Achieving Airworthiness Assurance in an Operational Context

Presented by:

Dave Cripps
Deputy Director,
Aviation Engineering Directorate
U.S. Army Aviation and Missile Research, Development, and Engineering Center

7 July 2011
• Background
• US Army airworthiness requirement
• Operational situations and solutions
  – Operation of non-standard aircraft in Joint environment
  – Operation in Coalition environment
  – Operation of non-standard aircraft of host nation
  – Other government agencies
  – Contracted air services
• Summary
• Q & A
Civil Use vs Public/State Use

Civil Aviation Authority

Technical Airworthiness
- Aircraft Type Certification
- Production Certification

Operational Airworthiness
- Flight Standards
- Instructions for Continued Airworthiness

Military Aviation Authority

Technical Airworthiness
- Aircraft Certification
- Production Certification

Operational Airworthiness
- Flight Standards
- ICA
- Risk Management

- Commercial and Private Use
- Chicago Convention
- ICAO regulations/oversight
- National oversight
- Domestic and international operations
- Bilateral Agreements

- Military, Police, Public Safety, etc.
- Generally excluded from CAA authority
- Emerging requirements nationally and internationally
- Normally includes contract/charter air services
Increasing Demand for Public Use Airworthiness Oversight
An affirmative documentation of airworthiness by a recognized competent airworthiness authority is required for US Army aircrew to operate any aircraft.

US Army Aircrew - any US Army Soldier, Department of the Army Civilian employee, or contractor employee performing under a contract signed by a US Army warranted contracting officer

Operate – serving as a crew member performing any function other than passenger when aircraft is in flight or on the ground with rotors/propellers turning under aircraft power or at any time when the aircraft operator manual requires a crew member (e.g. auxiliary power unit operation)
Airworthiness Elements

Does the system design (or modification) meet airworthiness standards?

Is the system produced (or modified) in accordance with the approved design?

Is the system operated and maintained to keep compliant with the approved design?

Services have extremely similar technical standards, however very different regulations and policies, and no overarching DoD policies exist.

In Joint operations, Service regulations apply to each Service's forces, but Joint staffs are comprised of personnel from each Service who generally only understand their own Service regulations.

Resulting confusion sub-optimizes use of resources and limits capability options to the Joint force commander.

SOLUTION:
Harmonize Service regulations.
Admit there is a problem.
Establish overarching DoD level guidance.
Operation in a Coalition Environment

Coalition operations have all the challenges of US Joint operations with the addition of a political dimension.

Dialog regarding commitment of national forces for coalition operations seldom if ever considers differences in nations' airworthiness processes.

Complications arise with:
- Multi-national assets on single missions
- Transport of one nation's forces by another nation's aircraft
- Flight crew exchanges between nations

SOLUTION:
- Clear ground rules at commitment of forces.
- Foreign MAA recognition.
- Thorough mission coordination
- Assessment and acceptance of risk by operational commanders.
  - Required by compulsory message/order to operational forces
  - Supported by preparation of risk assessment checklists
The purpose of such operations is invariably to enable eventual autonomous safe, effective and efficient flight operations of US supplied or internationally sourced aircraft by host nation.

The ability of host nation units to achieve internationally recognized standards varies widely between nations and often within a nation. This is impacted by: History/experience, Culture, Economics, Intent/Desire

Situations requiring attention include:
- Maintenance mentorship
- Flight operations mentorship
- Flight training

SOLUTION:
Commitment to resource initial efforts, perhaps for a relatively long time
Education as part of overall process
Flexibility, understanding and patience
Establishing clear goals and timelines
Thorough mission coordination
Some non-DoD government agencies do not maintain their own public use airworthiness authority.

Their interpretation of exclusion from Chicago Convention is "no compliance is necessary" as opposed to "separate but equivalent".

Differences in public law and OGA regulations compound the problem.

OGAs often make extensive use of contracted air services without CARB or similar process.

SOLUTION:
Education
Liaisons for detailed mission coordination
“Necessity is the mother of invention.”
"Nature abhors a vacuum."

Demand for aviation assets generally exceeds military capability.

Entrepreneurial air service providers will be present, though some may be operating beyond the authority of the civil authorities.

Operational commanders and contracting officers generally do not understand airworthiness.

SOLUTION:
Education of contracting officers
Use of operator certification scheme (e.g. CARB)
Continued dialog between MAAs and CAAs
For near term, few examples of success exist
   Must be innovative and flexible

Be patient - your sense of urgency may not be shared

Make plans, estimate resource requirements - then add 25%

Be willing to share your experiences with the international community