Diversity of Canadian Military Airworthiness Authority experiences and challenges

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Canada

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Outline

- DND/CF Airworthiness Program
- Experiences and Challenges

Canada

DND/CF Airworthiness Program

- Product of the Aeronautics Act
- Implementation of the Program is a legal responsibility

- MOT responsible for all civil aviation
- MND (and CDS) responsible for the development, regulation and supervision of all matters related to military aeronautics

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Airworthiness Program Objective

To provide an acceptable level of aviation safety for military aeronautical products based on fundamental principles and practices used by military and civil airworthiness authorities worldwide and tailored to meet the unique DND/CF needs and objectives.

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Fundamental Principles

All airworthiness-related activities are:

- Completed to **Accepted Standards**;
- Performed by **Authorized Individuals**;
- Accomplished within **Accredited Organizations**; and
- Done using **Approved Procedures**;

Canada

Aeronautics Act

Minister of National Defence / Chief of the Defence Staff

Chief of the Air Staff

Airworthiness Authority (AA)

Technical Airworthiness Authority (TAA)	Operational Airworthiness Authority (OAA)	Airworthiness Investigative Authority (AIA)
FTA		
AMA		
DG Aerospace Equipment Project Mgt	Commander 1 Cdn Air Division	Director of Flight Safety

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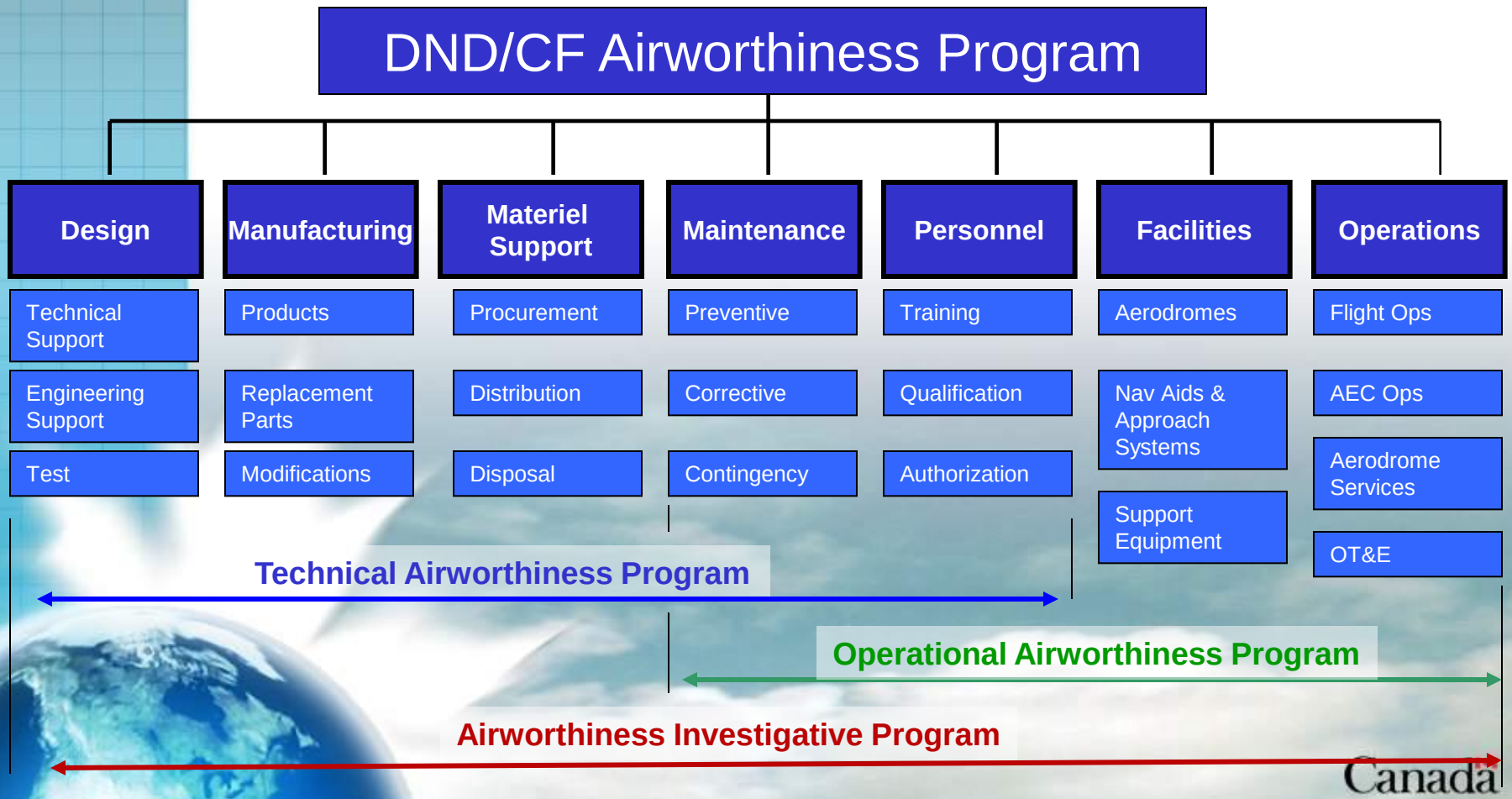
Program Structure



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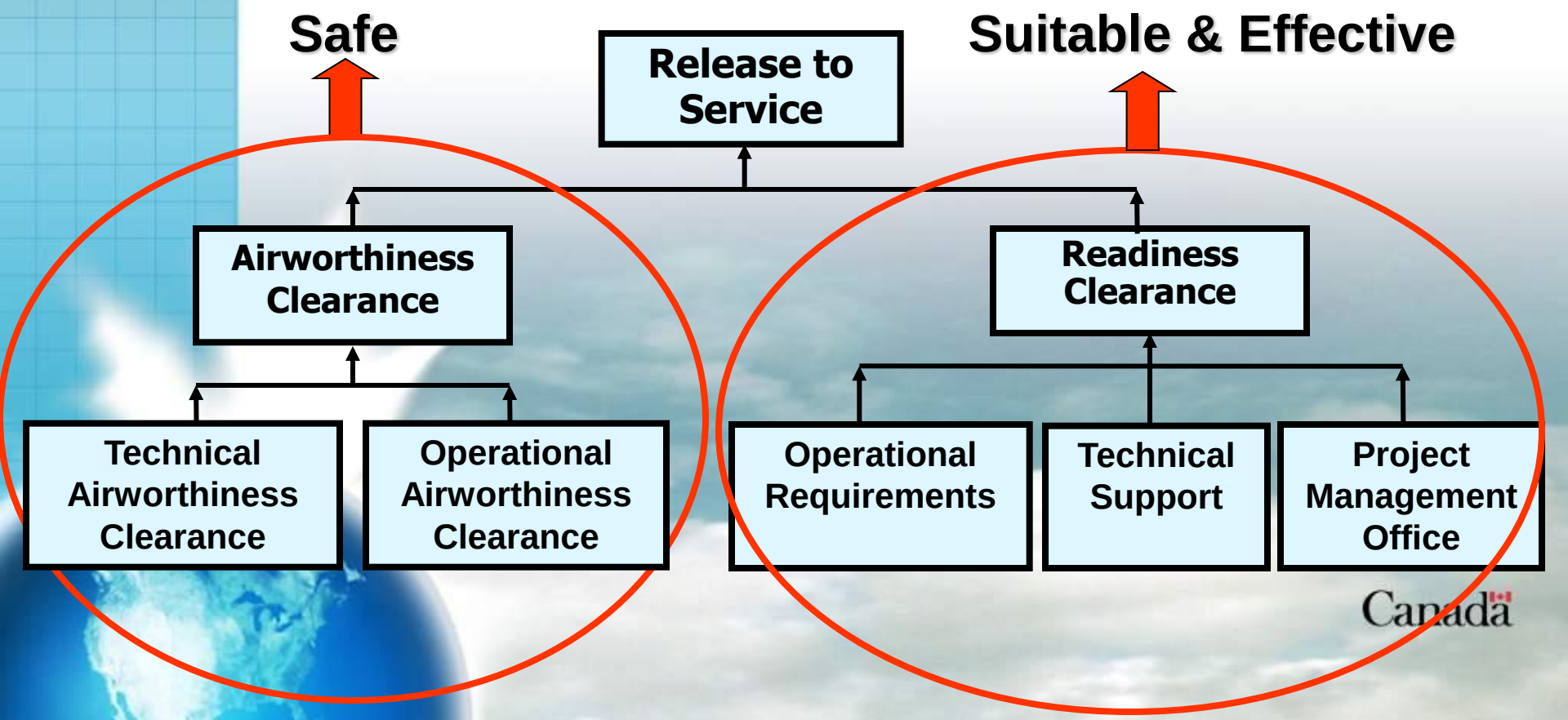
Release to Service



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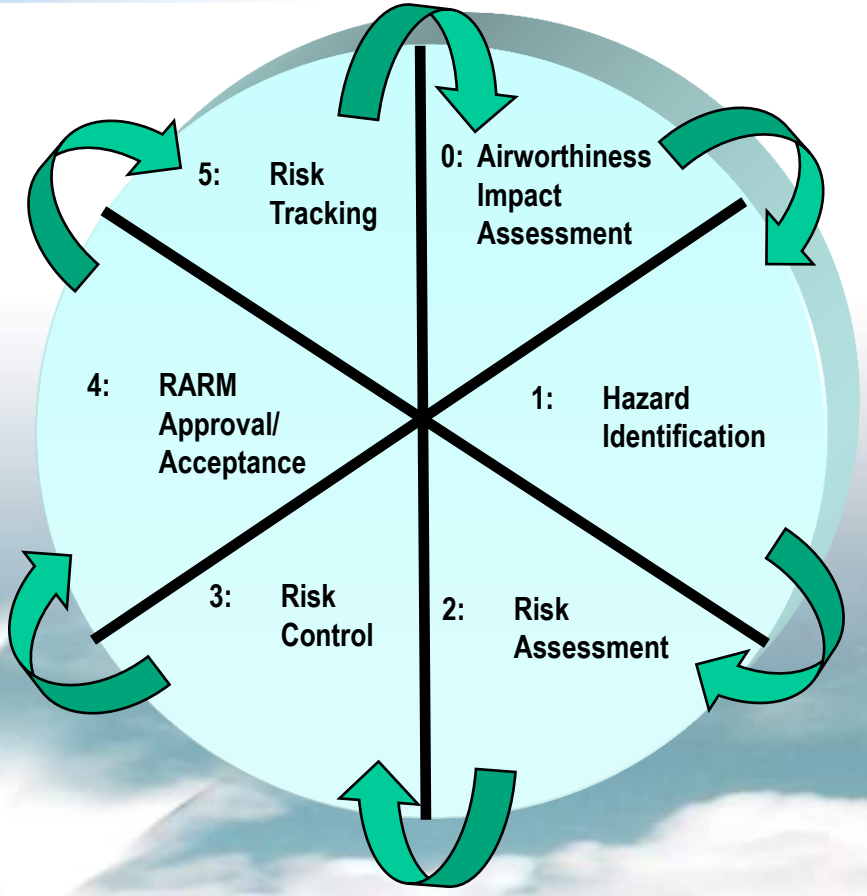
Airworthiness Risk Management



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Risk Index

HAZARD SEVERITY / PROBABILITY			A	B	C	D	E
			Catastrophic	Hazardous	Major	Minor	Negligible
LEVEL	1	Frequent	A1 Extremely High	B1 Extremely High	C1 Medium	D1 Low	E1
	2	Probable	A2 Extremely High	B2 High	C2 Low	D2	E2
	3	Remote	A3 High	B3 Medium	C3	D3	E3
	4	Extremely Remote	A4 Medium	B4	C4	D4	E4
	5	Extremely Improbable	A5	B5	C5	D5	E5

Acceptable Level of Safety

RCAF AW Programme Experiences & Challenges

1. Improve MAA Recognition

- Prior to allowing US Army personnel to fly onboard CF CH147D aircraft, US Army conducted review of Canadian Airworthiness System to determine acceptability.
- RNLAF identified a survivability issue on RCAF Hercules. Using the Cdn risk management process, RCAF demonstrated how the risk was being mitigated.

2. Improve access to Information & Data

- US Army assisting RCAF with Chinook certification
- USAF assisting with F-35 certification

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RCAF AW Programme Experiences & Challenges

3. Increase AW programme exchanges

- Following crash of CT156 Hawk, *Op Pause* imposed. Return to Ops managed through risk management.

4. Continue focus on standardization

- Air weapons clearance programs

Stores Certification Process Mil-Std-1763

NATO Universal Armament Interface

AIR AND SPACE INTEROPERABILITY COUNCIL

NATO OTAN

Canada

RCAF AW Programme Experiences & Challenges

5. Should be actively engaged with airworthiness approvals

- Canada working with USAF, RAF & RAAF for C130J block 7.0 upgrade

6. On-site National regulatory rep best

- Canada participating in C17 Block Upgrades and Continued Airworthiness

7. Need certification standards for UAVs

- NATO Joint Capability Group Unmanned Aircraft Systems Operational Syndicate (JCGUAS OS)

8. Integration with acquisition process

- Cyclone certification

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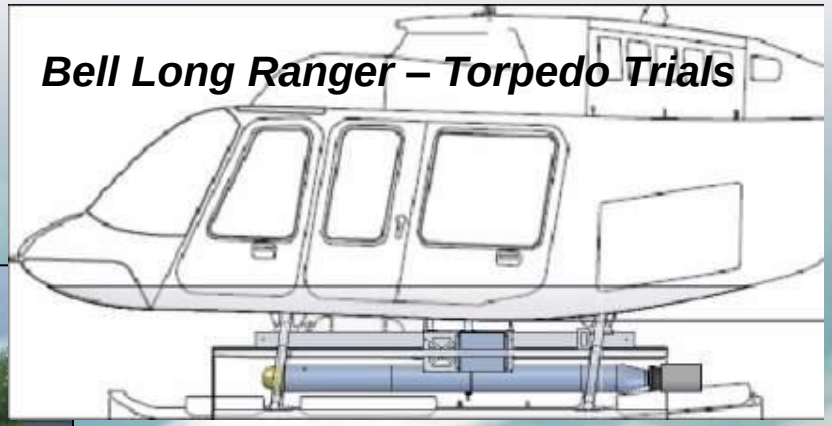
Fleet Upgrade Programs

AIMP
Aurora Incremental Modernization Project

F-18 Modernization

Joint GAF/CAF A310 MRTT Programme

Civilian Aircraft on Military Contracts



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	Owner	Operator	Registration	Colour Scheme	Type of Operations	Airworthiness Responsibility and Clearances	Flight Authority	ARB Reporting
1	DND/CF	DND/CF	Military	Military	Any	TCCA: Nil. DND/CF: All aspects (CofA, Type Certificate, RTS etc.)	TCCA: Nil. DND/CF: All aspects (CofA, Airworthiness Clearance and RTS etc.)	Full AAR. **Note**: Abbreviated AAR (Ops) and AAR (Tech) for UAVs.
	Examples and/or Comments			All ops by the DND/CF-owned fleet on the military register, i.e. CF188, CC177, CH124 etc.				
2	Civil	DND/CF	Military	Military	Tactical Operations	TCCA: Nil. (Note 1) DND/CF: All aspects of modifications (CofA, E3 testing etc). Airworthiness audits.	TCCA: Nil. (Note 1) DND/CF: Airworthiness Clearance and RTS.	Full AAR.
	Examples and/or Comments			Aircraft contracted for military ops. Military flying training, e.g. NFTC CT155 and CT156.				
3	Civil	Civil	Military	Military	Tactical Operations	TCCA: Ops and maintenance manuals, mod approval etc. DND/CF: All aspects of modifications (CofA, E3 testing etc). Airworthiness audits.	TCCA: Nil. (Note 1) DND/CF: A/W Clearance and RTS.	AAR (Ops). AAR (Tech) (Note 2).
	Examples and/or Comments			Civil aircraft entered onto the military register for specific military operations. Exercised when required.				
4	Civil	DND/CF	Civil	Civil or non-tactical military	Civil. DND/CF is a private operator iaw CAR 604.	TCCA: Ops and maintenance manuals, mod approval etc. DND/CF: Airworthiness audits.	TCCA: CofA. DND/CF: A/W Clearance and RTS.	AAR (Ops). AAR (Tech) (Note 2).
	Examples and/or Comments			Multi-Engine Utility Flight (MEUF). Basic flying training, e.g. CWATC and Air Cadets glider flying.				
5	Civil	Foreign Military	Civil	Civil or non-tactical military	Civil. Foreign Military is a private operator iaw CAR 604.	TCCA: Ops and maintenance manuals, modification approval etc. DND/CF: Airworthiness audits.	TCCA: CofA. DND/CF: Authority to operate as foreign military aircraft.	Brief only.

	Owner	Operator	Registration	Colour Scheme	Type of Operations	Airworthiness Responsibility and Clearances	Flight Authority	ARB Reporting
6	DND/CF	DND/CF	Civil	Civil or non-tactical military	Civil. DND/CF is a private operator iaw CAR 604.	TCCA: Ops and maintenance manuals, modification approval etc. DND/CF: Airworthiness audits.	TCCA: CofA. DND/CF: A/W Clearance and RTS.	AAR (Ops). AAR (Tech) (Note 2).
	Examples and/or Comments			Exercised when required.				
7	Civil	Civil	Civil	Civil or military	Military-type support to operations or training	TCCA: Ops and maintenance manuals, mod approval etc. DND/CF: Military aspects of modifications (eg E3 testing). Airworthiness audits. Supplements to maintenance and ops manuals.	TCCA: CofA. DND/CF: Operations authorized by TAO.	Brief.
	Examples and/or Comments			Combat support training, e.g. CATS aircraft with electronic warfare equipment.				
8	Civil	Civil	Civil	Civil	Civil. Commercial operations iaw CARs Part VII	TCCA: All aspects. DND/CF: Nil.	TCCA: All aspects (CofA, AOC etc). DND/CF: Nil.	Nil.
	Examples and/or Comments			Routine cargo flights (Note: If DND/CF personnel on board, then additional safety clauses may be required in the contract). Air Cadet powered flying training at civilian flight schools.				

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