Aircraft Certification Service

Introduction to New Fort Worth Certification Offices

Fort Worth Aircraft Certification Office
April 2015
ACO REORGANIZATION

150/170/190 to 130 and 140
Background

– Directorate had maintained 3 ACO’s since 1980’s
– Respond to a changing environment
  • Less TC more modifications
  • Office staffing remains static or reduced
  • Redundant activities across ACOs
  • Resource sharing across ACO’s was a necessity
  • Increased Organizational delegation
    – Strain on our ability to provide exceptional safety oversight to non-delegated applicants while maintaining oversight of ODA’s.
    – FAA and industry recognize ODA’s not as effective as they should be.
– Congressional mandates for improved certification service and expanded delegation.
Current ACO Functions

- COS and certification of TC’d airplanes in SW region, designee and organizational delegation oversight (3 ODA’s), limited TSO, PMA, STC
- COS and certification of all rotary wing aircraft in SW region, designee and organizational delegation oversight (2 ODA’s), limited TSO, PMA
- COS and certification of airplane modifications, designee and organizational delegation oversight (8 ODA’s), TSO, PMA, engines
Reorganization

• To strengthen our ability to perform our safety oversight and certification services at the highest level of efficiency we:
  – Combined the functions of the three ACO’s that are dedicated to the safety oversight and certification of products and parts from our non-delegated organizations into a single aircraft certification office, and
  – Created an oversight office comprised of technical and administrative specialists to provide safety oversight and certification services to our organizational delegations (ODA’s)
Office Functions

**Fort Worth Aircraft Certification Office**
- Responsible for all COS, TC, STC, PMA, TSO for non delegated organizations
- Individual designee appointment and oversight
- Test Pilots, FTE’s, and Software specialists reside here and are a shared resource

**Delegation Systems Certification Office**
- Responsible for the appointment and oversight of all ODA’s in the Region
- Responsible for any FAA managed programs or retained findings for these companies
- Responsible for COS for these organizations
Technical Specialist Branch

**Specialist Responsibilities:**
- Conduct ODA Reviews
- Coordinate Compliance and Enforcement efforts
- Manage data in CPN
- Coordinate with foreign authorities
- Coordinate project prioritization with the ACO and DSCO
- Facilitate PNL Responses

**PM Responsibilities:**
- Lead ODA reviews
- Coordinate new ODA Applicants with ACO
- Monitor delegation findings
- Educate ODA’s
- Manage Compliance and Enforcement from an Office Level
Pilot/Engineer Responsibilities:
- Support ASW-143/ASW-131 with flight test/software retained compliance findings
- Serve as Flight Test Software and DER Advisors
- Support ASW-140 and ASW-130 Audits
- Support DSCO as OMT
- Support FSDO Flight Test Field Approvals
- Focal Point for Field Approvals

Engineer Responsibilities:
- Support ASW-143 with retained compliance findings on TC/STC/PMA
- Serve as DER advisors
- Support ASW-130 as necessary
- Support FSDO with field Approvals with Engineering Review
- Support 143 with COS investigations
- Support QSA Audits
- TSO Projects
- PMA Projects

PM/COS Responsibilities:
- Focal Point for Stake Holder
- Focal Point for COS
- Review Application Packages for Completeness
- Open Project Numbers
- Coordinate with ASW-141 and ASW-142 for Project Support
- Coordinate with MIDO and AEG For Project Support
- Coordinate with Standards Staff For COS Support
- Maintain Project File
- Serve as Admin DER Advisors
- Lead COS Investigations
- Process STC/TC projects
Scott Horn, Mgr.

ASW-140

Fort Worth ACO

Administrative Assistants

Vacant: Scott Horn Acting

ASW-141

Shared Services Branch Flight Test/Software

John Hardie

ASW-142

Certification Branch

Vacant

ASW-143

Project Management and Continued Operation Safety

TC/STC/PMA/TSO Applications come here Address Scott Horn

Administrative Assistants

- Mike Heusser
- Andrew Gfrerer
- Efrain Esparza
- Charles Harrison

Project Managers
- Joon Kim – Propulsion
- Andy McAnaul – Structures

COS Specialist
- Kristin Bradley

Flight Test Pilots
- John Pamer
- Cary Nadeau
- Eric Kinney
- Charlie Roberts
- Anne Godfrey

Flight Test Engineers
- Dennis Barbini
- George Harrum
- Andy Gardos

Senior Project Engineer
- Marc Belhumeur

Software
- John Harris
- Silpa Uppalapati

Electrical/Mechanical Systems
- Kyle Cobble
- Jon Kim
- Ife Ogunleye
- Mahmood Shah
- Garry Sills
- Tony Kenward

Structures
- Kenny Cook
- Hung Nguyen
- Mike Kohner
- Scott Franke

Propulsion
- Pete Hakala
- Justin Carter
- Angela Tarin

New Grad Engineer -David Wilson
Conclusion

• The new organization is structured to facilitate an improvement and efficiency in our oversight functions as well as our product services
Office Contacts

• **ASW-140 Contact**
  – ACO Phone Numbers 817 222-5140/5150/5170
  – Email:
    • [Scott.A.Horn@faa.gov](mailto:Scott.A.Horn@faa.gov)
    • [John.Hardie@faa.gov](mailto:John.Hardie@faa.gov)

• **ASW-130 Contact**
  – DSCO Phone Number 817 222-5130/5190
  – Email:
    • [Fran.Cox@faa.gov](mailto:Fran.Cox@faa.gov)
    • [Matthew.Crouch@faa.gov](mailto:Matthew.Crouch@faa.gov)
Aircraft Certification Service

Project Prioritization and Resource Management

Fort Worth Aircraft Certification Office
April 2015
Objective

• Review the Aircraft Certification Service (AIR) process for prioritizing certification projects. This process supersedes the project sequencing process which delayed projects until resources were available.
Background

• Project process was changed in response to the FAA Reauthorization Act congressional report (Sec. 312) of Feb 2012
• It is a national process used to allocate limited resources
• A national team is used to facilitate sharing resources across offices nationwide
• Provides a predictable, transparent process
Benefits to Applicants

• Projects managed by home Aircraft Certification Office (ACO)
• Project is turned on after acceptance of application package and project priority is established
• Applicant showings/designeee findings, FAA retained findings, and response times are documented
• There is an ACO process to acquire additional resources if needed
• More predictability and transparency to help applicants schedule accordingly
• Early communication between the FAA and applicant
Process Applicability

Applicable Projects
- Type Certificates (TCs)
- Amended TCs
- Supplemental TCs (STCs)
- Amended STCs
- Parts Manufacturer Approvals (PMAs)

Not Applicable Projects
- Technical Standard Order Authorizations (TSOAs)
- Changes to TSOAs
Process Overview

• **Start:**
  – Applicant submits a complete application package per FAA Orders 8110.4, 8110.42 or 8100.15 (for an ODA).
  – Should submit a Project Specific Certification Plan (PSCP) and a compliance checklist

• **End**
  – FAA assesses the FAA level of involvement
  – FAA communicates and documents via email or letter the priority and response times to the applicant
  – FAA allocates resources to tasks
# Maximum Task Response Times

<table>
<thead>
<tr>
<th>Project Priority or Project Type</th>
<th>FAA Maximum Task Response Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Priority 1 TC or Model Addition ATC Project</td>
<td>Office Flow Time (OFT)</td>
</tr>
<tr>
<td>Priority 2</td>
<td>OFT + 30 Days**</td>
</tr>
<tr>
<td>Priority 3</td>
<td>OFT + 60 Days**</td>
</tr>
<tr>
<td>Priority 4</td>
<td>OFT + 90 Days**</td>
</tr>
</tbody>
</table>

**Fort Worth ACO OFT = 45 Days**

**Note:** Only resource limited projects are eligible for extensions
Project Priorities

• Project Priority based on:

  - **SI**: Based on prioritization factors of safety impact, passenger impact and affected fleet
  - **ASDF**: Based on two elements:
    - Total percentage of airworthiness regulations with applicant showing using designee findings of compliance
    - Number of findings retained by the FAA
## Safety Index Element: Safety Impact

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Description</th>
<th>Prioritization Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very High / Immediate Safety Benefit</td>
<td>Prevent/mitigate accident/Near-term safety impact</td>
<td>90</td>
</tr>
<tr>
<td>High / Strategic Safety Benefit</td>
<td>Program of defined strategic safety importance / regulatory compliance</td>
<td>10</td>
</tr>
<tr>
<td>Moderate / Long Term Safety Benefit</td>
<td>Product with updated certification basis where the change to the product has some safety enhancement or Longer-term safety impact</td>
<td>4</td>
</tr>
<tr>
<td>Negligible Safety Benefit</td>
<td>Negligible safety impact. Includes projects where the applicant refuses to submit a certification plan</td>
<td>0</td>
</tr>
</tbody>
</table>
## Safety Index Element: Passenger Impact

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Description</th>
<th>Prioritization Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 or Greater passengers</td>
<td>Aircraft that can carry 20 or more passengers</td>
<td>7</td>
</tr>
<tr>
<td>11 to 19 passengers</td>
<td>Aircraft that can carry between 11 and 19 passengers</td>
<td>6</td>
</tr>
<tr>
<td>Defined public safety impact</td>
<td>A project that will have a defined public safety impact</td>
<td>5</td>
</tr>
<tr>
<td>0 to 10 passengers</td>
<td>Aircraft that can carry between 0 and 10 passengers</td>
<td>4</td>
</tr>
<tr>
<td>Public Use</td>
<td>Aircraft that is for public use only</td>
<td>1</td>
</tr>
</tbody>
</table>
## Safety Index Element: Affected Fleet

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Description</th>
<th>Prioritization Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 or greater aircraft or Incorporation into production line</td>
<td>The change in type design can affect 100 or more aircraft or is a change in type design that will be incorporated into the entire production line which is likely to contain 100 or more aircraft</td>
<td>5</td>
</tr>
<tr>
<td>Between 5 and 100 aircraft</td>
<td>The change in type design can affect more than 5 but less than 100 aircraft</td>
<td>3</td>
</tr>
<tr>
<td>5 or fewer aircraft</td>
<td>The change in type design will affect 5 or fewer aircraft</td>
<td>1</td>
</tr>
</tbody>
</table>
### ASDF Element: % Applicant Showing using Designee Findings

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>100%</td>
<td>No findings of compliance will be retained by the FAA for the applicable regulations.</td>
</tr>
<tr>
<td>90 to 99%</td>
<td>Findings of compliance will be retained by the FAA between 1% to 10% of the airworthiness regulations.</td>
</tr>
<tr>
<td>75 to 89%</td>
<td>Findings of compliance will be retained by the FAA between 11% to 25% of the airworthiness regulations.</td>
</tr>
<tr>
<td>50% to 74%</td>
<td>Findings of compliance will be retained by the FAA between 26% to 50% of the airworthiness regulations.</td>
</tr>
<tr>
<td>&lt; 50%</td>
<td>Findings of compliance will be retained by the FAA greater than 50% of the airworthiness regulations.</td>
</tr>
<tr>
<td>Criteria</td>
<td>Description</td>
</tr>
<tr>
<td>----------</td>
<td>-------------</td>
</tr>
<tr>
<td>0</td>
<td><strong>No</strong> findings of compliance will be retained by the FAA for the applicable regulations.</td>
</tr>
<tr>
<td>1 to 5</td>
<td>Findings of compliance will be retained by the FAA on <strong>1 to 5</strong> of the airworthiness regulations.</td>
</tr>
<tr>
<td>6 to 15</td>
<td>Findings of compliance will be retained by the FAA on <strong>6 to 15</strong> of the airworthiness regulations.</td>
</tr>
<tr>
<td>&gt;15</td>
<td>Findings of compliance will be retained by the FAA on <strong>greater than 15</strong> of the airworthiness regulations.</td>
</tr>
</tbody>
</table>
Calculate ASDF

<table>
<thead>
<tr>
<th>% Applicant Showing or Designee Finding of Compliance</th>
<th>ASDF</th>
</tr>
</thead>
<tbody>
<tr>
<td>100%</td>
<td>For 0 findings, see Note</td>
</tr>
<tr>
<td>90-99%</td>
<td>High</td>
</tr>
<tr>
<td>75-89%</td>
<td>High</td>
</tr>
<tr>
<td>50-74%</td>
<td>Med</td>
</tr>
<tr>
<td>&lt;50%</td>
<td>Med</td>
</tr>
</tbody>
</table>

**Note:** Priority 1 if all regulations are met through DER acceptance or all findings delegated to a DER and/or ODA

<table>
<thead>
<tr>
<th># of Applicable Regulations retained by the FAA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-5</td>
</tr>
<tr>
<td>6-15</td>
</tr>
<tr>
<td>16+</td>
</tr>
</tbody>
</table>
# Calculate the Project Priority

If multiple projects have the same priority, the project with the highest Safety Index takes precedence.

<table>
<thead>
<tr>
<th>Safety Index</th>
<th>Priority</th>
</tr>
</thead>
<tbody>
<tr>
<td>100% DER</td>
<td>1 1 1</td>
</tr>
<tr>
<td>&gt;350</td>
<td>1 1 1</td>
</tr>
<tr>
<td>120 to 350</td>
<td>3 2 2</td>
</tr>
<tr>
<td>50 to 119</td>
<td>4 3 3</td>
</tr>
<tr>
<td>0 to 49</td>
<td>4 4 3</td>
</tr>
</tbody>
</table>

- **Low**
- **Medium**
- **High**

**ASDF**
Summary of AIR Project Prioritization

• Documented process vetted with industry
• Process places an emphasis on safety to National Aerospace Systems
• All projects are started with no delay
• All projects opened in home ACO
• Priority 1 projects, New TC, and New major models worked without extensions
• Open communication with applicant on risk based level of project involvement, safety index, and project priority
References

- “Standard Operating Procedure Aircraft Certification Service Project Prioritization and Resource Management,” SOP # AIR-100-ALL-005 or 15 Sep 14
Questions?
Aircraft Certification Service

Expectations for Project Specific Certification Plans
Objectives

• Introduce ASW-140 Fort Worth Aircraft Certification Office (ACO) Project Specific Certification Plan (PSCP) expectations for applicants

• Review sections of the Fort Worth ACO recommended PSCP and provide guidance for each section
Background

• The 2004 FAA and Industry Guide to product Certification is the current guide to creating a PSCP

• This presentation serves as an additional resource, provides clarification to this process, and defines the Fort Worth ACO expectations
What is a PSCP?

• Defines and documents a product certification plan between the ACO and the Applicant to expedite certification of the product under standardized procedures

• It’s the mutual goal of all team members to meet or exceed the expectations of the agreement

• The PSCP is a living document and is updated throughout the projects life
Overview of PSCP Sections

1. Revision history
2. Purpose
3. Effectivity
4. Product Certification
5. Post Certification Requirements
6. Project Planning
7. Continuous Improvement
8. Signatories
Section 1- Revision History

• Include a Table of Revisions with:
  – Dates
  – Revision numbers

• As the document is revised during the certification process, use change bars to highlight revisions
Section 2 - *Purpose*

- State the purpose of the project
- Some pertinent information may include:
  - State if the project is a TC, STC, PMA etc.
  - State if the project is new or a major change
  - State the intent of the certificate (for example: Sales, Personal use, etc.)
Section 3 - Effectivity

• A statement showing when the PSCP has been approved should be included in the PSCP:

“This PSCP shall become effective upon approval by the managers of the (Specify name of ACO) Aircraft Certification office and the applicant’s Certification or Airworthiness Manager. This PSCP may be amended by mutual agreement or terminated by either the applicant or the FAA. This PSCP will continue in effect throughout all phases of the product approval unless it is superseded, revised, or terminated with written notice by either the applicant or the FAA. Any change in the services furnished or other provisions of this PSCP will be formalized by an appropriate written amendment signed by effected parties, which will outline the nature of the change.”
Section 4 - Product Certification

A. Reference Section
B. Project Description
C. Safety Assessment
D. Project Schedule
E. Certification Basis
F. Methods of compliance
G. Compliance Checklist

H. Communication and coordination
I. Delegation
J. Test Plan
K. Compliance documentation
L. Conformity
M. Instructions for Continued Airworthiness
Section 5 - *Post Certification Requirements*

- **Compliance Summary Document**
  - A summary at the end to capture and retain corporate knowledge learned during the project. (e.g., Unique data, precedent issues, lessons learned)

- **Instructions for continued Airworthiness**

- **Continued Airworthiness Management**
  - How the applicant and the FAA will handled continued airworthiness issues after delivery of the first aircraft.
Section 6 – *Project Issue Planning*

- The Applicant and the FAA will jointly maintain a Project Issues Tracking List
- List should Identify
  - Issues
  - Plan and milestones for their resolution
  - Responsible parties for resolution
Section 7 - Continuous Improvement

• The FAA and the applicant will jointly identify
  – Criteria for success
  – Operating norms to guide timeliness and quality of products and services
Section 8 - Signatories

• All DERs supporting the project need to review the PSCP and include a record of each DER review
• The applicant should sign each revision with name and date
• The FAA will sign the PSCP when accepted
Summary

• This process provides the applicant and FAA with a way to plan, manage and document an effective and efficient certification process

• This correlates to existing processes in
  – Order 8110.4C, Type Certification
QUESTIONS?
ASW 141: Shared Services Branch

- Flight Test and Software
- Support ASW-143 with retained compliance findings on TC/STC/PMA
- Serve as DER advisors
- Support ASW-130 as necessary
- Support FSDO with field Approvals with Engineering Review
- Support 143 with COS investigations
- Support QSA Audits
- TSO Projects
- PMA Projects
ASW 142: Certification Branch

- Support ASW-143 with retained compliance findings on TC/STC/PMA
- Serve as DER advisors
- Support ASW-130 as necessary
- Support FSDO with field Approvals with Engineering Review
- Support 143 with COS investigations
- Support QSA Audits
- TSO Projects
- PMA Projects
ASW 143: Project Management and Continued operational Safety

- Focal Point for Stake Holder
- Focal Point for COS
- Review Application Packages for Completeness
- Open Project Numbers
- Coordinate with ASW-141 and ASW-142 for Project Support
- Coordinate with MIDO and AEG For Project Support
- Coordinate with Standards Staff For COS Support
- Maintain Project File
- Serve as Admin DER Advisors
- Lead COS Investigations
- Process STC/TC projects
Federal Aviation Administration

Scott Horn, Mgr.

Project Management and Continued Operation Safety Branch

Administrative Assistants

Certification Branch

ASW-140

Fort Worth ACO

ASW-141

Vacant: Scott Horn Acting

John Hardie

ASW-142

Administrative Assistants

ASW-143

J.R. Holton

Project Management and Continued Operation Safety

TC/STC/PMA/TSO Applications come here
Address Scott Horn

Flight Test Pilots
- John Pamer
- Cary Nadeau
- Eric Kinney
- Charlie Roberts
- Anne Godfrey

Flight Test Engineers
- Dennis Barbini
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New Grad Engineer - David Wilson

Project Managers
- Mike Heusser
- Andrew Gfrerer
- Efrain Esparza
- Charles Harrison

Project Engineers
- Joon Kim – Propulsion
- Andy McAnaul – Structures

COS Specialist
- Kristin Bradley
Section 4.A - References

• List all applicable documents including but not limited to
  – Advisory Circulars (ACs)
  – Memorandum of Understanding (MOU)
  – Partnership for Safety Plan (PSP)
  – Any other technical documents
Section 4.B - *Project Description*

- **Provide as much detail as possible**
  - Pictures, drawings, description of operation
  - Before and After configurations
  - Location on Aircraft

- **Table of all parts**
  - Do the parts being installed have previous approval (TSO, DO-160, PMA, etc.)
  - Software design assurance level for each part if applicable

- **Function and operation of part**
Section 4.C – System Safety Assessment

• Assessment of hazards and failures
  – Perform System Safety Assessment (SSA) according to 14 CFR part 23 (or 25, 27, 29 as applicable) § 1309
  – Assess and identify potential hazards/failures and their effects on aircraft, crew, and passengers
  – Use additional available references
    • AC 20-174 Development of Civil Aircraft and Systems
    • ACs 23/25.1309 [titles]
    • 27-1
    • 29-2
Section 4.D - Project Schedule

• List the Major Milestones (e.g. issue papers, flight manual, major deliverables)
• Provide a Preliminary System Safety Assessment for system projects
• Provide an estimation of project priority (Use FAA AIR-100 SOP as a reference)
• Estimate timing for deliverables
  – Type Inspection Report
  – Flight Manual
  – Etc.
Section 4.E - \textit{Certification Basis}

- The certification basis identifies the applicable standards to which the applicant must show compliance.
- Identify all applicable regulations with their amendment level to the project.
- Describe any need for special conditions, exemptions, equivalent level of safety findings, and Issue papers.
- Provide an issue list as a means to track certification issues.
Section 4.F - Method of Compliance

- List method of compliance (MOC) along side with the list of Regulations
  - e.g. drawings, analyses, test plans, test reports
  - More details may allow maximum delegation
  - For example Compliance to XX §1309 is substantiated by the SSA, FHA
  - Identify any nonstandard methods of compliance being proposed

- List responsibility for each deliverable and propose delegation

- Indicate how the applicant will report to the FAA at the end of the project that all regulations in the Compliance check list are complied with
Section 4.G - Compliance Checklist

• List all Regulations in applicable airworthiness standards (e.g. part 21, 23, 25, 27, 29, 31, 33)

• For each regulation identify:
  – Applicable or not Applicable with justification
  – Assigned DERs for finding compliance by discipline and name
  – FAA guidance (e.g. AC) if used
Section 4.H - Communication and Coordination

• Provide points of contact for Company and DERs
  – This will improve early communication in the project
Section 4.I - Delegation

- Identify all designees supporting project
- List the following for each DER
  - Specialty
  - Limitations
  - Additional authorizations
- Any special coordination required for
  - Specific regulation
  - Test
  - Report
Section 4.J - Testing Plan

- List Planning, preparation, conformity, and witnessing
- Provide DO-160 if applicable
- List all proposed testing
  - Lab test
  - Bench test
  - Ground test
  - Flight test
- Identify Locations of test
- Identify Conformity process and Delegation
Section 4.K - Compliance Documentation

• List all Substantiating Documents with
  – Description of how it supports compliance
  – applicable regulations and how they are addressed
  – Methods of Compliance
  – Proposed designees involvement in Recommending approval, Approving, and Witnessing
Section 4.L – Conformity Inspection Plan

• Describe what conformities will be needed for certification, and the FAA’s and Applicant’s role in the conformity process

• This section should include:
  – Identify in process conformities
  – Methods used to establish and track conformity status
  – List of Parts, Assemblies, and Tests
  – Applicant is responsible for NACIP
  – Designees involved (note should be consistent with Delegation)
  – Location of conformity inspection
  – Handling of deviations and how they’re dispositioned
  – State conformity of non-US supplied parts if applicable
Section 4.M - Instructions for Continued Airworthiness (ICA)

• Outline the process used to Ensure Continued Airworthiness
  – Refer to Order 8110.54a for guidance on ICAs
  – Allow the AEG 30 days to review
  – An available resource is AC 33.4-1
  – Complete prior to the issuance of an airworthiness certificate or delivery of the first aircraft