MAA Conference 2015
Airworthiness Risk Management

Presented by Sylvain Lavoie

Sylvain.lavoie2@forces.gc.ca
Airworthiness Risk Management Specialist

Military Airworthiness Authority Conference 2015
Soesterberg, the Netherlands, 13-14 Oct 2015
Overview

- Situations warranting Airworthiness Risk Management
- Challenges
- The RCAF Airworthiness Risk Management process
Example 1:
CC130 In-Flight Fire
Example 1:
CC130 In-Flight Fire
Example 2 – Supporting a Flight Permit

Installation of a M134 gun prior to certification due to an urgent operational requirement
Example 3 – Organizational issues

- A Weapon System Support Organization failed an Airworthiness Audit. Several serious observations were raised including:
  - Repairs approved by unauthorized individuals
  - Mandatory Service Bulletins from the OEM ignored for up to 4 years.
  - Deficient Aircraft Structural Usage Monitoring
  - Severe backlog of changes to the AFM
Risk Management Gone Wrong
What went wrong?

• Airworthiness Risk not factored in flight test priority
• Stakeholders had limited visibility of the issue
• The mitigation plan was not implemented in a timely manner
• Non-involvement of the Operational Command in Risk Management
• Personnel were untrained in risk management
The RCAF solution

- A structured, repeatable and rigorous Risk Management process has been developed
- Risk management involves Technical and Operational personnel but risk acceptance is an operational command function
- The process (and records) facilitates accountability
- Risk issues remain visible to all stakeholders until fully mitigated
- Weapon System Management teams are trained to recognise risk issues and to manage them appropriately
AW Risk Management Process

0: Airworthiness Impact Assessment
1: Hazard Identification
2: Risk Assessment
3: Risk Control
4: Risk Assessment Approval/ Acceptance
5: Risk Tracking

Option analysis
Monitor Risk Control Measures Tracking Log
Tech A/W Approval Ops A/W Approval Comd’s Acceptance
Condition, Cause and Effect
Effect Severity Effect Probability Risk Index
# Airworthiness Risk Index

<table>
<thead>
<tr>
<th>HAZARD SEVERITY</th>
<th>PROBABILITY</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequent</td>
<td>A1 Extremely High</td>
<td>B1 Extremely High</td>
<td>C1 Medium</td>
<td>D1 Low</td>
<td>E1</td>
</tr>
<tr>
<td></td>
<td>Probable</td>
<td>A2 Extremely High</td>
<td>B2 High</td>
<td>C2 Low</td>
<td>D2</td>
<td>E2</td>
</tr>
<tr>
<td></td>
<td>Remote</td>
<td>A3 High</td>
<td>B3 Medium</td>
<td>C3</td>
<td>D3</td>
<td>E3</td>
</tr>
<tr>
<td></td>
<td>Extremely Remote</td>
<td>A4 Medium</td>
<td>B4</td>
<td>C4</td>
<td>D4</td>
<td>E4</td>
</tr>
<tr>
<td></td>
<td>Extremely Improbable</td>
<td>A5</td>
<td>B5</td>
<td>C5</td>
<td>D5</td>
<td>E5</td>
</tr>
</tbody>
</table>

**Acceptable Level of Safety**
Conclusion

• Aviation is inherently risky and all risks cannot be eliminated but…
• Sound project management of risk issues can be an amazing tool…
• The emphasis placed on airworthiness risk management has deeply changed our culture…
• And the administrative cost of risk management should not be a deterrent.