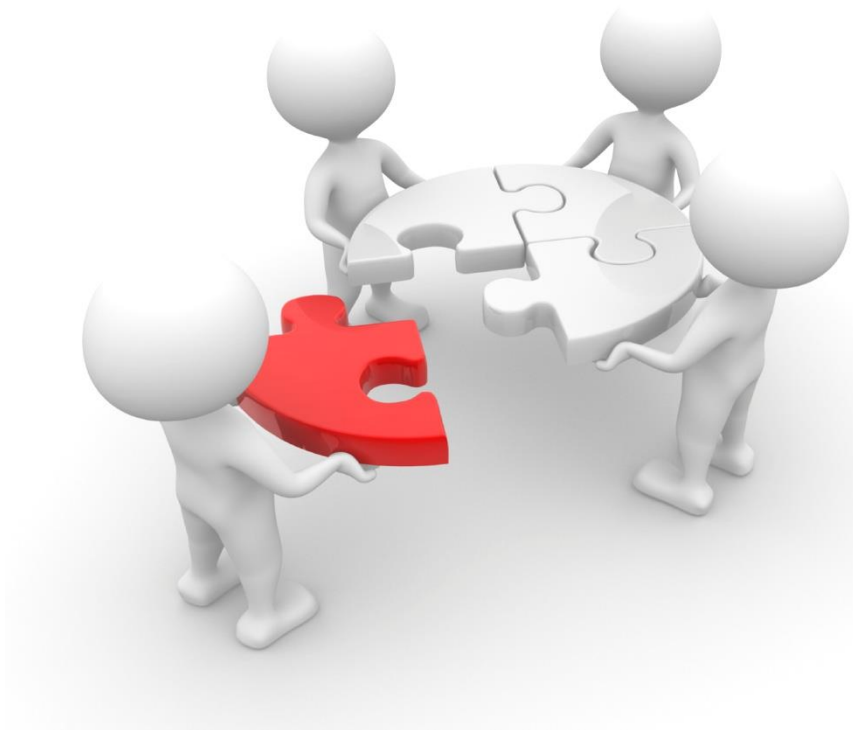
Determine whether component tracking is required and provision for it

- Tracking component movements after the fact is time consuming and may even be impossible

Lessons learnt – early years of service

Develop stakeholder relationships

- Local and overseas operators
- Regulators
- Validation agency
- Fellow contractors



Lessons learnt – early years of service

Collaborative development of data delivery techniques

- Have a clear focus on the end user's needs

Lessons learnt – early years of service

Identify and resolve problems that emerge in the operational environment

- Understand your interfaces and perform impact analyses when anything changes

Lessons learnt – early years of service

Identify and address commonly experienced high initial usage rates

- Any fatigue saved in the early days is precious later on

Lessons learnt – later years of service

Optimisation of HUMS to support extensions to Planned Withdrawal Date

- It will happen!

Lessons learnt – later years of service

Reduction in reporting turnaround time to support operation of aircraft and components close to their life limits

- Look for revolutionary, not just evolutionary changes
- But make sure change is controlled!

Lessons learnt – later years of service

Use of new technology to enhance HUMS and prevent obsolescence

- Hardware/software lifecycle is much shorter than aircraft lifecycle

Closing

- HUMS is a core part of the mission system
- A high level of planning and investment is required throughout the lifecycle

  … enabling

  Cost savings

  Safety assurance

  High aircraft availability

  Full use of service life

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Thank you... Questions.

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