

The FAA and Industry Guide to Product Certification

Second Edition



- *Safety*
- *Teamwork*
- *Communication*
- *Planning for success*
- *Quality products & services*
- *Accountability at all Levels*

Prepared by AIA, GAMA, and
the FAA Aircraft Certification Service

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THE FAA AND INDUSTRY GUIDE TO PRODUCT CERTIFICATION

Second Edition

Agreed by:

President, General Aviation Manufacturer's Association (GAMA)



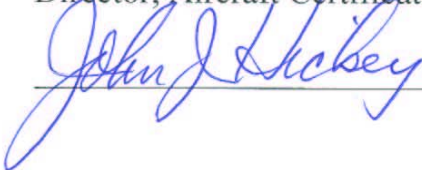
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Prologue

This amendment of *The FAA and Industry Guide to Product Certification* (CPI Guide) incorporates changes based on lessons learned and supports the broader use of this guide by providing additional guidance for specialized product certification (particularly avionics). Section B of chapter 1 was added to clarify the relationship with FAA certification directives.

The Partnership for Safety Plan is no longer labeled as a phase; therefore, the number of phases is reduced to five. The titles of the phases are changed to provide concise descriptors and to correlate them to the existing certification procedures in FAA Order 8110.4C, Type Certification.

Old Phase Description

I	Partnership for Safety Plan
II	Conceptual Design and Standards
III	Refined Product Definition and Risk Management
IV	Certification Project Planning
V	Certification Project Management
VI	Post Certification

New Phase Description

	<i>overarching function independent of phases</i>
I	Conceptual Design
II	Requirements Definition
III	Compliance Planning
IV	Implementation
V	Post Certification

This edition of the *CPI Guide* incorporates *The FAA and Industry Guide to Avionics Approvals*, dated April 13, 2001. Helpful concepts for streamlining the approval process of avionics installations in multiple models, follow-on field approvals, and so forth appear in four new appendices:

1. Appendix III - Avionics Certification Process Improvement
2. Appendix IV - Avionics Partnership for Safety Plan
3. Appendix V - Avionics Installation Project Specific Certification Plan
4. Appendix VI - Avionics TSOA Project Specific Certification Plan

Appendix VIII – Delegation Planning, adds guidance for delegation and oversight and reflects new delegation policy in FAA Order 8110.4C. A few descriptors were added to the roles and responsibilities of certain key players. The Project Evaluation Forms are renamed as Phase Evaluation Checklists to better reflect their true function in the certification process. The glossary and the acronyms have been expanded to include some terms that were absent from the 1999 edition of this guide.

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CHAPTER 1: INTRODUCTION

A. PURPOSE

The FAA and Industry Guide to Product Certification contains a description of the purpose and vision of the improved certification process, hereinafter referred to as Certification Process Improvement (CPI). It also includes an overview of the Phases for product certification including the process flow and a detailed description of Key Player's roles. This is followed by Appendices I and II, which contain the models for the primary tools of the certification process: Partnership for Safety Plan (PSP) and a Project Specific Certification Plan (PSCP). Appendix III – Avionics Certification Process Improvement – supported by appendices IV, V and VI focuses on the unique nature of the avionics approval process and provides information regarding the most effective path for various types of avionics approvals. This appendix is introduced from the guidance developed by the Certification Select Committee to implement the recommendations developed by the RTCA Task Force. The recommendations generally focused around needed improvements in the efficiency and responsiveness of the certification process to facilitate implementation and certification of new avionics technologies. It includes an overview of how the generic certification phases apply to the avionics approval process. Appendix VII contains the Phase Evaluation Checklists used at the end of each Phase of a project to ensure completeness of phase objectives and evaluate the effectiveness of the process. Appendix VIII is the Glossary and Acronyms.

This Guide describes how to plan, manage, and document an effective, efficient product certification process and working relationship between the Federal Aviation Administration (FAA) and an Applicant. The Guide should be used by the FAA and Applicants for Type Certification, Supplemental Type Certification, significant amendments to either TC or STC, Production Approval, and other design approvals including PMA and TSOA. Though focused on large and/or complex programs, it is expected that the CPI principles of up-front planning, project management, and documenting the certification process and working relationship are applicable to all applicants, large or small.

The FAA and Industry are committed to improving the effectiveness and efficiency of the product certification process by establishing up-front a clear understanding of the needs and expectations of both parties in the product certification process. Reducing the cycle time to certify products, while ensuring regulatory compliance, will require earlier involvement of FAA and Applicants in project planning, open and constructive communication, and safety focused project management. Early involvement helps to identify and resolve the certification basis more efficiently, e.g. means of compliance, special conditions, etc. This process will result in a more effective use of FAA and Industry resources, particularly through the use of FAA Designees with oversight focused on critical safety areas. Also, by reducing the time and cost of product certification, safety enhancements through new technology and design innovation can be more rapidly integrated into aviation products.

B. RELATION TO FAA POLICY

CPI is not a major overhaul of the current certification process. It does not change what we do; rather it changes how we do it. CPI is a compilation and enhancement of the best business and certification practices and is compatible with FAA Orders 8110.4, “*Type Certification*” and 8100.5, “*Aircraft Certification Service - Mission, Responsibilities, Relationships, and Programs*”.

This guide should be used as a supplement to existing FAA guidance. If you find that this document conflicts with or contradicts any other policy or guidance material, please contact the Aircraft Engineering Division, AIR-100 for further direction.

C. VISION

By applying the principles of this Guide, the FAA and Applicants can lay a foundation from which to build mutual trust, leadership, teamwork, and efficient business practices. The processes and products described in this Guide enable the FAA and Applicants to fulfill their respective roles and expedite certification of products while focusing on safety significant issues. It is the mutual goal of the FAA and Applicants to meet or exceed the following vision:

Vision of the Product Certification Process

A credible and concise product certification process that results in:

- Timely and efficient product type design and production approvals
- Clearly defined and understood roles, responsibilities, and accountability of all stakeholders
- Timely identification and resolution of the certification basis, potential safety issues, and business practice requirements
- Optimal delegation using safety management concepts with appropriate controls and oversight

Note that the word “product” is used throughout this Guide to identify aircraft, aircraft engines, propellers, as well as appliances and components or parts thereof. Furthermore, “certification” is used broadly and is not limited to design approvals marked by a certificate.

D. ACCOMPLISHING THE VISION

The building blocks to bring about the vision of the new certification process are the PSP, the PSCP, and the Phase Evaluation Checklists. The Plans must be agreed to by both the FAA and the Applicant prior to conducting a certification project. It is important to adhere to the guidance and intent of these documents to the greatest extent possible, focusing on safety and allowing flexibility in other areas where the FAA’s and Applicant’s work processes and related customer bases may differ. Material contained in this Guide is a model of how to conduct effective process and project management by applying the PSP and PSCP formats found in Appendices I and II respectively. The Plan formats can be adapted and enhanced within the FAA's regulatory and policy requirements to meet the needs and work processes of the FAA and Applicants.

However, it is essential that Plans address as a minimum all the areas and issues contained in this Guide. This ensures that each certification project is planned and managed in a way that achieves the maximum benefit of this Guide.



The PSP, shown in Appendix I, is a written “umbrella” agreement between the FAA and the Applicant that defines generic procedures to plan for product certification, establish the general expectations or operating norms and identify deliverables. The PSP also defines the general discipline and methodology to be used in planning and administering certification projects. Examples of content include generic methodologies for use of Designees, conformity inspections, communication, issue resolution, and generic metrics for measuring project progress.

The second Plan is the PSCP shown in Appendix II. It applies the agreed upon principles of the PSP to a specific certification project. Each project will have a PSCP. The PSCP is designed to be used as a project management tool, providing milestones, performance measures, and information unique to a certification project. The PSCP captures procedures based on the generic methodologies of the PSP and applies them to a specific project.

The Avionics Certification Process Improvement guidance in appendix III captures the means to obtain approval of avionics equipment and systems.

The Phase Evaluation Checklists (Appendix VII) are a tool that can be used for project management during each Phase of a certification project. The FAA and Applicant Project Managers (PMs) should jointly prepare a Phase Evaluation Checklist at the close of each Phase. The PMs are encouraged to include the completion of the Phase Evaluation Checklists as milestones when preparing their PSCP schedule. To facilitate continuous improvement, any necessary corrective actions should be implemented by the Team, and the Phase Evaluation Checklists should be maintained in the official project file for future national or local program evaluation. When the evaluation identifies the need for corrective actions or improvements it should be included as a part of the Compliance Summary Document for future reference.

CHAPTER 2: PARTNERSHIP FOR SAFETY PLAN

This is a written agreement that states how the FAA and Applicant will conduct product certification, establish the general timelines and expectations, and identify deliverables. The agreement defines the generic discipline and methodology to be used in early exchange of information to plan for successful certification projects. It includes project schedule milestone development, generic delegation procedures, conformity procedures, communications protocol, an issues resolution process, and the generic operating norms for developing metrics for project evaluation.

A. TASKS

- FAA and Applicant training on certification process
- FAA and Applicant meetings on conduct and procedures

B. REQUIRED INFORMATION

- *The FAA and Industry Guide to Product Certification*
- Existing approvals/authorizations
- Relevant experience
- FARs, guidance, policy
- Delegations and procedures
- Applicant's procedures

C. DELIVERABLES

(Deliverables are prerequisites to be completed before beginning Phase I of a project, unless otherwise mutually agreed by the FAA and the Applicant.)

- Meeting minutes and correspondence to document decisions, agreements, schedules, milestones, and action item assignments
- Signed PSP (See Appendix I)

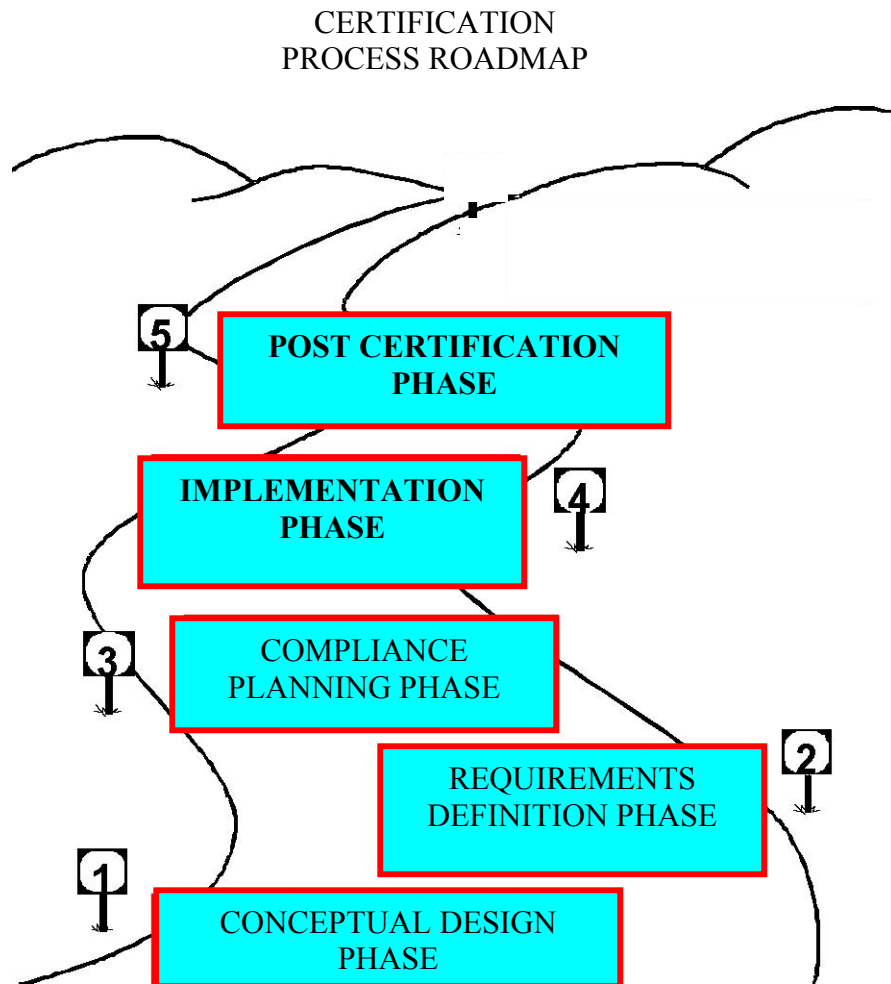
D. CRITERIA FOR SUCCESS

- Provide proper levels of management leadership
- Commit to securing agreement on all elements of the PSP and subsequent PSCPs

CHAPTER 3: PHASES OF CERTIFICATION

A. OVERVIEW OF CERTIFICATION PHASES

There are five Certification Phases that move from early project concept and initiation through post certification activities. The content of the PSP and PSCP outlines the FAA and Applicant agreement and operating practices for a Product Certification project. Each Phase is built on early mutual awareness of key certification issues, commitment to planning and managing projects, early identification and resolution of issues and other elements to achieve the aforementioned vision. All phases contribute to improving safety and serve to mitigate cost and project risk. The five Phases are illustrated below:



As one works through the five Phases outlined in this Guide, the new process of extensive up-front engagement of both the FAA and an Applicant becomes evident. The Product Certification Phases shown on the following pages depicts the Key Players in the process, the tasks for each Phase, and the required information, deliverables, and criteria for success. The Key Players’

Roles shown later in this Guide also include the responsibilities, and quality attributes or best practices for teaming, communication, and accountability.

B. PHASES OF CERTIFICATION

A detailed description of each Phase is contained on the following pages. It includes the Phase's definition, tasks, required information, deliverables, and criteria for success. Deliverables of each Phase are prerequisites before entering the next Phase. ALL of the Key Players outlined below are involved in ALL of the product certification Phases:

- FAA and Applicant's Management:**
Makes commitment to the PSP and provides leadership and resources.
- FAA and Applicant's Project Managers:**
Jointly orchestrates the PSCP and apply the PSP agreements.
- FAA Standards Staff Project Officer:**
Provides timely standardized policy and guidance.
- FAA Engineers and Designees:**
Apply regulations and policy to find compliance including the determination of the adequacy of type design and substantiation data.
- FAA Inspectors and Designees:**
Determine conformity and airworthiness.
- FAA Flight Test Pilots and Designees:**
Conduct FAA flight tests.
- FAA Chief Scientific and Technical Advisor (CSTA):**
Provides expert advice and technical assistance.
- FAA Aircraft Evaluation Group (AEG):**
Evaluates conformance to operations and maintenance requirements.

A more detailed description of the Key Players' roles appears in chapter 4 of this Guide.

Each Phase of certification described in the following pages identifies certain "Criteria for Success" that are unique to that Phase. The following is a list of Criteria for Success applicable to ALL Phases that must be embedded in both the FAA's and Applicant's culture to assure a successful process:

- Establish mutual trust
- Ensure confidentiality
- Meet all commitments
- Emphasize empowerment

- Maintain open and timely communication
- Provide proper levels of technical project and management leadership with frequent reviews to ensure all are aware of project status, significant issues, and commitments
- Conduct early familiarization meeting(s) and document accordingly
- Conduct meeting(s) using well structured agendas/presentations, ensure Key Players attend, and document agreements, issues and actions accordingly
- Agree to clear time frames, expectations, and action plans to accomplish all Phases
- Produce timely, high quality documentation of decisions, agreements, schedules, milestones, action item assignments, compliance/conformance submittals, and approvals

C. PHASE I – CONCEPTUAL DESIGN

This Phase is initiated when the Applicant begins design concept for a product that may lead to a viable certification project. The intent is to ensure early, value added, joint involvement with an expectation to surface critical areas and the related regulatory issues, and begin formulating a preliminary Project Specific Certification Plan (PSCP). This is an opportunity to apply the PSP principles to develop a mutual understanding of potential new projects.

1. Tasks

- Early Familiarization Meetings on design concepts

2. Required Information

- New designs, technology, materials, processes, etc.
- Proposed certification basis and means of compliance
- Supplier relationships
- Initial safety assessments

3. Deliverables

(Deliverables are prerequisites for subsequent Phases and must be completed before entering the next Phase, unless otherwise mutually agreed by the FAA and the Applicant.)

- Meeting minutes and correspondence to document decisions, agreements, schedules, milestones, and action item assignments
- Preliminary certification basis considering the intended means of compliance, initial safety assessments, and relevant policy material and begin formulation of a PSCP
- Definition and plan for resolution of critical issues, e.g. new designs, technology or processes, potential special conditions, exemptions or equivalent safety findings, co-production or foreign supplier arrangements requiring undue burden assessments; etc.
- Identify core team for commitment to developing the preliminary PSP elements to ensure continuity
- Phase I Evaluation Checklist (See Appendix VII)

4. Criteria for Success

- Commitment to the signed PSP

D. PHASE II – REQUIREMENTS DEFINITION

Efforts in this Phase clarify the product definition and the associated risks, and conclude with a mutual commitment to move forward with product certification. Specific regulatory requirements and methods of compliance or critical issues are formulated. A more formal PSCP is developed..

1. Tasks

- Meetings to refine product definition, requirements, and develop the PSCP
- Preliminary Certification Board Meeting

2. Required Information

- Applicant's descriptive design & production data
- Critical issues definition
- Refined safety assessments
- Proposed schedule

3. Deliverables

(Deliverables are prerequisites for subsequent Phases and must be completed before entering the next Phase, unless otherwise mutually agreed by the FAA and the Applicant.)

- Submission of Application, FAA Form 8110-12 (FAA Order 8110.4)
- Acknowledgment of Application
- Certification Project Notification (FAA Order 8110.4) and establishment of project
- Establishment of FAA and Applicant project certification team
- Meeting minutes and correspondence to document decisions, agreements, schedules, milestones, and action item assignments
- Preliminary PSCP including project milestones and related events such as program status reviews (See Appendix II)
- Agreement of TC Certification Basis Plan and definition of project issues such as means of compliance including special conditions, equivalent safety findings, exemptions, etc.
- Phase II Evaluation Checklist (See Appendix VII)

4. Criteria for Success

Apply the PSP and commit to the early development of the PSCP

E. PHASE III – COMPLIANCE PLANNING

During this Phase a PSCP is completed. The plan is a tool to which the responsible parties commit and use to manage the product certification project.

1. Tasks

Project planning and PSCP development meetings

2. Required Information

- Initial FMEA/Safety Assessments
- Stakeholder identification
- Refined critical issues
- Production processes

3. Deliverables

(Deliverables are prerequisites for subsequent Phases and must be completed before entering the next Phase, unless otherwise mutually agreed by the FAA and the Applicant.)

- Meeting minutes and correspondence to document decisions, agreements, schedules, milestones, and action item assignments
- Signed PSCP (See Appendix II)
- Project schedule with established FAA/Applicant milestones for completion of analyses, test plan submission, TIA, conformities, flight test, AEG evaluations, critical issues resolution plan, and other items affecting the completion of the project
- Agreed Type Certification Basis
- Compliance Check List
- Completion of Stage 1 on all issue papers
- Identification of stakeholders, including suppliers, installers in the case of engines, propellers, or systems, etc.
- Delegations defined with oversight criteria
- Resource requirements
- Conformity procedures
- Project evaluation measures
- Phase III Evaluation Checklist (See Appendix VII)

4. Criteria for Success

Apply the PSP and commit to agreement on the PSCP

F. PHASE IV – IMPLEMENTATION

During this Phase the Applicant and FAA work closely in managing, refining, and achieving their agreed PSCP to ensure that all agreed upon product specific certification requirements are met.

1. Tasks

- Demonstration of compliance
- Compliance and conformance requirements verification
- Final Certification Board Meeting

2. Required Information

- Design and production analysis
- Witnessing
- Inspection results
- Safety analysis

3. Deliverables

(Deliverables are prerequisites for subsequent Phases and must be completed before entering the next Phase, unless otherwise mutually agreed by the FAA and the Applicant.)

- Meeting minutes and correspondence to document decisions, agreements, and action item assignments
- Meet milestones for completion of analyses, test plan submission, TIA, conformities, flight test, AEG evaluations, critical issues resolution plan, and other items affecting the completion of the project
- Completed test plans/reports, conformity requests, inspections, and compliance documentation
- Issue Papers, Special Conditions, Exemptions, Equivalent Safety Findings
- Compliance and conformance findings
- Type Design and Production approval issuance
- Phase Evaluation IV Checklist (See Appendix VII)

4. Criteria for Success

- Apply PSP and manage to the PSCP
- Conduct frequent project schedule and compliance checklist status reports, team and management reviews, and make revisions as needed to PSCP.

G. PHASE V – POST CERTIFICATION

During this Phase close-out activities provide the foundation for continued airworthiness activities and certificate management for the remainder of the product's life cycle.

1. Tasks

- Project follow-up and closure
- Certificate Management

2. Required Information

- Airworthiness Limitations
- Maintenance and Operations requirements
- Project lessons learned
- Relevant safety data
- Type Certificate Data Sheet
- Evaluation findings
- Design change data

3. Deliverables

- Meeting minutes and correspondence to document decisions, agreements, schedules, milestones, and action item assignments
- Compliance Summary Document
- Type Inspection Report
- Instructions for Continued Airworthiness
- Continued Airworthiness Management Plan
- Phase V Evaluation Checklist (See Appendix VII)

4. Criteria for Success

- Work together for continuous improvement
- Apply PSP and manage to the PSCP with a focus on continued operational safety
- Provide proper levels of technical project and management leadership with frequent reviews to ensure project close-out to schedule and resolution of significant post TC issues

CHAPTER 4: DESCRIPTION OF KEY PLAYERS' ROLES



FAA and Applicant's Management

Commitment to the Partnership for Safety Plan Provides Leadership and Resources



FAA and Applicant's Project Managers

Jointly orchestrate the project and apply the Partnership for Safety Plan agreements



FAA Standards Staff Project Officers

Provides timely standardized policy and guidance

KEY PLAYERS' ROLES



FAA and Applicant's Engineers &

Designees apply regulations and policy to find compliance including the determination of the adequacy of type design and substantiation data.



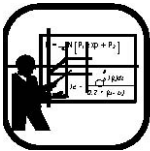
FAA and Applicant's Inspectors &

Designees Determines conformity and airworthiness



FAA and Applicant's Flight Test Pilots &

Designees Conducts FAA flight tests



FAA Chief Scientific and Technical Advisors (CSTA)

Provides expert advice and technical assistance



FAA Aircraft Evaluation Group

Evaluates conformance to operations and maintenance requirements

NOTE: Appendix III describes Key Players' roles and responsibilities as they apply to avionics approvals.

A. FAA AND APPLICANT'S MANAGEMENT - PROVIDES LEADERSHIP AND RESOURCES

The Applicant and the FAA work to establish a PSP to reach a clear common understanding of their respective responsibilities for the design and production definition and the certification requirements. The respective managements provide leadership and resources to product certification teams through the Project Managers in order to accomplish the project and resolve issues. The management has ultimate responsibility through the product certification team for the quality of compliance finding work, standard application of regulatory compliance policy and procedures, and the timely, efficient completion of the product certification projects.

1. Teamwork

- Establishes PSP early for the involvement and commitment of both parties
- Ensures the Product Certification Team's full participation, application of the PSP, and adherence to the PSCP
- Ensures Product Certification Team engages all stakeholders including other FAA Engineers, Standards Staffs, Inspectors and Applicants to resolve integration issues, e.g. engine/propeller/APU to airframe compatibility
- Coaches and mentors Product Certification Team members
- Models behaviors that promote effective teamwork between the FAA and Applicant

2. Communication

- Communicates early and often about design, schedules, plans for demonstrating compliance and conformity and anticipated problems
- Facilitates access to best sources of information
- Ensures consistency and clarity of positions on issues is communicated to each other
- Promotes and ensures efficient resolution of issues at the operational level prior to elevating to the higher management levels

3. Accountability

- Participates in resolving critical issues identified in the PSCP
- Moderates appeal process through respective Project Managers
- Works in partnership to reach early agreement on certification basis
- Sets realistic schedules and monitors project status
- Provides leadership and management of resources to support the project
- Ensures the delivery of a quality product

4. Jointly the Managements Ensure

- Resources are available to support project: team, travel funds, training, policy and administrative procedures
- Integration of project requirements with total workload for the respective organizations including: resources, priorities, schedules, staff, and policy considerations
- Facilitation of issues resolution by providing management oversight and leadership
- Identification of Project Manager focal points and lines of communication for certification project team
- Participation in Familiarization Meeting to discuss certification aspects of proposed project concepts

B. FAA AND APPLICANT'S PROJECT MANAGERS – ORCHESTRATES PROJECT AND GETS THE JOB DONE

The FAA, Designees, and Applicant's Project Managers are the principal focal points for the project. They coordinate and direct the certification team's effort and ensure things are kept moving to achieve the Product Certification objectives.

1. Teamwork

- Ensure the right people from the FAA and Applicant are involved
- Develop and maintain the PSCP (See Appendix II)
- Ensure the Product Certification Project Team awareness of design features, proposed means of compliance, new materials, new production processes, co-production or foreign supplier issues, and other critical issues for timely resolution

2. Communication

- Ensure effective communication flow and quality documentation among specialists, FAA offices, and Applicant

3. Accountability

- Ensure commitments and PSCP schedules are met
- Develop proposed certification basis and certification PSCP
- Manage timely delivery completion of inspections, analysis, test data, exemptions, special conditions, equivalent safety findings, etc. for determining compliance and completing certification of the product
- Maintain effective oversight and control of the project

4. Jointly the PMs Ensure

- Notification and involvement of FAA and Applicant in early project Phases
- Preparation of all required documentation
- Completion of accurate data submittals
- Completion of planning and scheduling
- Development of the compliance checklist
- Adherence to agreed project sequence and schedule for test plans, completion of inspections and tests, and data and report submittals to show conformity and compliance
- Planning for and coordination of all interactions, familiarization, and board meetings during all Phases
- Determination of project resource requirements to meet FAA and Applicant commitments
- Establishment of project team including necessary specialists
- Preparation of the PSCP in coordination with all team members (Ref. Order 8100.5 and Appendix II)
- Identification of new materials, new production processes, and co-production or foreign supplier arrangements requiring an undue burden assessment
- Development of the product certification basis

- Accountability as project focal points with their respective FAA, Designees, and Applicant team members to ensure team is always aware of project status
- Participation in the development of new project-specific policy safety issues
- Coordination of technical decisions and regulatory issues with their respective team members
- Integration of work of project team to promote timely decisions (Ref. Order 8100.5)
- Identification of unique/novel product features or applications, and potential need for coordination on issue papers, special conditions, exemptions, equivalent safety findings, (Ref. Order 8100.5)
- Management of the issues resolution process, maintains an issues tracking system, and applies the issues resolution process, as needed
- Participation in Pre-flight TC board and presents certification material on project
- Participation in Final TC board and presents certification material on project, if applicable
- Proper evaluation of type design and substantiation data to determine their adequacy
- Preparation of Type Certificate Data Sheet
- Preparation of the Phase Evaluation Checklist at the end of each Phase (Ref. Appendix VII)
- Preparation of Certification Compliance Summary Document (Ref. Order 8110.4 and Appendix II)

5. The FAA PM Ensures

- Coordination with FAA Team members and Designees cooperatively keeping the project team aware of applicable policy and guidance material
- Preparation of the Certification Project Notification and acknowledgment letter of Applicant's application (Ref. Orders 8100.5 and 8110.4)
- Scheduling and chairing of preliminary, interim, flight test and final TC Board meetings as appropriate
- Proper preparation, and Designee oversight, where appropriate, are provided for approval of Type Inspection Authorizations and/or FAA Form 8120-10 requests for conformity
- Completion of project file compliance documentation including Applicant's, Designee's, and project team member's required input
- Proposed certification basis for project and means of compliance are consistent with FAR and policy
- Findings of compliance are made by appropriate accountable team members
- Notification of Applicant early of schedule revisions and/or major issues after commencement of certification which would influence prior agreed objectives

6. The Applicant's PM Ensures

- Demonstration of compliance to the FAR
- Application for Type and Production Certification includes available relevant data/information
- Development of proposed certification basis, means of compliance, and certification PSCP
- Submittal of type design data, analyses, plans, and reports, and shows compliance per the agreed PSCP

- Notification to FAA early of schedule revision and/or major design changes after commencement of certification which would influence prior agreed outcomes
- Submittal of Statement of Conformity (FAA Form 8130-9) on product and components or parts
- Notification to Inspector when ground test articles are ready for conformity inspection when required, and for pre-flight test conformity and airworthiness certification
- Acceptance of Certificates and Approvals from FAA

C. FAA STANDARDS STAFF PROJECT OFFICER – COORDINATES DIRECTORATE INTERACTION

The Standards Staff Project Officer provides the certification team with clear and timely regulatory and policy guidance specific to the project. The Project Officer is the focal point within the accountable project Directorate for that policy and for engaging other appropriate Directorate Staffs on installation issues across FAR Parts e.g., engines, propellers, APUs.

1. Teamwork

- Works with Directorate policy staff and Product Certification team to provide coordinated policy to the team
- Assures that the certification basis, including means of compliance, is agreed upon early in project
- Assures timely support of the project regulatory and policy aspects

2. Communication

- Serves as advisor to the FAA and Applicant Project Managers and Designees on timely and responsive interpretation of policy and rules
- Raises critical policy issues early to the Project Managers, e.g., in meetings, telecons, issue papers; and documents agreements and actions to resolve them

3. Accountability

- Reviews and concurs with the certification basis early
- Provides guidance on standardized application of rules and policy
- Assures that last minute changes in policy are applied to Applicant's products only when critical new safety issues are identified, i.e., the potential for an accident or service difficulty sufficient to warrant Airworthiness Directive action if the product were in service

4. The FAA Standards Staff Project Officer

- Serves as Directorate national focal point and provides Project Managers and Designees with early policy guidance consistent with national policy that is common to all Directorates, e.g., software, HIRF
- Coordinates special conditions, exemptions, and equivalent safety findings within Directorate and with other Directorates, as appropriate
- Provides pertinent FAR Part regulatory and policy guidance
- Analyzes the PSCP to ensure the team has all necessary policies and to identify issues that require additional or future regulations or policies to be undertaken
- Adheres to all applicable policy and guidance material
- Attends all relevant meetings and discussions related to the establishing the certification basis and resolving non-standard means of compliance or other critical issues list items
- Ensures timely processing of all Issue Papers, Special Conditions, Exemptions, etc. related to regulatory and policy issues
- Ensures timely determination of the certification basis

D. FAA ENGINEERS AND/OR DESIGNEES – APPLY REGULATIONS AND POLICY TO FIND COMPLIANCE

The Engineers, as assigned for appropriate disciplines, are the principal contacts for the Applicant. Their activity is always in coordination with the FAA Project Manager and follows the agreed PSCP for guiding the certification process, communication guidelines and how rules and policy will be applied. The Engineers and Designees understand the technical details of the project, application of applicable rules and policy, and are responsible for the majority of the compliance findings associated with the project. They also evaluate sufficiency of the type design and substantiation data with the discretion to review any of the data therein, such as critical material process specifications.

1. Teamwork

- Works closely with team members to meet deadlines, e.g., coordinates early on with Aviation Safety Inspectors, Designees, and the Applicant to request conformity inspections, new material/process specification evaluations, and compliance findings, where needed
- Participates in all team meetings and discussions appropriate to their areas of responsibility and disciplines

2. Communication

- Uses timely and effective communication methods to identify and resolve problems early
- Communicates directly with Applicant and FAA counterparts on policy staff and other FAA Engineers and Inspectors to facilitate meeting project objectives
- Transmits policy and guidance material, with the Standards Staff Project Officer, to Applicant for timely resolution of critical issues
- Raises critical engineering issues early to the Project Manager, e.g., in meetings, telecons, issue papers; and documents agreements and actions to resolve them
- Communicates the need for specialized expertise and resources to the team and management

3. Accountability

- Assures compliance with regulations and policy
- Responsible for technical details and documentation of findings and issues resolution
- Maintains appropriate oversight of the Designees
- Uses all available resources, e.g., peers, Designees, Technical Specialists, CSTAs, policy staff, management, to make quality technical decisions and accomplish project deadlines

4. The FAA Engineers and/or Designees, as Appropriate

- Attends all appropriate familiarization, technical, and board meetings
- Notifies the FAA Project Manager early of the need for CSTA or technical specialist assistance
- Assists in developing certification basis
- Reviews and approves certification means of compliance consistent with the agreed certification PSCP, certification basis and related policy (FAA only)

- Oversees the use of engineering delegations and Designees in accordance with the Delegation section of the PSCP (FAA only)
- Communicates with Applicant and project team on day-to-day technical issues; keeps Project Manager informed
- Makes compliance findings for design approval
- Drafts issue papers
- Ensures the quality and timeliness of approvals and documentation
- Prepares Type Inspection Authorizations in discipline, requests conformity inspection, when needed, of appropriate test articles, and coordinates with FAA Inspectors and their Designees
- Coordinates with FAA Inspectors and their Designees on the approval of critical parts and new materials or new process specifications
- Adheres to all applicable policy and guidance material
- Assures that all data submitted for design and production is complete and accurate to serve as the foundation for issuance of the certificate and subsequent continued airworthiness management activities throughout the life cycle of the aircraft

E. FAA INSPECTORS AND/OR DESIGNEES – DETERMINES CONFORMANCE AND AIRWORTHINESS.

The FAA Aviation Safety Inspectors provide consultation and advise on production processes proposed in the design. They conduct and oversee, through Designees, a variety of conformity inspections, evaluations of aircraft airworthiness, and issues airworthiness certificates or other approvals. They conduct progressive evaluation of the manufacturer's quality and production systems for eventual production approval. The Inspector is alert to conformance issues on critical parts that cannot be determined solely from type design data. This would then require focused process control, inspection, or evaluation within the production quality system.

1. Teamwork

- Works closely with team members to meet deadlines, e.g., coordinates early on with FAA Engineers, other Aviation Safety Inspectors, Designees, and the Applicant to conduct conformity inspections, new material/process specification evaluations, and compliance findings, where needed
- Participates in all team meetings and discussions appropriate to their areas of responsibility and disciplines

2. Communication

- Uses timely and effective communication methods to identify and resolve problems early
- Communicates directly with the Applicant and FAA project team members, and other Aviation Safety Inspectors to facilitate meeting project objectives
- Raises critical production issues early to the Project Manager, e.g., in meetings, telecons, issue papers, and documents agreements and actions to resolve them
- Communicates the need for specialized expertise and resources to the team and management

3. Accountability

- Briefs Applicant on conformity inspection, airworthiness approval, and production approval requirements
- Evaluates conformity, when requested, prior to official FAA tests
- Determines airworthiness of aircraft prior to flight test
- Maintains appropriate oversight of their Designees
- Assures compliance with regulations and policy governing production approvals
- Assumes responsibility for production related technical issues resolution and documentation of findings
- Uses all available resources, e.g., peers, Designees, CSTAs, policy staff, management, to make quality technical decisions and accomplish project deadlines

4. The FAA Inspectors and/or Designees as Appropriate

- Attends all appropriate familiarization, technical, and board Meetings
- Notifies the FAA Project Manager early of the need for CSTA or technical specialist assistance
- Assists in developing certification basis

- Reviews and approves production means of compliance consistent with the agreed certification PSCP, certification basis and related policy (FAA only)
- Oversees the use of production delegations and Designees and Applicant in accordance with the Delegation section of the PSCP (FAA only)
- Coordinates with Applicant and project team on day-to-day issues related to production and conformity aspects; keeps Project Manager informed.”
- Makes compliance findings for production approval
- Coordinates with FAA Engineering or their Designees, as assigned, on requests for conformity inspection and ensures conformity of test articles
- Coordinates with FAA Engineering or their Designees, as assigned, on approval of design data affecting critical parts, new material, new process specifications, new technology, and co-production or foreign supplier arrangements that require an undue burden assessment.
- Adheres to all applicable policy and guidance material
- Coordinates and prepares appropriate items for Type Inspection Authorization in discipline
- Assures that all production and inspection data submitted for design and production approval are complete and accurate to serve as the foundation for issuance of the certificate and subsequent continued airworthiness management activities throughout the life cycle of the aircraft
- Ensures conformity and Airworthiness Certification for release of aircraft for FAA flight testing in coordination with FAA flight test pilots and Engineers

F. FAA FLIGHT TEST PILOTS AND/OR DESIGNEES – CONDUCTS PRODUCT CERTIFICATION FLIGHT TESTS

The Flight test Pilots provide technical advice to the team on aircraft configuration, operation, flight-testing and instrumentation needed for compliance determinations. They conduct FAA flight tests and other appropriate evaluations, find compliance to flight test requirements, and provide guidance to the Applicant on preparing the flight manual and related operational procedures.

1. Teamwork

- Works closely with team members to meet deadlines, e.g., coordinates early with Engineers, Aviation Safety Inspectors, and Applicant for flight test requirements
- Participates in all team meetings and discussions appropriate to their areas of responsibility and disciplines

2. Communication

- Uses informal and formal communication channels to identify and resolve problems early
- Communicates directly with Applicant and FAA counterparts on the policy staff and with other FAA Engineers
- Raises critical flight test issues early to the Project Manager, e.g. in meetings, telecons, issue papers, and documents agreements and actions to resolve them
- Communicates the need for specialized expertise

3. Accountability

- Assures compliance with regulations and policy
- Assumes responsibility for technical details in their discipline
- Uses all available resources, e.g. peers, CSTAs, policy staff, management, to make quality technical decisions and accomplish project deadlines

4. The FAA Pilots and/or Designees as Appropriate

- Attends all Familiarization and board appropriate Meetings
- Notifies the Project Manager early on of the need for CSTA or technical specialist involvement
- Assists in developing certification basis
- Reviews and approves certification means of compliance consistent with the agreed certification PSCP, certification basis and related policy (FAA only)
- Oversees the use of delegations and Designees in accordance with the Delegation section of the PSCP (FAA only)
- Communicates with Applicant and project team on day-to-day technical issues; keeps Project Manager informed
- Makes compliance findings
- Drafts issue papers
- Prepares relevant items for Type Inspection Authorization in discipline and requests conformity of flight test articles in coordination with Inspector
- Conducts FAA Product Certification flight tests

- Reviews aircraft flight manual and related procedures for approval
- Adheres to all applicable policy and guidance material
- Assures that all appropriate flight test data submitted for TC is complete and accurate to serve as the foundation for issuance of the certificate and subsequent continued airworthiness management activities throughout the life cycle of the aircraft
- Considers flight test risk management in conjunction with entire team

G. FAA CHIEF SCIENTIFIC AND TECHNICAL ADVISOR (CSTA) - PROVIDES EXPERT ADVICE AND TECHNICAL ASSISTANCE

The CSTA provides professional technical guidance, advice and assistance in their discipline. They are our direct link to an extensive professional network in the R&D community, professional and academic organizations, industry, other government, and national and international experts in their discipline.

1. Teamwork

- Works as advisors to certification project teams on issues that require precedent setting means of compliance relating to new or complex technology and technical specialties
- Participates in Special Certification Reviews, Critical Design Reviews, and Multiple Expert Opinion Teams
- Assists FAA team members in identifying areas where their expertise can add value to the quality and timeliness of compliance findings or resolution of complex technical issues

2. Communication

- Uses informal and formal communication channels to resolve problems identified by the project team early
- Communicates the need for their specialized expertise
- Raises issues early, e.g. in meetings, telecons, issue papers, etc.

3. Accountability

- Provides timely response to project team needs for means of compliance or precedent setting design or production aspects

4. The FAA CSTA

- Attends appropriate familiarization and board meetings as they and the certification team deem necessary
- Assists certification team in understanding special technical disciplines and new or complex technology related issues to facilitate timely and adequate compliance findings

H. FAA AIRCRAFT EVALUATION GROUP – EVALUATES CONFORMANCE TO OPERATIONS AND MAINTENANCE REQUIREMENTS

The FAA Aircraft Evaluation Group (AEG) provides a link to applicable Flight Standards technical services. This lends an aircraft operational and maintenance perspective to the type design assessment thereby allowing FAA Engineering and their Designees to determine appropriate compliance requirements in those areas. The AEG carries knowledge of the product and how it was type certificated to the aircraft Maintenance Review Board, Flight Operations Evaluation Board, and Flight Standardization Board activities.

1. Teamwork

- Works closely with team members to meet deadlines, e.g. coordinates early with Engineers, Aviation Safety Inspectors, and the Applicant on maintenance and operational issues
- Participates in all team meetings and discussions appropriate to maintenance and operational disciplines

2. Communication

- Uses informal and formal communication channels to identify and resolve problems early
- Communicates directly with the Applicant and FAA counterparts in the Directorate Standards Staff, Flight Standards policy staff, and FAA Engineers
- Provides AFS policy and guidance material to the team
- Raises critical maintenance or operational issues early to the Project Manager, e.g., in meetings, telecons, issue papers; and documents agreements and actions to resolve them
- Communicates the need for specialized expertise e.g., AFS, CSTA

3. Accountability

- Serves as the focal point for all Flight Standards interests in the certification process
- Evaluates the product and its systems for operational suitability and maintainability
- Uses all available resources (e.g., other AFS organizations, FAA Engineers, Aviation Safety Inspectors) to make quality, technical decisions and accomplish project deadlines

4. The FAA Aircraft Evaluation Group (AEG)

- Attends all appropriate familiarization, technical, and board Meetings
- Communicates with Applicant and project team on day-to-day technical issues related to operations and maintenance, and keeps the Project Manager informed
- Coordinates on Type Inspection Authorizations regarding AEG issues and coordinates with FAA Engineers and Aviation Safety Inspectors or their Designees
- Participates in appropriate flight testing related to Flight Standards operational issues
- Adheres to all applicable policy and guidance material
- Assists the certification team in understanding operations and maintenance issues for timely transition into service, and coordinates appropriate issues with key AFS policy divisions
- Transmits pertinent AFS policy and guidance to project team

- Assists Engineers in determining that means of compliance meet operations and maintenance requirements
- Provides maintenance and operational insight of the type design into Flight Standardization Board, Flight Operations Evaluation Board, Maintenance Review Board processes
- Reviews and coordinates maintenance and operational aspects of proposed documents for acceptance, i.e., AFM, Instructions for Continued Airworthiness, Operating Instructions

CHAPTER 5: CONCLUSION

The FAA and Applicants, in a Partnership for Safety, are dedicated to providing a highly effective and efficient Product Certification Process. Our mutual expectations for the FAA and Applicants' Partnership for Safety are to plan early, communicate often, and cooperate on initiatives that make aircraft increasingly safer. All Key Players on Product Certification Teams make our commitments happen.

Our commitment to Public Safety –

➤ *Communicate often to:*

- ✓ Explain our expectations and listen to concerns
- ✓ Strive for safe solutions to key safety decisions
- ✓ Work as “One Safety Team”

➤ *Be accountable to:*

- ✓ Identify best practices and provide quality service
- ✓ Allocate resources appropriately, including delegations
- ✓ Apply rules and policy properly in a standardized way
- ✓ Keep commitments

➤ *Come to closure to:*

- ✓ Complete projects to the PSCP and on schedule
- ✓ Work cooperatively and constructively
- ✓ Follow the agreed issues resolution processes

APPENDIX I

PARTNERSHIP FOR SAFETY PLAN

between the

FEDERAL AVIATION ADMINISTRATION

And

APPLICANT

The material contained herein is an aid for constructing a Partnership for Safety Plan (PSP). This aid is intentionally not a “boiler plate”, but allows the freedom to innovate and meet the needs of the Applicant and the FAA. However, it is essential that the PSP address the same key content areas of this aid ensuring that as written it captures the meaning and intent of this Guide.

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SIGNATORIES

PURPOSE

The purpose of this Partnership for Safety Plan (PSP) is to define a working relationship between the Aircraft Certification Service of the Federal Aviation Administration (FAA) and Applicant. It provides the foundation from which to build mutual trust, leadership, teamwork, and efficient business practices. This Plan enables the FAA, Applicant, and their staffs to expedite certification projects by focusing on safety significant issues. It is the mutual goal of the FAA and Applicant to meet or exceed the expectations of this agreement to achieve the following vision:

Vision of the Product Certification Process

A credible and concise product certification process that results in:

- Timely and efficient product type design and production approvals
- Clearly defined and understood roles, responsibilities, and accountability of all stakeholders
- Timely identification and resolution of the certification basis, potential safety issues, and business practice requirements
- Optimal delegation using safety management concepts with appropriate controls and oversight

In the establishment of this PSP, it is understood that a cooperative working relationship is required for this process to be effective. To achieve successfully this Vision, it is understood that the Applicant and FAA team members will work in accordance with the guidelines contained in this PSP.

EFFECTIVITY

This PSP becomes effective upon approval by the FAA Directorate Manager and the Applicant's President, CEO, or Senior VP officer empowered to commit for the Applicant. It continues in effect until it is superseded, revised or terminated and may be amended by mutual consent of the parties. Any change in the services furnished or other provisions of this PSP is formalized by an appropriate written amendment signed by both parties, which outlines the nature of the change.

PARTNERSHIP FOR SAFETY

1. GENERAL

This PSP is a living document that will be developed by the FAA and the Applicant to the greatest extent possible in advance of any specific certification project. The PSP is an important prerequisite to a specific product certification project. It establishes the principles and procedures for early identification of critical issues and early planning so that subsequent to this PSP, future projects can be completed in a timely and efficient fashion. The PSP will be managed and maintained by the FAA's and Applicant's

management focal points in accordance with the “Communications” section below. The PSP will include, but not be limited to, consideration of the elements outlined below. The Applicant and the FAA agree to work to the principles and operational norms outlined in this PSP and to future Project Specific Certification Plans (PSCP) that may be developed in conjunction with this agreement. The PSCP is discussed in Appendix II of *the FAA and Industry Guide to Product Certification*.

2. CORPORATE PLANNING

The Applicant and the FAA jointly conduct periodic management program reviews using an agreed process to provide early insight into future potential projects. These reviews also provide a forum to begin early planning for those potential projects as outlined in the early involvement Phases of *the FAA and Industry Guide to Product Certification*. The reviews would, to the extent possible, touch broadly on areas that should require special attention, e.g., special conditions, exemptions, equivalent safety findings, unique designs, new materials or processes, production or operational aspects, foreign validation, co-production or use of foreign suppliers, continued airworthiness.

The FAA and Applicant will participate in early identification of product concepts, applicable standards, and in the product definition and risk management Phases. This will be done as potential certification projects arise to assure agreement and commitment on dealing with critical issues in a value added way. This is an iterative process requiring ongoing mutual evaluation and continuous improvement of the PSP and related processes. The PSP gives the FAA a means to keep the Applicant informed of new proposed regulations or policy that could affect future product certification projects.

3. COMMUNICATION AND COORDINATION

In the PSP, communication and coordination paths should be clearly defined between the FAA and Applicant. Focal points will be identified to avoid conflict and keep both parties informed of all critical communications that affect the needs and responsibilities of their respective roles. This does not preclude any team members from communicating with any other members, but they need to assure the focal points are informed. Thus, critical links should be defined to ensure roles and responsibilities are clear and to facilitate conflict resolution. The focal points will be responsible for the maintenance of the PSP.

4. DELEGATION

The FAA depends on using both individual and organizational delegations in the certification process. Delegation will be used to the maximum extent practicable with appropriate oversight safeguards as defined in the FAA’s delegation management process policies.

The FAA Engineering and Aviation Safety Inspectors’ Designees, Designee oversight controls, related documentation, etc. should be identified and agreed early, preferably prior to a specific project. This should also include by reference, reliance on existing agreements or working procedures generated between the FAA and Applicant, where appropriate. The PSP should be specific as to what aspects of the FAA project

responsibilities are delegated, and should address the delegation and oversight process as well as Designee disciplines and limitations. The FAA and Applicant agree to manage all Designee activity within the regulations and policy regarding Designee appointment, procedures, and oversight. It is essential that the FAA and the public have confidence in the integrity of the Designee system and that it functions properly. Both the FAA and Applicant agree to foster an environment where open communication between the Designees and Applicant's management, and between the Designees and their FAA counterparts is standard practice. That environment should encourage the Designees, within the scope of their delegation, to openly communicate certification items with FAA that is necessary to maintain confidence in the Designee system. The Applicant agrees to create a working environment where Designees can make compliance and conformity findings free from undue pressure and with the support and knowledge of the FAA. It should be clearly understood by FAA personnel and Designees that their objective is to find compliance with the regulations and not to dictate design.

Because of the close integration of the design, production, and continued airworthiness processes, it is necessary to have all stakeholders in the delegation process agree on the extent of delegation, the procedures, and the degree of delegation oversight to be used in each project. The Applicant and FAA Engineers, Aviation Safety Inspectors, Flight Test Pilots, and FAA Designees will agree upon and document a plan by which the Designees in different disciplines can work together directly to the greatest extent possible to ensure compliance to the FAR while providing more timely project management.

The PSP should also describe the respective FAA and Applicant roles in the conformity inspection process. As noted in applicable FAA Orders and policy, the goal of the FAA and Applicant is to develop a system that ensures conforming products and that the FAA can rely upon to the greatest extent possible using the Designees with appropriate oversight to expedite the work. This should include in coordination with the Delegation section of the PSP, criteria for determining which conformities will be conducted, which are delegated to both Engineering and Aviation Safety Inspectors' Designees, and how deviations will be dispositioned.

The system should include, but is not limited to:

- Maintaining the custody chain of conformed articles destined for an official FAA test.
- Notifying FAA Aviation Safety Inspector of any changes to ground/flight test articles after conformity inspection has been completed.
- Ensuring requests are not duplicated and the timely and efficient conduct of conformities and dispositioning of deviations occurs.
- Identifying who issues the requests, conducts the inspections, and dispositions the deviations.
- Providing for the completion of inspection, documentation, and dispositioning of deviations or changes before tests are conducted.

5. PRODUCTION QUALITY SYSTEM EVALUATION

In addition, the PSP should describe the FAA and Applicant's roles in the production approval process. The goal of FAA production approval is to verify that the Applicant has established a system which ensures that only products and parts conforming to the FAA approved design are released to service. Evaluations to determine adequacy of this system should be conducted by the FAA during the type certification Phase of the project, where practicable. The FAA Aviation Safety Inspectors' Designees, with appropriate oversight, could be used to facilitate the work.

CONTINUOUS IMPROVEMENT

1. ISSUES RESOLUTION PROCESS

The objective of this process is to identify and resolve issues and disagreements as early as possible at the team working level facilitated by the Applicant's and the FAA's Project Managers (PMs). The Applicant and FAA PMs will jointly maintain a project issues tracking list. They will continually manage those issues to assure adequate progress is being made on the resolution of issues so as to ensure compliance with the FAR while not adversely affecting project schedules. The PMs will periodically keep their managements and other certification team members apprised of the progress on resolving issues. If there is agreement on the progress of issues resolution, the Applicant and FAA PMs will document the actions, decisions, and outcomes in the project records. Any necessary changes to the project schedule or the issues will be coordinated and agreed upon by all affected team members. Should any problems arise with open issues where their resolution is not proceeding according to the agreed PSCP, the PMs will utilize the following issues resolution process:

(a.) If there is disagreement, the Applicant and FAA PMs, their respective managers, and other appropriate team members in the affected disciplines will review the issue and recommend a solution. If they agree, the resolution will be documented and all team members will be informed.

(b.) If the managers and appropriate team members are unable to agree, the office raising the concerns will prepare a white paper detailing the issue, respective parties' positions, and options for resolution. Timelines will be established for resolution of each issue to permit tracking via the project issues list and ensure timely resolution. Where appropriate, the FAA Issue Paper process should be used, but should not be applied just for the sake of tracking which can be done through the project issues tracking list maintained by the FAA and Applicant PMs.

(c.) The issue will then be submitted to the applicable Directorate Manager(s), the FAA and Applicant PM's management, and, where appropriate, FAA regional counsel and other appropriate FAA Division(s) for review and disposition.

(d.) The conclusions, recommendations, and outcome of the issue resolution will be documented by the Applicant and FAA PMs in the project records.

2. PERFORMANCE MEASURES

(a) GENERAL

Project tracking and documentation provide for early identification and resolution of potential conflicts. Early communication between the Applicant and FAA in the conceptual/prototype stages of product development is critical to assure availability of resources, adequate planning, and flexibility for both the FAA and the Applicant. Effective project management oversight, planning, communication, and documentation are needed. This process is very management and discipline dependent. Priority must be placed on early identification and resolution of the following:

- Establishment of certification basis and means of compliance
- Project planning and management including, for type design and production issues.
- Identification and tracking of significant issues, issues papers, exemptions, special conditions, equivalent safety finding proposals, Airworthiness Limitations, and applicable in-service maintenance/operational history
- Definition of clear, up-front, pass/fail criteria, wherever possible
- Validation and documentation of critical assumptions, installation interface issues, and data for Airworthiness Limitations
- Conformity requirements involving e.g., major critical production processes, new materials, new technologies, Delegation (what, why, oversight criteria)
- Co-production issues, foreign supplier arrangements requiring undue burden assessment, other authorities' involvement, validation needs, etc.
- Resource needs/constraints of all stakeholders accommodated to the greatest extent possible

The above guidelines should focus on producing quality deliverables that show an efficient and credible certification process. These and other project deliverables can be associated with the Phases in the certification process as delineated in *the FAA and Industry Guide to Product Certification*. The operating norms agreed upon between the FAA and the Applicant will establish the basis for operating under this PSP and subsequent PSCPs.

(b) OPERATING NORMS

Each FAA Directorate will establish with the Applicant, agreed, documented, operating norms. These norms will guide the timeliness and quality of deliverables and services provided by both the FAA and Applicant during the project. Operating norms should be defined to meet the needs of the Applicant and FAA consistent with agreed PSCPs.

Many factors affect the planning and management of certification projects, such as, project size and complexity, and degree of delegation. The FAA and Applicants recognize, for example, that an STC or engine project may have significantly different

resource needs and timing than a rotorcraft or large transport airplane project. The PSP and each PSCP should identify appropriate agreed operating norms since there could be different team members on different PSCPs. An agreed PSP and early pre-project communication and planning in accordance with that PSP are essential prerequisites to preparing for successful certification projects. The objective of any successful project is to meet or beat the plan. Unless compelling reasons are presented to deviate from this Guide, the operating norms for certain key deliverables should be set as low as possible within the following typical ranges:

Product Certification Process Norms

Within 2 weeks after application:

- Acknowledgment of application issued
- FAA Certification Project Notification (CPN) issued

Within 1 month after application:

- Project team identified (FAA and Applicant)
- Preliminary Type Certification Board Meeting (PTCBM) scheduled

Within 1 to 3 months after PTCBM:

- Proposed Certification Basis G-1 issue paper prepared and processing begins (stage 1)
- PSCP drafted

Within 4 to 6 months after PTCBM:

- Final Certification Basis G-1 issue paper closed.
- PSCP agreed and signed, including the mutually agreed project schedule.

Within 6 to 9 months after PTCBM:

- All issue papers closed

One month prior to scheduled TC/STC/Production Approval issuance:

- Compliance documentation submittals should be scheduled over the course of a project to be completed by this point in time. More than one month may be needed in some cases, especially when submittals are not FAA Designee approved or recommended for approval.

Additional norms may be necessary or appropriate depending upon the specific project needs. When developing a PSCP, the need to define norms should be assessed for all issues identified such as those considerations in Paragraph 2.(a.) above or other deliverables. Any major issues, design changes, or compliance requirements should result in agreed revisions to the PSCP with appropriate milestones for closure. As the project progresses other major issues may be identified. Where appropriate, issue papers and a revised PSCP will be prepared within 1 month after identification of the issue along with a plan to achieve its resolution. In such cases, the FAA will work within boundaries of their policies and public rulemaking procedures. The PSP compels the partners to

work together to understand the product architecture early enough to preclude last-minute guidance (verbal or written) new interpretations or rule escalation that would adversely affect the mutually agreed upon program goals.

(c) PHASE EVALUATION CHECKLISTS

The Phase Evaluation Checklists (Appendix VII of the *FAA and Industry Guide to Product Certification*) are tools that can be used for project management during the appropriate Phases. The FAA and Applicant Project Managers (PMs) should jointly prepare a Phase Evaluation Checklist at the close of each phase of a project. The PMs are encouraged to include the completion of the Phase Evaluation Checklist as milestones when preparing their PSCP schedule. To facilitate continuous improvement any necessary corrective actions should be implemented by the Team and the Phase Evaluation Checklists should be maintained in the official project file for future national or local program evaluation. When the evaluation identifies the need for corrective actions or improvements it should be included as a part of the Compliance Summary Document for future reference.

SIGNATORIES

The FAA and Applicant agree to the provisions of this PSP as indicated by the signature of their duly authorized representatives.

Agreed by: (This is a representative sample of possible signatories and could include others deemed appropriate to provide necessary commitments and accountability. Include Names and date)

Applicant President, CEO, or Senior VP	FAA Directorate Manager(s)
Applicant Certification Manager	FAA ACO Manager(s)
Applicant VP Quality Assurance	FAA MIO/MIDO Manager(s)
	FAA AEG Manager(s)
	FAA Standards Staff Manager(s)

APPENDIX II
PROJECT SPECIFIC CERTIFICATION PLAN
between the
FEDERAL AVIATION ADMINISTRATION
And
APPLICANT
for Product Certification

The material contained herein is an aid for preparing the Project Specific Certification Plan (PSCP). This aid is intentionally not a “boiler plate”, but allows the freedom to innovate and meet the special project needs of the Applicant and FAA. However, it is essential that the PSCP addresses the same key content areas of this aid ensuring that as written it captures the meaning and intent of this Guide. The PSCP should include elements that were not addressed in detail in the PSP and it should incorporate by reference appropriate procedures, agreements, or other elements pertinent to the project.

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SIGNATORIES

PURPOSE

The purpose of this PSCP is to define and document a product certification plan between the Aircraft Certification Service of the Federal Aviation Administration (FAA) and Applicant to expedite certification of the product under standardized procedures. The PSCP will provide the foundation from which to build mutual trust, teamwork, and efficient business practices between the FAA and Applicant during certification of the product. It is the mutual goal of all team members to meet or exceed the expectations of this agreement. It is understood that this PSCP will be executed in accordance with the PSP.

In the establishment of this PSCP, it is understood that a cooperative working relationship is required for these procedures to be effective. To implement successfully the PSCP procedures, it is understood that both the Applicant and FAA team members work in accordance with the established guidelines. The FAA team members will recognize and utilize the knowledge of the FAA Designees to the greatest extent possible and keep the Applicant's team members abreast of certification issues that may arise. The PSCP schedule will be within specified ranges agreed to in the norms of the PSP and additional milestones will be considered by the FAA and Applicant as firm commitments unless a change is agreed to. It is intended that all team members facilitate review and approval of the necessary design and production data and related compliance documents in a timely manner with the objective of bettering the PSCP wherever possible.

The PSCP is a living document. This means that if both the FAA and Applicant agree that modification to the Plan is needed, an amended Plan is drafted. The Plan will be developed to the greatest extent possible as soon as the FAA and the Applicant agree that the certification project is a viable one for which resources can be planned and committed for its completion. As the project progresses, the PSCP will be managed and maintained jointly by the FAA and Applicant's Project Managers.

EFFECTIVITY

This PSCP shall become effective upon approval by the FAA Aircraft Certification Office Manager and the Applicant's Certification or Airworthiness Manager. It will continue in effect throughout all Phases of the product certification unless it is superseded, revised, or terminated. This PSCP may be amended by mutual agreement or terminated by either party. Any change in the services furnished or other provisions of this PSCP will be formalized by an appropriate written amendment signed by both parties, which will outline the nature of the change.

PRODUCT CERTIFICATION

1. PROJECT DESCRIPTION

This section should contain a brief description of the project.

2. PROJECT SCHEDULE

Provide a detailed project schedule to identify all major milestones, including appropriate project management reviews and any required scheduled deliverables such as those listed below. These milestones need to be established in accordance with the operating norms identified in the PSP. Every effort must be made to establish realistic schedules considering both the FAA and

Applicant's total workloads and other resource commitments. Design, production, operational, and maintenance aspects as well as foreign authority validation requirements should be planned for and considered. All issue papers should also be included with a resolution plan and prioritization of the issues to be resolved. The schedule should also adhere to the Phases and process flow identified in *The FAA and Industry Guide to Product Certification*. This would include identifying in the schedule all appropriate deliverables for the project such as, but not limited to, those shown below:

Deliverables:

- Familiarization and board meeting(s) minutes
- Draft and final PSCP
- Product Certification team and management status reviews
- Application for Type/Production Certification
- Letter of application acknowledgment
- Certification Project Notification
- Type Certification basis (documented in G-1 issue paper)
- Issue papers, special conditions, exemptions, equivalent safety findings, undue burden assessments, etc. (including resolution plan and schedule)
- Issues tracking list
- Compliance check list
- Conformity procedures
- Type Inspection Authorizations and Conformity requests
- Delegation plan
- Compliance data submittals (e.g., test plans/reports, analyses.)
- Type Inspection Report (TIR)
- Installation and Operating instructions
- Flight Manual
- Structural Repair Manual
- Instructions for Continued Airworthiness
- Continued Airworthiness management plan
- Type Design approvals (TC/STC and amendments)
- Type Certificate Data Sheet (TCDS)
- Production approvals/certification
- Production Limitation Record (PLR)
- Airworthiness Certifications
- Compliance Summary Document
- Phase Evaluation Checklists

3. CERTIFICATION BASIS

The Certification Basis identifies the applicable standards to which the Applicant must show compliance. It also includes the need for special conditions, exemptions, and equivalent safety findings, if any. An issues list should be included to highlight those special requirements needing resolution and other areas which may be significant, even though they may not warrant a special condition, exemption, or equivalent safety finding.

4. MEANS OF COMPLIANCE

This section of the PSCP will summarize the applicable FAR paragraph by paragraph with the agreed means of compliance that will be met for type certification. The PSCP will be

comprehensive and identify all compliance requirements. The PSCP will identify which compliance items are delegated or not and why, when test plans, conformity inspections, test or analytic reports are to be submitted and approved, and who has primary responsibility for the deliverables to both the FAA and the Applicant.

5. COMMUNICATION AND COORDINATION

This section describes the communication and coordination paths between the FAA, the Applicant, and, where appropriate, co-producers, suppliers, other Civil Aviation Authorities, etc. Focal points and their roles should be clearly identified and kept to a minimum to avoid conflict. The Applicant and the FAA PMs must be kept informed of all critical communications. This does not preclude any team member from communicating with any other member, but they need to assure the PMs are informed. Thus, critical links should be defined to ensure roles and responsibilities are clear to define accountable team members responsible for deliverables and to facilitate conflict resolution. Team members should include, but are not limited to the following:

- Applicant's Project Manager
- FAA Project Manager
- Applicant's Project Quality Manager
- FAA Engineers and Designees
- FAA Aviation Safety Inspectors and Designees
- FAA Flight Test Pilots and Designees
- FAA Standards Staff Project Officer
- FAA Flight Standards AEG
- FAA Chief Scientific and Technical Advisors (CSTA) (as required)
- Other authorities (for overseas assistance on witnessing or conformities or when type certificate validation is anticipated)
- FAA and Applicant's Legal (consultation as required)

6. DELEGATION

The oversight and documentation requirements of Engineers, Aviation Safety Inspectors, and Flight Test Pilot Designees should be identified and agreed to in this section. This should also include reliance on existing delegation authorization agreements or working procedures generated between the FAA, Applicant, and other Authorities, as appropriate, that should already be specified in the PSP.

As outlined in Appendix VIII, Delegation Planning, the PSCP should be specific as to what aspects of the project are delegated and what if any stipulations, coordination, or limitations are placed upon that delegation. Delegation should be applied to the maximum extent practicable with appropriate safeguards and oversight as defined in the FAA's delegation management process policy and this PSCP. Because of the close integration of the design, production, and continued airworthiness processes, it is necessary to have all stakeholders agree on the procedures and degree of delegation and oversight to be used in the project.

To facilitate certification, the FAA Designee system will be utilized to the greatest extent possible. Both the FAA and Applicant agree to foster an environment where open communication between the Designees and company management, and between the Designees and their FAA counterparts is standard practice. The Applicant agrees to create a working environment where Designees can make compliance and conformity findings free from undue

pressure and with the support and knowledge of the FAA. It is understood by FAA personnel and Designees that their objective is to find compliance and conformity with the regulations and not to dictate design. The FAA and Applicant agree to manage all Designee activity within the regulations and policy regarding Designee appointment, procedures, and oversight.

7. TESTING PLAN

(a.) GENERAL

This section should contain the requirements for the planning, preparation, and conduct of FAA required testing. The Applicant's product development tests do not require FAA involvement. However, FAA certification credit will not be granted for development tests unless arrangements are made and agreed upon prior to testing. These pretest arrangements must be coordinated with appropriate FAA Engineering, Flight Test Pilots, and Aviation Safety Inspectors with sufficient lead-time to ensure all aspects necessary for the desired FAA credit toward certification are achieved. This is particularly important for critical parts and components or when new technology, new materials or new processes are involved which should necessitate a greater depth of review and conformity inspection. FAA personnel will witness all ground and flight tests intended for certification credit that are not specifically delegated to Designees prior to testing. Delegation should be used wherever possible. Who will witness which tests should be planned for and documented in advance in the Delegation section of the PSCP and the compliance checklist. When the FAA will witness tests, they will meet the project schedule as agreed to the greatest extent possible. The Applicant should keep the FAA informed of test schedules and changes should be negotiated with affected team members.

The following items are required prior to testing:

- Drawings and specifications sufficiently describing the design and production of the test article;
- FAA approved test plan, including a description and/or drawing of the test set-up, instrumentation, calibration requirements, etc.;
- The Applicant's completed inspections and Statement of Conformity, FAA Form 8130-9;
- FAA Form 8120-10, Conformity Request;
- FAA Form 8100-1, Conformity Report, indicating the results of the Conformity Inspection including disposition of deviations by FAA Engineering or their Designee if so delegated. (A copy must be available for the official test witnessing.)

When specifically delegated as identified in the Delegation section of the PSCP, Designees can submit fully approved test plans with FAA Form 8110-3 and FAA Form 8120-10 requests for conformity inspection, where needed, and disposition conformity deviations. All instrumentation that is required for an FAA certification test will require calibration criteria to be agreed with the accountable FAA Engineering team members or their Designee, if so delegated, and to be documented in each test plan or in generic calibration procedures documents as appropriate.

(b.) FLIGHT TEST

This section should contain any unique requirements for the planning, preparation, and conduct of FAA required flight testing. Flight tests are conducted in accordance with the requirements of the TIA. The TIA also authorizes conformity and airworthiness inspections and flight tests to determine compliance to the certification requirements. It is important to ensure close pre-flight

test coordination with the FAA, including FAA discipline managers, Aviation Safety Inspectors, and the flight test pilots in accordance with FAA policy. The PSCP will provide the clarity to ensure:

- Conducting of conformity inspections early in the project.
- Timely, high-quality documentation.
- Pertinent Applicant flight tests are completed and results reported prior to FAA flight test.
- Coordination within FAA for concurrent Product Certification and AEG flight testing.
- Aircraft conformity, airworthiness certification, and identification of operating limitations.
- Detailed scheduling and the use of delegation will be specified.
- Consideration of flight test risk management in conjunction with entire team

(c.) CONFORMITY

Federal Aviation Regulations 21.33 and 21.53 require the Applicant to make all inspections necessary to establish the conformity of the product being presented to the Administrator for certification and to submit a Statement of Conformity to the FAA on FAA Form 8130-9. The FAA will then determine as far in advance as possible, which Statements of Conformity it will accept without verification and which will require FAA conformity inspections. Some factors affecting this would be the criticality of the part/component, whether there is new material, new process, or technology involved, and/or whether there is an existing quality control or inspection system that has demonstrated its ability to adequately assure conformity. This section of the PSCP should describe what conformities will be needed, and the FAA's and Applicant's roles in the conformity inspection process for the project. This should be consistent with the Delegation section of the PSCP. It should state, which conformity inspections will be conducted, which are delegated to Designees, and how deviations will be dispositioned. A system should be established to:

- Maintain custody of conformed articles destined for an official FAA test.
- Notify FAA Aviation Safety Inspector of any changes to ground/flight test articles after conformity inspection has been completed.
- Ensure requests are not duplicated and the timely and efficient conduct of conformities and dispositioning of deviations occur.
- Identify who issues the requests, conducts the inspections, and dispositions the deviations.
- Provide for the completion of inspection, documentation, and dispositioning of deviations or changes before tests are conducted.
- Provide for timely conduct of conformity inspection at non-US suppliers.

Conformity inspections will be performed by FAA Aviation Safety Inspectors or their Designees. These inspections will be performed in response to FAA Form 8120-10 (request for conformity) issued by the FAA or their Designees. The Applicant, FAA Engineer and FAA Aviation Safety Inspector, along with their respective Designees will agree upon and document a plan by which the Designees from all disciplines can work directly together to perform conformity.

8. COMPLIANCE DOCUMENTATION

This section should describe the procedures for submittal and processing of compliance documentation. The PSCP should identify what data will be submitted and by whom. It should account for all data (not just drawings) pertinent to defining the type design, including manufacturing specifications, and to conducting the showings of compliance required for FAA certification. This would include, but is not limited to, test plans, test reports, test setup schematics, test instrumentation, drawings, analyses (e.g., stress, safety, damage tolerance), material or process specifications, manuals. The Applicant will submit one copy of the data with each FAA Form 8110-3. Data submitted without an FAA Form 8110-3 will require FAA Engineering review and approval which may add to the processing time. This should be taken into account when developing the project schedule.

The FAA and Applicant will agree and document the amount of time needed for review, disposition, and approval or acceptance of the data, as appropriate. Typically this may be up to four (4) weeks for Designee recommended approval data. Some submittals due to size or complexity may require more time such as Instructions for Continued Airworthiness and safety analyses. The timing and process for such submittals should be agreed between the FAA and Applicant and documented in the PSCP. Data submittals that are Designee approved are reviewed only for Designee oversight purposes, whereas data that is recommended for approval must be reviewed for those aspects that the Designee could not or did not evaluate. Hence, communication and pre-planning for data submittal and consideration of the level of delegation between Designees and FAA is essential, and encouraged to ensure timely and efficient data approval.

PRODUCTION CERTIFICATION

This section of the PSCP should outline production quality project issues and how they will be managed to permit early approval of the production system. The goal is to have concurrent design and production approval issuance. The primary focal points for the production approval process are the FAA Principal Aviation Safety Inspector and the Applicant's Project Quality Manager. Production approval is granted after the Applicant has demonstrated, and the FAA has verified, that the Applicant has developed and is capable of maintaining a quality assurance system. This system will assure that only products and parts conforming to the design data are released for commercial service use. For existing Production Approval Holders (PAH) who will be adding a new product to an existing approved production system, issues to be considered should include:

- Approval of new materials, new processes, new suppliers, co-production agreements, new technologies or new applications of existing technology, etc.
- FAA undue burden assessment of non-US suppliers and/or co-producers
- Instructions for assembly and test of the final product to assure conformance
- Coordination with Engineering on production Material Review Board requirements and integrating engineering and production Certificate Management activities
- Controls to be placed on production as a result of design Airworthiness Limitations or the criticality of parts and components
- Configuration control requirements

- Any other reviews necessary to assure that a conforming product will be produced under the FAA approved quality inspection system

In addition, for Applicants who do not hold an existing production approval for the type of product which is being certificated under this PSCP, the Applicant must demonstrate, to the satisfaction of the FAA, the existence of and compliance to a quality system which satisfies ALL the requirements of the applicable subparts of FAR Part 21.

POST CERTIFICATION REQUIREMENTS

1. COMPLIANCE SUMMARY DOCUMENT

The Applicant and FAA PMs will prepare a summary at the end of each certification project to capture and retain the corporate knowledge learned during the project. The summary should capture only unique data, precedent issues (e.g., regulatory, policy, or technical), and both the Applicant and FAA perspectives, feedback, and lessons learned. This document is not to be a complete history of the project, but should only document those areas out of the ordinary that require process improvements, affect rule/policy making, etc. in order to provide continuous improvement of the FAA and Applicant's working relationship. This summary plus the phase evaluation checklists should be evaluated by the team and appropriate changes to the PSP or future PSCPs should be made. When the team identifies where changes to the Guide would be beneficial those should be referred to AIR-100 for consideration.

2. INSTRUCTIONS FOR CONTINUED AIRWORTHINESS (ICA)

Except for the Airworthiness Limitations, the Instructions for Continued Airworthiness may be incomplete at the time of Type Certification. However, a program must be in place to insure they are complete prior to issuance of the standard airworthiness certificate or delivery of the first aircraft.

3. CONTINUED AIRWORTHINESS MANAGEMENT

The details of how the FAA and Applicant will handle continued airworthiness issues, after delivery of the first aircraft or issuance of the standard airworthiness certificate, will be agreed and documented. This will be consistent with the FAR and FAA policy on certificate management, reporting, self-disclosure and the requirements for implementing corrective actions in both the type design and production systems.

PROJECT ISSUE PLANNING

The Applicant and FAA PMs will jointly maintain a project issues tracking list. This list, at a minimum, should include issues identified as potential “show-stoppers.” The list will identify the issue, the plan and milestones for their resolution, as well as the primary responsible team member for assuring the closure of each issue within the operating norms of the project schedule. The PMs will continually manage those issues to assure adequate progress is being made on their resolution so as to not adversely affect the project schedule. The PMs will identify to their management and other appropriate team members, concerns and problems with open issues and

seek early resolution of any items not proceeding according to the agreed PSCP. A specific issue resolution process example is shown in the PSP. (Appendix I of *The FAA and Industry Guide to Product Certification*) The process as defined in a PSP may be incorporated by reference in the PSCP or a specific process could be included here to meet any unique needs of the particular project.

CONTINUOUS IMPROVEMENT

1. GENERAL

Continuous improvement applies to all elements of the PSP, the PSCP, and all Phases of projects. This can be accomplished by applying the “Criteria for Success” that are defined in the Guide. The FAA and Applicant's Team must provide proper levels of technical project and management leadership with frequent reviews to ensure all are aware of project status, significant issues, and that commitments are met. The Team should always document clear time frames, expectations, agreements, schedules, milestones, action item assignments, compliance/conformance submittals and approvals deadlines, and decisions. This will help foster an environment of mutual trust, confidentiality, and empowerment.

2. PERFORMANCE MEASURES

(a.) GENERAL

The performance measures for the project will be provided in this section. It defines the agreed norms, and how they will be accomplished in accordance with the PSP elements in the Performance Measurement section. Other factors could also be considered for performance measures in addition to deliverables listed in the PROJECT SCHEDULE section above. These could include, where appropriate, interpersonal relationship measures and leadership principles.

(b.) OPERATING NORMS

Each FAA Directorate will establish with the Applicant, agreed, documented, operating norms consistent with the PSP. Those norms will guide the timeliness and quality of products and services delivered by both the FAA and Applicant during the conduct of the project. Examples of metrics for measuring performance could include parameters such as meeting schedule milestones, quality of submittals, issues resolved, task re-accomplishment and performance against other operating norms.

(c.) PHASE EVALUATION CHECKLISTS

The Phase Evaluation Checklists (Appendix VII of this Guide) are tools used for project management during the appropriate Phases. The FAA and Applicant Project Managers (PMs) should jointly prepare a Phase Evaluation Checklist at the close of appropriate Phases of a project. These forms should be continuously evaluated by the Applicant/FAA team for immediate process improvement. The PMs are encouraged to include the completion of the Phase Evaluation Checklists as milestones when preparing their PSCP schedule. During initial implementation, a FAA/AIA/GAMA Product Certification Continuous Improvement Steering Committee will review all project evaluation feedback on current projects and recommend Guide changes for continuous improvement. To facilitate continuous improvement any necessary corrective actions should be implemented by the Team and the Phase Evaluation Checklists should be maintained in the official project file for future national or local program evaluation.

When the evaluation identifies the need for corrective actions or improvements it should be included as a part of the Compliance Summary Document for future reference.

SIGNATORIES

The FAA and Applicant agree to the provisions of this PSCP as indicated by the signature of their duly authorized representatives.

Agreed by: (This is a representative sample of possible signatories and could include others deemed appropriate to provide necessary commitments and accountability. Include Names and date)

Applicant Certification Manager

FAA ACO Manager

Applicant Project Manager

FAA Project Manager

Applicant Project Quality Manager

FAA MIDO Manager(s)

FAA Designee(s)

FAA Principal Inspector

FAA Standards Staff Manager

FAA Standards Staff Project Officer

FAA AEG Inspector(s)

APPENDIX III

AVIONICS CERTIFICATION PROCESS IMPROVEMENT

The material contained herein is an aid for applying the certification phases and concepts discussed in *The FAA and Industry Guide to Product Certification* to the avionics approval process. The basic structure and premise of the processes described may be applied to avionics and non-avionics appliances. This material should be used by the FAA and the applicants of avionics equipment to obtain design, production, and installation approvals.

Scope

The avionics Certification Process Improvement (CPI) focuses on special issues typically faced by applicants and the FAA during the avionics approval process and provides information regarding the most efficient path for various types of avionics approvals. The approval process may include either Technical Standard Order (TSO) approval or installation approval via Type Certificate (TC) or Supplemental Type Certificate (STC), or both. The process varies depending on the applicability of TSO standards and issues that arise regarding the installation of the equipment.

The basic structure and premise of the processes described may be applied to non-avionics appliances as well. It should be noted, however, that depending on the type of product, the applicability will vary. The application of this material to appliances other than avionics should be coordinated with the FAA. For the purposes of this document, it should be noted the term *Approval* includes certifications, authorizations, and other forms of approval.

Purpose

This document complements *The FAA and Industry Guide to Product Certification*, which contains a description of the purpose and vision of the improved certification process. It is expected that the CPI principles of up-front planning, project management, and documenting the certification process and working relationship are applicable to all applicants. This extends from large Type and Production Certificate applicants to those applying for avionics approval through the TSO approval process. When the FAA and avionics applicants engage in the CPI process *The FAA and Industry Guide to Product Certification*, intended to be the overarching guide to using CPI, should be used in conjunction with this document.

General

The below listed items are issues that should be addressed when developing a new avionics product. This will provide the FAA and the applicant a clear understanding of the best processes to use in the certification of these systems.

- Project Operational Concept (including background, operational purpose, justification, project maturity and user interest)
- Project benefits, e.g. safety enhancements and efficiency
- Anticipated constraints of the project and equipment
- Project specific Operation Procedures (including new phraseology, task analysis, contingency and emergency procedures)
- Human factors issues (including display requirements, crew training, additional workload demands, and crew resource management)
- Equipment compatibility issues
- Technical requirements (including Minimum Operational Performance Standards (MOPS), bench and flight tests, and Instructions for Continued Airworthiness)
- Operational safety assessment (including a proposed target level of safety and failure mode analysis)

- Operational test and evaluation plan
- Potential Flight Standards approval issues, i.e. Operations, Maintenance, Aircraft Evaluation Group (AEG), etc.
- Need for Flight Procedures coordination, i.e. special approaches
- Certification basis and means of compliance
- Project planning and management (including type design and production issues)
- Significant issues, issues papers, exemptions, special conditions, equivalent safety finding proposals, Airworthiness Limitations, and applicable in-service maintenance/operational history
- Clear, up-front, pass/fail criteria, wherever possible
- Critical assumptions, installation interface issues, and data for Airworthiness Limitations
- Conformity requirements involving major critical production processes, new materials, new technologies, delegation (what, why, oversight criteria)
- Co-production issues, foreign supplier arrangements requiring undue burden assessment, other authorities' involvement, validation needs, etc.
- Resource needs/constraints of all stakeholders accommodated to the greatest extent possible
- Equipment and installation approval processes for other countries that require FAA resources
- Identification of the equipment manufacturer and the certification applicant's roles, responsibilities, and communication channels with the FAA when the manufacturer and the applicant are not the same

Expanded Use of Approved Model List

For avionics equipment that may be installed similarly on several different aircraft models, one certification approach to consider for certain applications is the generic STC approval process. The goal of the generic STC approval process is to develop installation instructions that can be used to install avionics equipment in several different aircraft models. This concept reduces the number of follow-on approvals that must be obtained by the avionics installers.

One way to do this is for the manufacturer to develop installation instructions that incorporate both generalized installation guidelines and specific instructions. The generalized installation guidelines could reference standard practices used in the installation, for example aircraft electrical wire selection as specified in Advisory Circular 43.13-1B. The specific installation instructions would address more critical elements of the installation, for example guidance about antenna placement. These instructions should include procedures for determining the placement, installation, and post installation checkout of the avionics equipment. For example, post installation checkout procedures could include the following: electrical load analysis, equipment mounting/wiring testing/verification, Electro-Magnetic Interference (EMI)/Radio Frequency Interference (RFI) test, compass interference test, etc. Assistance from an avionics repair station and the local FAA Flight Standards Inspection Office should be obtained in developing and reviewing these instructions.

It is important that the applicant and the FAA Aircraft Certification Office (ACO) agree to the use of this process early in a project. Together they should review the installation instructions to

verify their applicability for the aircraft models requested. The resulting STC, with its associated approved model list, would greatly reduce the need for the installers to request a field approval. This will save valuable resources for both industry and the FAA.

Non-TSO Avionics

When a Technical Standard Order does not exist for a specific avionics system, the system may be certified in accordance with the airframe/engine regulations. The PSCP associated with this approval would identify certification requirements for both the avionics system and the installation of that system. The manufacturer may elect to develop the PSCP in such a way that would allow the format of the PSCP to be transferred to another applicant. This would allow the manufacturer to develop avionics systems for which a TSO does not exist and without a specific installation in mind. The manufacturer would develop the product to meet requirements documented in the PSCP, which would include intended functions, software level, and environmental test requirements. The manufacturer would be responsible for showing that the avionics system performs its intended function and meets its specified software and environmental requirements. This PSCP would model the relevant portions of the TSO PSCP. The manufacturer would have the option of continuing the STC process or transferring the PSCP to the installation company and allowing them to finish the STC process.

Partnership for Safety Plans and Project Specific Certification Plans

To come to an early and clear agreement on the certification process, the first plan the FAA and applicant develop is the PSP (Appendix I and IV). An example of this agreement between the FAA and an avionics applicant is shown in Appendix IV. It defines generic procedures to plan for product approval, establishes the general expectations or operating norms, and identifies deliverables. The PSP also defines the discipline and methodology to be used in planning and administering subsequent specific approval projects. Examples of content include generic processes and procedures for use of designees, conformity inspections, communication, issue resolution, and generic metrics for measuring project progress.

Depending on the specifics of a project, two PSCPs may be recommended. The first PSCP is the one that covers the Technical Standard Order Authorization (TSOA) aspects of a project. The PSCP in Appendix V is for applicants wanting approval of an avionics appliance through TSO procedures outlined in Title 14 of the Code of Federal Regulations, CFR Part 21, Subpart O. This PSCP covers the design approval phase as well as the production phase of obtaining a TSOA. The PSCP described in Appendix VI covers the installation approval phase of a project and is tailored for installation of avionics appliances. There may be cases when a Line Replaceable Unit (LRU) or some form of interface unit is required for an installation when there is not an applicable TSO but still requires qualification testing. These types of LRUs are often approved during the installation phase; therefore, in this case the certification aspects may be covered by the installation PSCP. In the case where an applicant is seeking qualification of an LRU (TSO not applicable) without an installation, the TSOA PSCP should be used and revised accordingly.

The primary reason for not combining the two PSCPs is the approval requirements and stakeholders involved in obtaining a TSOA versus an installation approval are quite different.

Additionally, the two approvals often involve different applicants. Once a PSCP is developed for the installation of a specific avionics appliance, it may be used as a basis for an installation PSCP by another applicant with the same installation.

These PSCPs are designed to be used as project management tools providing milestones, performance measures, and information unique to obtaining a TSOA or installation approval for a certification project. It takes the generic principles and procedures outlined in the PSP and applies them to specific projects.

PSCP Selection

It should be recognized that an avionics approval (depending on the project specifics) may take the form of one of several processes. The decision tree shown in Figure 1 is an aid to determine which of the two basic PSCPs to use for a particular avionics approval.

1) TSOA (correlates to TSO PSCP block 8 in Figure 1)

TSOA is a design and production approval based on meeting FAA criteria, which is published in a TSO. It is granted after the ACO and Manufacturing Inspection District Office (MIDO) review and concur with an applicant's statement of conformance to the requirements of the TSO. It does not include installation approval.

2) First-of-Type STC and basis for LRU PMA if seeking PMA (correlates to Installation PSCP block 11 in Figure 1)

STC is an aircraft modification and installation approval based on the applicant showing that the modification and installation meets the minimum airworthiness requirements.

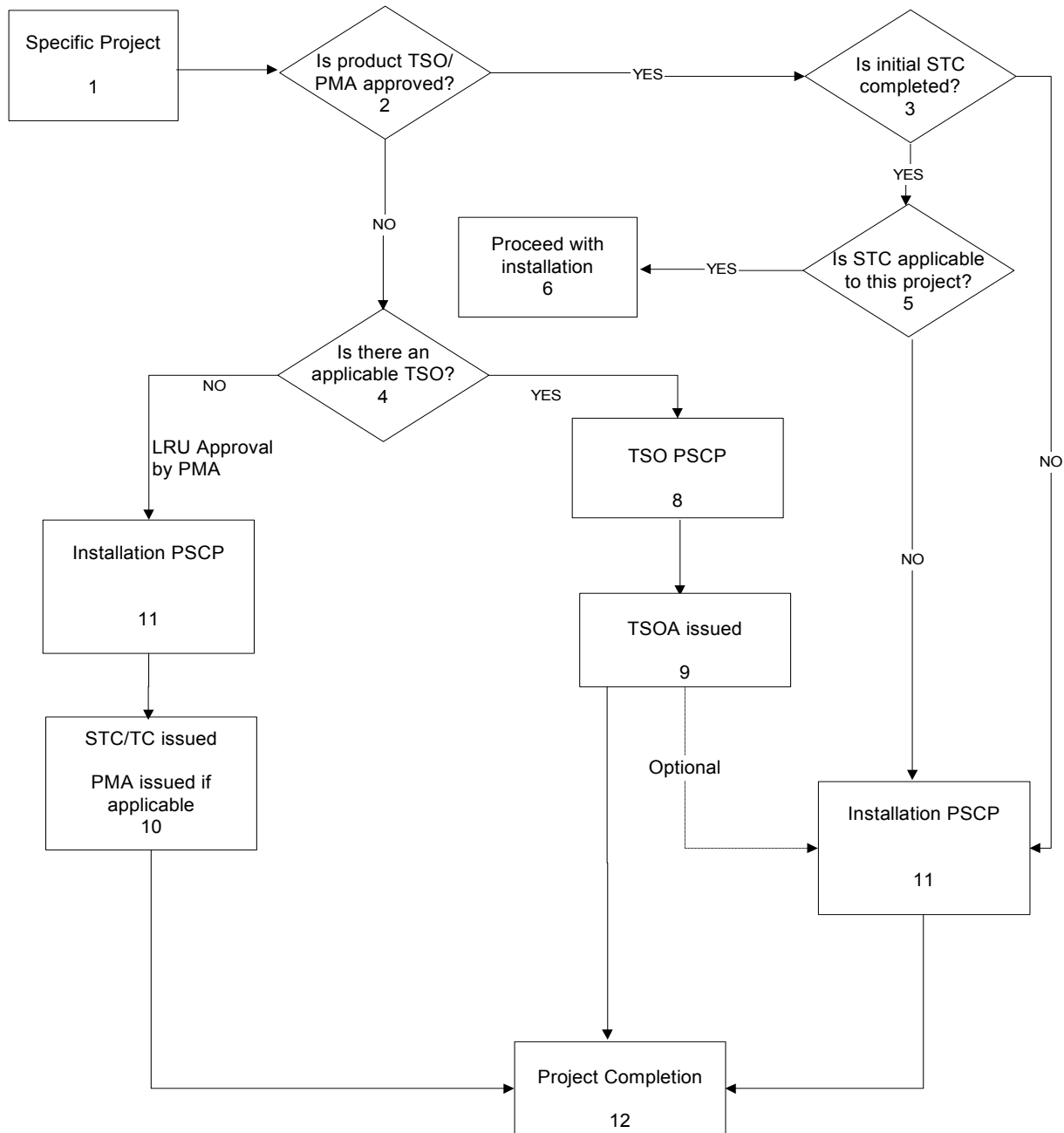
PMA is a design and production approval that can be based on the prior approved design and installation data such as an STC. The installation approval is documented by an STC. Consequently, the PMA provides eligibility for installation only for the aircraft specified on the STC.

3) Follow-on STC and basis for LRU PMA if seeking PMA (correlates to Installation PSCP block 11 in Figure 1)

STC is an aircraft modification and installation approval based on the applicant showing that the modification and installation meets the minimum airworthiness requirements.

PMA is a design and production approval that can be based on the prior approved design and installation data such as an STC. The installation approval is documented by an STC. Consequently, the PMA provides eligibility for installation only for the aircraft specified on the STC.

Figure 1. Project Specific Certification Plan Selection Decision Process



4) “Follow-on” Field Approval via Form 337 (Does not require a PSCP)

A “follow-on” Field Approval is an installation approval based on a previously approved STC. The level of similarity between the candidate installation and the STC upon which the data approval is based depends on the level of complexity of the installation. There can be cases where the interface complexity is such that the data approval may rise to the level of an STC even though the product being installed is the same as the original installation. In these cases an STC application would be needed. For those less complex installations the data utilized may come from any number of sources in addition to the previously approved data. The inspector may elect to use the previously approved STC and then field approve the remaining data necessary for the installation. The inspector could also utilize Designated Engineering Representative (DER) data plus the STC data and field approve any remaining elements of the alteration not covered by these sources. (When using STC data as the basis for any approval, written permission must be obtained from the holder of the STC.)

The applicant will present the FAA Form 337 completed in accordance with Advisory Circular 43-9. The inspector will evaluate the data and if satisfactory will sign Block 3 of the form indicating data approval. The form will then be returned to the applicant and the alteration can be accomplished. The flight manual supplement is signed by the ACO unless a handbook bulletin or an Advisory Circular specifically authorizes the inspector to approve it.

Production approvals (TSOA and PMA) always require an FAA approved production system. This means the MIDO has evaluated the production quality system and found that it meets the requirements. This evaluation and finding of compliance is accomplished before the TSOA or PMA is granted and is included within blocks 9 and 10 in Figure 1, although it is not shown.

Note that if both installation and operational approvals are desired for a TSO product, both the TSO PSCP and installation PSCP are needed as depicted by the “optional” flow out of block 9.

PHASES OF AVIONICS APPROVAL

The following discussion is an interpretation of the CPI phases as they apply to the approval of avionics equipment.

In general, tasks, required information, deliverables, and additional criteria for success for the five CPI Phases apply also to the avionics approval process. Deliverables specific to the avionics certification process are listed in the following descriptions of the phases as they apply to avionics projects.

Phase I: Conceptual Design

Because avionics designs often introduce new technology, information about new designs, materials, processes, and so forth, is required. Also, proposed certification bases and means of compliance are especially important for advanced designs and are part of the required information. Any new avionics approval must consider the product design and production

approval as well as the operational and installation approvals. The applicant needs to discuss these issues with the appropriate FAA counterparts. This normally will involve staff within the ACO, MIDO, and Flight Standards District Office (FSDO) as well as staff within the appropriate Certification Directorate, Division, or Flight Standards Division.

The FAA and the applicant should determine the approval process path using the decision tree described in the next section. It should be clearly understood that the FAA's objective is to find compliance with the regulations and not to dictate design.

Deliverables from Phase I include:

- Initial Safety Assessment
- Establishment of the FAA and applicant project certification team
- Draft critical issues list and mitigation plans
- List of relevant software policy material and preliminary compliance plans (preliminary Plan for Software Aspects of Certification (PSAC))
- List of relevant human factors policy material and preliminary compliance plans
- Consensus regarding which PSCP(s) will be used
- Determination of need for any TSO deviations
- Draft PSCP(s)

Phase II: Requirements Definition

Efforts in this phase clarify the product definition and the associated risks, and they conclude with a mutual commitment to move forward with product approval. Specific regulatory requirements (certification basis, if applicable), means of compliance, and critical issues are revised. The PSCP is refined.

Deliverables from Phase II include:

- Safety Assessment
- Refined PSCP(s)
- Refined critical issues list and mitigation plans
- Applicant notification of certification project initiation
- FAA acknowledgment of project initiation
- Certification Project Notification, if applicable (FAA internal step)

The refined PSCPs should now include project milestones and related events such as program status reviews. Definition of project issues such as means of compliance including special conditions, equivalent safety findings, deviations, exemptions, and so forth, should be complete. However, as a project progresses to later phases, other major issues may be identified. Unanticipated issues should be resolved as quickly as possible; developing a plan to achieve resolution fits the intent of CPI.

Follow-on Field Approval issues should be identified and coordinated with the appropriate contacts from the FAA's Flight Standards Division at this point.

Phase III: Compliance Planning

Deliverables from Phase III include:

- Signed PSCP (See Appendices V & VI)
- Project schedule with established FAA/applicant milestones for completion of analyses, test plan submission, TIA, conformities, flight test, AEG evaluations
- Updated critical issues list and resolution plan
- Compliance Check List
- Defined delegations and oversight criteria
- Resource requirements
- Conformity procedures
- Refined operational and installation issues

Phase IV: Implementation

Deliverables from Phase IV include:

- Completed test plans/reports, conformity requests, inspections, and compliance documentation
- Compliance and conformance findings
- TSO/JTSO required data submittal
- Quality Control System Manual
- Issue Papers, Exemptions, Equivalent Safety Findings
- Technical Standard Order Authorization
- Instructions for Continued Airworthiness
- Issued Supplemental Type Certificate

Phase V: Post Certification

Deliverables from Phase V include:

Project Closure

- Project Lessons Learned
- Revisions to PSP resulting from lessons learned
- Project Evaluation Form(s)

Continued Airworthiness

- Approval of design changes

- Applicant's submittal of reporting of failures, malfunctions, and defects in accordance with 14 CFR Part 21, § 21.3
- FAA review of data submitted in support of 14 CFR Part 21, § 21.3
- Applicant's development of service bulletins or other service related documents, as applicable
- FAA response to applicant regarding service related issues
- FAA issuance of airworthiness directives, as applicable
- FAA notification to other civil aviation authorities of service related issues

ROLES AND RESPONSIBILITIES

General roles and responsibilities for each of the partnership stakeholders are presented in *The FAA and Industry Guide to Product Certification*. These principles of teamwork, communication, and accountability apply equally to the avionics approval process. In some cases, specific roles and responsibilities may be somewhat different for avionics approval and are denoted in the appropriate sections.

FAA and Applicant Management

The applicant and the FAA work to establish a PSP to reach a clear common understanding of their respective responsibilities for the design and production definition and the approval requirements. The respective managements provide leadership and resources to product approval teams through the Project Managers (PM) in order to resolve issues and accomplish the project. The management has ultimate responsibility through the product approval team for the quality of compliance finding work, standard application of regulatory compliance policy and procedures, and the timely, efficient completion of the product approval projects.

It is important to ensure that appropriate managers provide the commitment necessary to accomplish the approval goals. For projects such as advanced avionics, it is essential that FAA management in the Flight Standards Division support the process because of the important reliance on operational and installation issues. Within Aircraft Certification, the Aircraft Engineering Division will play an important role in the process.

FAA and Applicant Project Managers

The FAA, designees, and applicant's Project Managers are the principal focal points for the project. They coordinate and direct the certification team's effort and ensure things are kept moving to achieve the product approval objectives. The PMs ensure the right people from the FAA and applicant are involved in the project. The PMs develop and maintain the PSCP (See Appendices V and VI). The PMs ensure that the Product Certification Project team is aware of design features, proposed means of compliance, new materials, new production processes, co-production or foreign supplier issues, and other critical issues for timely resolution. The PMs ensure effective communication flow and quality documentation among specialists, FAA offices, and the applicant. The PMs are also responsible for coordinating new design features with the responsible FAA offices, participating in the development of new project-specific policy safety issues, and coordinating technical decisions and regulatory issues with their respective team members.

FAA and Applicant Project Engineers

The FAA engineers, as assigned for appropriate disciplines, are the principal contacts for the applicant's engineers. Their activity is always in coordination with the FAA's and the applicant's Project Managers and follows the agreed PSCP. The engineers and Designees understand the technical details of the project, application of applicable rules and policy, and are responsible for the majority of the compliance findings associated with the project.

Directorate Standards Staff

The directorate Standards Staff provides the certification team with clear and timely regulatory and policy guidance specific to the project. The Project Officer is the focal point within the accountable project directorate for that policy. The directorate ensures timely support of the project regulatory and policy development for installation of new systems. The directorate provides guidance on standardized application of rules and policy. The directorate ensures that last minute changes in policy are applied to the applicant's products only when critical new safety issues are identified, that is, the potential for an accident or service difficulty sufficient to warrant Airworthiness Directive action if the product were in service.

Aircraft Engineering Division

The Aircraft Engineering Division provides the certification team with clear and timely TSO regulatory and policy guidance specific to the project. The Avionics Systems Branch within that Division approves all TSO deviations. That branch also ensures timely response to requests for TSO deviations. The Avionics Systems Branch also provides guidance on standardized application of rules and policy for avionics related issues.

FAA Manufacturing Inspection

The FAA Aviation Safety Inspectors provide consultation and advice on production processes proposed in the design. They conduct and oversee, through designees, a variety of conformity inspections and evaluations of aircraft airworthiness, and they issue airworthiness certificates or other approvals. They conduct evaluations of the manufacturer's quality and production systems for eventual production approval.

FAA Chief Scientific and Technical Advisor

The Chief Scientific and Technical Advisors (CSTAs) play a technical leadership role within the FAA and with industry in the design and development of aircraft and in the application of regulatory policies and practices for certification of state-of-the-art technology. CSTAs in disciplines pertinent to Avionics Approvals are: Flight Deck Human Factors; Aircraft Computer Software; Flight Management; Advanced Avionics/Electrical; Electromagnetic Interference; and Aeronautical Communications.

CSTAs provide professional technical guidance, advice, and assistance in their discipline to the certification team on issues that require precedent setting means of compliance relating to new or

complex technology and technical specialties. Technical areas specific to avionics equipment approval that require early involvement by specialists include software and human factors.

FAA Aircraft Evaluation Group

The FAA Aircraft Evaluation Group (AEG) provides a link to applicable Flight Standards Service technical services. The AEG serves as the focal point for all Flight Standards interests in the approval process. They Flight Standard personnel assist engineers in determining that means of compliance meet operations and maintenance requirements. They work with the Flight Standards Flight Technologies and Procedures Division to ensure that requirements and policies affecting new avionics equipment are fully coordinated with the applicant.

FAA Flight Technologies and Procedures Division

The FAA Flight Technologies and Procedures Division (AFS-400) is the principal organization in the Flight Standards Service that develops FAA requirements and policies for the operational certification, implementation, and approval of advanced CNS technology. They participate in a “hands-on” manner with the aviation community in the testing, prototyping, research, engineering, and development of new flight technologies and procedures. AFS-400 interfaces daily with numerous other government and industry partners and stakeholders on national and international levels to achieve the introduction of new CNS technology into global all weather operating environments.

APPENDIX IV

AVIONICS PARTNERSHIP FOR SAFETY PLAN

between the

FEDERAL AVIATION ADMINISTRATION

and

APPLICANT

The material contained herein is an aid for constructing a Partnership for Safety Plan (PSP) between the FAA and avionics equipment applicants. This aid is intentionally not a “boilerplate,” but it allows the freedom to innovate and meet the needs of the applicant and the FAA. However, it is essential that the PSP addresses the same key content areas of this aid ensuring that, as written, it captures the meaning and intent of this guide.

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PURPOSE

The purpose of this Partnership for Safety Plan (PSP) is to define a working relationship between the Aircraft Certification Service of the Federal Aviation Administration (FAA) and the applicant. It provides the foundation from which to build mutual trust, leadership, teamwork, and efficient business practices.

The scope of this PSP is intended to cover the working relationship between the FAA and an applicant seeking FAA approval for avionics equipment. The applicant may be either an avionics manufacturer or installer, or both. The types of FAA approval may include a Technical Standard Order (TSO) Authorization, Supplemental Type Certificate (STC), or Parts Manufacturer Approval (PMA). The avionics approval may involve one or more of these types of FAA approvals depending on the type of avionics equipment (whether a TSO exists), and whether the applicant is seeking an installation approval. Avionics approvals typically include a component level design and manufacturing approval (TSO or PMA), and an installation approval (STC or field approval). The needs of the applicant and the FAA may vary from project to project. If an applicant already has a PSP with the FAA, the content of this guide may be used to refine the existing PSP and to consider the alternate paths to approvals and certifications described herein.

This Plan enables the FAA, the applicant, and their staffs to expedite approval projects by focusing on safety significant issues. It is the mutual goal of the FAA and the applicant to meet or exceed the expectations of this agreement to achieve the following vision.

Vision of the Product Approval Process

A credible and concise product approval process that results in all of the following:

- Timely and efficient product type design and production approvals
- Clearly defined and understood roles, responsibilities, and accountability of all stakeholders
- Timely identification and resolution of the certification basis, potential safety issues, and business practice requirements
- Optimal delegation using safety management concepts with appropriate controls and oversight

In the establishment of this PSP, it is understood that a cooperative working relationship is required for this process to be effective. To successfully achieve this Vision, it is understood that the applicant and the FAA team members will work in accordance with the guidelines contained in this PSP.

EFFECTIVITY

This PSP becomes effective upon approval by the FAA Directorate/Division Manager and the applicant's President, Chief Executive Officer (CEO), or Senior Vice President (VP), or officer empowered to commit for the applicant. It continues in effect until it is superseded, revised or terminated and may be amended by mutual consent of the parties. Any change in the services furnished or other provisions of this PSP is formalized by an appropriate written amendment signed by both parties, which outlines the nature of the change.

PARTNERSHIP FOR SAFETY

1. General

This PSP is a living document developed by the FAA and the applicant to the greatest extent possible in advance of any specific approval project. The PSP is an important prerequisite to a specific product approval project. It establishes the principles and procedures for early identification of critical issues and early planning so that, subsequent to this PSP, future projects can be completed in a timely and efficient fashion. The PSP will be managed and maintained by the FAA's and the applicant's management focal points in accordance with the "Communications" section below. The PSP will include, but not be limited to, consideration of the elements outlined below. The applicant and the FAA agree to work to the principles and operational norms outlined in this PSP and to future Project Specific Certification Plans (PSCP) that may be developed in conjunction with this agreement. The PSP should also define the process for determining when a PSCP is not required for a specific project. For, example, minor changes as defined in 14 CFR Part 21, § 21.93, paragraph (a), and § 21.611, paragraph (a), would not require the development of a PSCP. The PSP should also address the process used for the incorporation and approval of minor changes. The PSCP is discussed in Appendix II, V, and VI of *The FAA and Industry Guide to Product Certification*.

The principles of CPI are such that an applicant needs only one PSP with the FAA. Since the PSP is used to define communication, coordination, and delegation between the applicant and the FAA, it needs to be accepted by the relevant organizations that will use it. If the applicant is likely to have approval projects with more than one FAA Aircraft Certification Office (ACO) or Manufacturing Inspection District Office (MIDO), the PSP should be developed with the secondary FAA offices involved as well.

If an applicant's organizational structure is such that lines of business work independently with their respective FAA offices, then separate PSPs may be appropriate. Alternately, a PSP agreement with the primary FAA office may be used as the basis for a PSP with other offices. When an applicant requires involvement with additional FAA offices, the applicant should share with those offices any existing agreements with the FAA, such as PSPs or PSCPs. This is especially important when an applicant and an ACO agree to a process for an avionics installation and then the applicant seeks approval for a similar process with another ACO.

2. Corporate Planning

The applicant and the FAA jointly conduct periodic management program reviews using an agreed process to provide early insight into future potential projects. These reviews also provide a forum to begin early planning for those potential projects as outlined in the early involvement Phases of *The FAA and Industry Guide to Product Certification*. The reviews would, to the extent possible, touch broadly on areas that should require special attention, for example, special conditions, exemptions, equivalent safety findings, unique designs, new materials or processes, production or operational aspects, foreign validation, co-production or use of foreign suppliers, and continued airworthiness.

The FAA and the applicant will participate in early identification of product concepts, applicable standards, and in the product definition and risk management phases. This will be accomplished as potential approval projects arise to ensure agreement and commitment on dealing with critical issues in a value-added way. This is an iterative process requiring ongoing mutual evaluation and continuous improvement of the PSP and related processes. The PSP gives the FAA a means to keep the applicant informed of new proposed regulations or policy that could affect future product approval projects.

The PSP should document the agreement between the FAA and the applicant regarding the use of a PSCP. As noted above, some TSO projects and STC changes may not require a PSCP. Although the preference would be to always use a PSCP, a cost/benefit analysis may show a low return on investment for less complex or recurring TSOA projects. With this in mind, the applicant and the FAA should work together to ensure developing and using the PSCP is efficient and commensurate with the project. The point is that a PSCP should add value to the process by improving project efficiency for both the applicant and the FAA.

Project tracking and documentation provide for early identification and resolution of potential conflicts. Early communication between the applicant and the FAA in the conceptual/prototype stages of product development is critical to ensure availability of resources, adequate planning, and flexibility for both the FAA and the applicant. Effective project management oversight, planning, communication, and documentation are needed. This process is management and discipline dependent.

Avionics equipment may require one or more PSCPs, depending on the type of project. For clarity and agreement between the applicant and the FAA, the PSP should include content to help all stakeholders decide which PSCP to use.

The TSO PSCP is specifically for products where a TSO exists and a TSOA is to be issued for design and manufacturing approval. The Installation PSCP should be used where the project will result in one of the following:

- First-of-Type STC and basis for LRU PMA if seeking PMA, or
- Follow-on STC and basis for LRU PMA if seeking PMA.

Typical projects that may not require a PSCP include, but are not limited to: minor changes to existing TSOs or STCs and TSO projects that have been previously approved by the applicant at the same ACO. Projects that may not benefit by having a PSCP are those low in complexity with little risk regarding the approval process or interpretation of the requirements for airworthiness.

3. Communication and Coordination

In the PSP, communication and coordination paths should be clearly defined between the FAA and the applicant. Focal points will be identified to avoid conflict and to keep both parties informed of all critical communications that affect the needs and responsibilities of their respective roles. This does not preclude any team members from communicating with any other members, but they need to ensure the focal points are informed. Thus, critical links should be defined to ensure roles and responsibilities are clear and to facilitate conflict resolution. The focal points will be responsible for the maintenance of the PSP.

The PSP should identify each organization that is responsible for elements in the approval process and the responsibility those organizations share in the approval of the product. The roles and responsibilities of each organization should be clearly stated in the PSP. In the approval process of avionics, several FAA organizations are responsible for different aspects of the approval. For example, the office responsible for developing the TSO and approving deviations related to any TSO is the Aircraft Engineering Division within the Aircraft Certification Service. This division is also responsible for developing policy as it relates to the avionics appliance.

The regulations and policy for installation of avionics into an aircraft falls under the responsibility of the directorates within Aircraft Certification. The type of aircraft in which the avionics are installed determines the accountable directorate:

- Small airplanes – Small Airplane Directorate
- Transport airplanes – Transport Airplane Directorate
- Rotorcraft – Rotorcraft Directorate
- Installations specific to engines or propellers – Engine and Propeller Directorate

Each directorate is also responsible for supporting certain ACOs and MIDOs to provide the FAA resources to support the applicants' projects. The ACO is responsible for determining that the avionics and installation complies with the required regulations and policies. Operational issues during the approval process are the responsibility of the Flight Standards Aircraft Evaluation Group. The approval for avionics production is the responsibility of the MIDO. The Project Specific Certification Plan should identify what is expected from each of these organizations.

4. Delegation

The FAA depends on using both individual and organizational delegations in the approval process. Delegation will be used to the maximum extent practicable with appropriate oversight safeguards as defined in the FAA's delegation management process policies.

A Designated Alteration Station (DAS) is an organization that is delegated to issue STCs in accordance with an FAA approved procedures manual. The FAA approved DAS procedures manual is, in effect, a partnership between the DAS and the FAA. An existing approved procedures manual, for a DAS or any other FAA organizational delegation, may be incorporated by reference in the applicant's PSP but is not a substitute for the PSP. This concept would also

apply to other delegated organizations. The following paragraphs are applicable to individual designees.

The FAA engineering and Aviation Safety Inspectors' designees, designee oversight controls, related documentation, and so forth, should be identified and agreed upon early, preferably prior to a specific project. This should also include, by reference, reliance on existing agreements or working procedures generated between the FAA and the applicant, where appropriate. The PSP should be specific as to what aspects of the FAA project responsibilities are delegated, and should address the delegation and oversight process as well as designees' disciplines and limitations. The FAA and the applicant agree to manage all designee activity within the regulations and policy regarding designee appointment, procedures, and oversight.

The expanded use of designees in the approval process is an important part of streamlining the avionics certification process. The FAA continues to explore ways to expand the use of DERs to help reduce the review time necessary for granting TSO authorization. When an applicant requests a TSOA they should work closely with the FAA to determine the scope of delegation the FAA will authorize. The FAA will explain the latest policies regarding use of DERs in this process, what authorizations are needed, and how best to utilize DERs in a project approval process.

It is essential that the FAA and the public have confidence in the integrity of the designee system and that it function properly. Both the FAA and the applicant agree to foster an environment where open communication between the designees and the applicant's management, and between the designees and their FAA counterparts, is standard practice. That environment should encourage the designees, within the scope of their delegation, to openly communicate approval items with the FAA, which is necessary to maintain confidence in the designee system. The applicant agrees to create a working environment where designees can make compliance and conformity findings free from undue pressure and with the support and knowledge of the FAA. It should be clearly understood that the FAA's objective is to find compliance with the regulations and not to dictate design.

Because of the close integration of the design, production, and continued airworthiness processes, it is necessary to have all stakeholders in the delegation process agree on the extent of delegation, the procedures, and the degree of delegation oversight to be used in each project. The applicant and FAA engineers, Aviation Safety Inspectors, flight test pilots, and FAA designees will agree upon and document a plan. This plan will describe how the designees in different disciplines will work together directly to the greatest extent possible to ensure compliance with Title 14 of the Code of Federal Regulations while providing more timely project management.

The PSP should also describe the respective FAA and applicant roles in the conformity inspection process. As noted in applicable FAA Orders and policy, the goal of the FAA and the applicant is to develop a system that ensures conforming products, and one that the FAA can rely upon, to the greatest extent possible, using the designees with appropriate oversight to expedite the work. This should include, in coordination with the delegation section of the PSP, criteria for determining which conformities will be conducted, which are delegated to both engineering and Aviation Safety Inspectors' designees, and how deviations will be dispositioned.

The system should include, but is not limited to:

- Maintaining the custody chain of conformed articles destined for an official FAA test.
- Notifying the FAA Manufacturing Aviation Safety Inspector of any changes to ground/flight test articles after conformity inspection has been completed.
- Ensuring requests are not duplicated and the timely and efficient conduct of conformities and dispositioning of deviations.
- Identifying who issues the requests, conducts the inspections, and dispositions the deviations.
- Providing for the completion of inspection, documentation, and dispositioning of deviations or changes before tests are conducted.

5. Production Quality System Evaluation

The PSP should describe the FAA and the applicant's roles in the production approval process. The goal of the FAA production approval is to verify that the applicant has established a system which ensures that only products and parts conforming to the FAA approved design are released to service. Evaluations to determine adequacy of this system should be conducted by the FAA as early as feasible during the project, where practicable. The FAA Aviation Safety Inspectors' designees, with appropriate oversight, could be used to facilitate the work.

6. Transition Plan

It is recommended that the ACO assign all of an applicant's projects to the same team of engineers. However, it is recognized that the ACO and the applicant's personnel may be reassigned or leave the organization. To minimize disruption of a project and maintain continuity throughout the approval process, a transition plan should be implemented when ACO/ applicant project personnel are replaced. The following is a recommended plan:

1. The ACO/ applicant will be notified of any changes to the project personnel within a prescribed time frame prior to the change, when possible. (For example, 2 weeks.)
2. During the prescribed period, new personnel will be trained on the contents of this PSP.
3. During this period, new personnel will be briefed on the status of all the applicant's projects (including the applicant's drawing, data, and document system).
4. Incoming personnel shall accept previous formally communicated and agreed to positions.
5. A meeting between the ACO and the applicant with new and remaining personnel will be conducted to review all ongoing projects and to review this PSP so that all personnel involved will have a common understanding of the PSP.
6. Individuals assigned to perform a backup role will have the background and authority to make decisions during personnel absences.

CONTINUOUS IMPROVEMENT

1. Issues Resolution Process

The objective of this process is to identify and resolve issues and disagreements as early as possible at the team working level facilitated by the applicant's and the FAA's PMs. The applicant and the FAA PMs will jointly maintain a project issues tracking list. They will continually manage those issues to ensure adequate progress is being made on the resolution of issues to ensure compliance with the regulations while not adversely affecting project schedules. The PMs will periodically keep their management and other certification team members apprised of the progress on resolving issues. If there is agreement on the progress of issues resolution, the applicant and the FAA PMs will document the actions, decisions, and outcomes in the project records. Any necessary changes to the project schedule or the issues will be coordinated and agreed upon by all affected team members. Should any problems arise with open issues where their resolution is not proceeding according to the agreed PSCP, the PMs will utilize the following issues resolution process:

1. If there is disagreement, the applicant and the FAA PMs, their respective managers, and other appropriate team members in the affected disciplines will review the issue and recommend a solution. If they agree, the resolution will be documented and all team members will be informed.
2. If the managers and appropriate team members are unable to agree, the office raising the concerns will prepare a white paper detailing the issue, respective parties' positions, and options for resolution. Timelines will be established for resolution of each issue to permit tracking via the project issues list and ensure timely resolution. Where appropriate, the FAA Issue Paper process should be used, but it should not be applied just for the sake of tracking, which can be done through the project issues tracking list maintained by the FAA and the applicant PMs.
3. The issue will then be submitted to the applicable directorate manager(s), the FAA, and the applicant PM's management, and, where appropriate, the FAA regional counsel and other appropriate FAA division(s) for review and disposition.
4. The applicant and the FAA PMs will document in the project records conclusions, recommendations, and outcome of the issue resolution.

2. Performance Measures

a. General

Project tracking and documentation provide for early identification and resolution of potential conflicts. Early communication between the applicant and the FAA in the conceptual/prototype stages of product development is critical to ensure availability of resources, adequate planning, and flexibility for both the FAA and the applicant. This process requires effective project management oversight, planning, communication, and documentation.

Priority must be placed on early identification and resolution of issues critical to the success of the project. Some of these issues are listed in the Avionics Certification Process Improvement section of this guide.

Performance measures should focus on producing quality deliverables that show an efficient and credible approval process. These and other project deliverables can be associated with the Phases in the approval process as delineated in this guide. Good planning will define the significant tasks, associated required information, and expectations necessary to meet the project completion objectives. The operating norms agreed upon between the FAA and the applicant will establish the basis for operating under this PSP and subsequent PSCPs and provide a means of measuring progress.

b. Operating Norms

The FAA will establish with the applicant agreed, documented, operating norms. These norms will guide the timeliness and quality of deliverables and services provided by both the FAA and the applicant during the project. Operating norms should be defined to meet the needs of the applicant and the FAA consistent with agreed PSCPs.

Many factors affect the planning and management of approval projects, such as project size and complexity, and degree of delegation. The FAA and the applicants recognize, for example, that certification of an advanced avionics design concept, then initial installation, may have significantly different resource needs and timing than a modification to a design or an installation. The PSP and each PSCP should identify appropriate agreed operating norms since there could be different team members on different PSCPs. An agreed PSP and early pre-project communication and planning in accordance with that PSP are essential prerequisites to preparing for successful approval projects. The objective of any successful project is to meet or beat the plan. Unless compelling reasons are presented to deviate from this guide, the operating norms for certain key deliverables should be set as low as possible within the following typical ranges:

Avionics Approval Process Norms

Within 2 weeks after submittal of 8110-12 application:

- Acknowledgment of application issued.
- ACO Project Manager determines project significance per Order 8110.4.
- ACO issues Certification Project Notification (CPN) and sends to appropriate directorate.
- ACO receives concurrence or non-concurrence regarding project significance from appropriate directorate (per Order 8110.4).
- Appropriate directorate assigns Program Officer.

Within 1 month after application:

- Project team identified (FAA and applicant).
- PSCP drafted.
- Project familiarization and up-front planning meeting at ACO.

Within 1 month after up-front planning meeting:

- Certification basis identified, if applicable.
- Technical and certification issues are defined.
- PSCP should be revised as appropriate to include comments and issues generated from the up-front planning meeting.

Within 2 to 3 months after up-front planning meeting:

- Certification basis established, if applicable.
- Resolution of technical and certification issues. (Where resolution is not possible at this early date in the project, the issues will be carried forward in the program on the critical issues list.)
- Issue papers written, as appropriate.
- Update the project schedule, if needed.
- PSCP agreed and signed, including the mutually agreed project schedule.

3 months prior to scheduled issuance of TC/STC/TSOA:

- Resolution of all remaining technical and certification issues.
- All issue papers closed.
- Update to the project schedule, if needed.

One month prior to scheduled issuance of TC/STC/TSOA:

- All required certification inspections and tests have been completed.
- Compliance data and documentation is submitted. (If the data is not FAA designee approved or recommended for approval, more time may be required. The use of designees should be taken into account early in the project planning and documented in the PSCP.)

Additional Norms:

- Request for a meeting should be accommodated within one month of the request.
- Meeting minutes should be completed, agreed upon, and signed within one month of the respective meeting.
- Request for a document review should be accommodated within six weeks of the request.
- Issue papers should be completed and released within one month of identifying the issue.
- Schedule slips and significant design changes will be communicated within one month of their identification.
- Deviation requests should be granted or denied within 6 weeks of the manufacturer's written request to the ACO^(*).
- FAA letters of Validation for non-US certifications should be provided within 3 weeks of the request.

(*) For deviation requests, any request for TSO deviation should identify the specific section in the TSO performance standard from which the manufacturer is requesting a deviation. The request should also include the compensating equivalent means of performance proposed by the manufacturer.

Additional norms may be necessary or appropriate depending upon the specific project needs. When developing a PSCP, the need to define norms should be assessed for all issues identified. Any major issues, design changes, or compliance requirements should result in agreed revisions

to the PSCP with appropriate milestones for closure. As the project progresses, other major issues may be identified. Where appropriate, issue papers and a revised PSCP will be prepared within one month after identification of the issue along with a plan to achieve its resolution. In such cases, the FAA will work within boundaries of their policies and public rulemaking procedures. The PSP compels the partners to work together to understand the product architecture early enough to preclude last-minute guidance (verbal or written), new interpretations, or rule escalation that would adversely affect the mutually agreed upon program goals.

c. Phase Evaluation Checklists

The Phase Evaluation Checklist (Appendix VII of this guide) is a tool that can be used for project management as the project moves through the five phases. The FAA and the applicant PMs should jointly prepare a Phase Evaluation Checklist at the beginning of a project. The applicant/FAA team should continuously evaluate the project for immediate process improvement. For long duration projects, the PMs should complete the “Deliverables” portion of the form at the end of each phase. For projects with a short completion time, the form should be completed at the end. The PMs are encouraged to include the review and update of the Phase Evaluation Checklist as milestones when preparing their PSCP schedule.

To facilitate continuous improvement the team should implement any necessary corrective actions. The Phase Evaluation Checklist should be maintained in the FAA and applicant’s official project file for future national or local program evaluation. When the evaluation identifies the need for corrective actions or improvements, it should be included as a part of the Compliance Summary Document for future reference. A copy of the form should also be sent to the FAA’s Aircraft Engineering Division, AIR-100, for FAA and industry review of the CPI process.

SIGNATORIES

The FAA and the applicant agree to the provisions of this PSP as indicated by the signature of their duly authorized representatives.

Agreed by: (This is a representative sample of possible signatories and could include others deemed appropriate to provide necessary commitments and accountability. Include Names and date)

Applicant President, CEO, or Senior VP

FAA Directorate/Division Manager(s)

Applicant Certification Manager

FAA ACO Manager(s)

Applicant VP Quality Assurance

FAA MIO/MIDO Manager(s)

FAA AEG Manager(s)

APPENDIX V

PROJECT SPECIFIC CERTIFICATION PLAN

for Technical Standard Order Authorization

between the

FEDERAL AVIATION ADMINISTRATION

and

APPLICANT (Specify Name)

for

(List specific product here)

The material contained herein is an aid for preparing the Project Specific Certification Plan (PSCP) for a product being approved under 14 CFR Part 21, Subpart O, Technical Standard Order Authorizations. This aid is intentionally not a “boilerplate,” but allows the freedom to innovate and meet the special project needs of the applicant and the FAA. However, it is essential that the PSCP addresses the same key content areas of this aid ensuring that, as written, it captures the meaning and intent of this guide. The PSCP should include elements that were not addressed in detail in the PSP, and it should incorporate by reference appropriate procedures, agreements, or other elements pertinent to the project.

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4. Communication and Responsibilities
 - a. Communication
 - b. Roles and Responsibilities
 5. Delegation
 6. Testing Plan
 - a. General
 - b. Flight Test
 - c. Configuration Control
 7. Compliance Documentation

PRODUCTION APPROVAL

POST APPROVAL REQUIREMENTS – COMPLIANCE SUMMARY
DOCUMENT

PROJECT ISSUES PLANNING

CONTINUOUS IMPROVEMENT

1. General
2. Phase Evaluation Checklist

SIGNATORIES

PURPOSE

The purpose of this Project Specific Certification Plan (PSCP) is to define and document a product approval plan between the Aircraft Certification Service of the Federal Aviation Administration (FAA) and the applicant. The plan should expedite the issuance of Technical Standard Order Authorization (TSOA) for the applicant's (*specify LRU or system*) under standardized procedures. The applicant is (*specify applicant's name and location of manufacturing*).

If an installation is being worked as a parallel project, it should be stated as follows: As a parallel certification project, the installation approval will be covered by a stand-alone PSCP. This PSCP will provide the foundation from which to build mutual trust, teamwork, and efficient business practices between the FAA and the applicant during approval of the product. It is the mutual goal of all team members to meet or exceed the expectations of this agreement.

It is understood that this PSCP will be executed in accordance with the PSP. However, there are certain situations where a PSP is not warranted. In these situations, those applicable sections for a PSP must be incorporated into this PSCP. (*Only use the following sentence if a PSP has not been developed:*) There is no current PSP with (*specify applicant*), but specific sections have to be added in this PSCP that include the CPI principles normally contained in a stand-alone PSP.

In the establishment of this PSCP, it is understood that a cooperative working relationship is beneficial for these procedures to be effective. To implement the PSCP procedures successfully, it is understood that both the applicant and the FAA team members shall work in accordance with the established guidelines. The FAA team members will recognize and utilize the knowledge of the FAA designees to the greatest extent possible and keep the applicant's team members abreast of approval issues that may arise. The PSCP schedule will be within specified ranges agreed to in the norms of the PSP. Additional milestones will be considered by the FAA and the applicant as firm commitments unless they agree to a change. It is intended that all team members facilitate review and approval of the necessary design and production data and related compliance documents in a timely manner with the objective of bettering the PSCP schedule wherever possible.

The PSCP is a living document. This means that if both the FAA and the applicant agree that modification of the Plan is needed, an amended Plan is drafted. The Plan will be developed to the greatest extent possible as soon as the FAA and the applicant agree that the approval project is a viable one for which resources can be planned and committed for its completion. As the project progresses, the PSCP will be managed and maintained jointly by the FAA and the applicant's Project Managers.

EFFECTIVITY

This PSCP shall become effective upon approval by the Managers of the (*specify name of ACO*) Aircraft Certification Office, the appropriate Standards Office (Directorate or Aircraft Engineering Division), the (*specify name of MIDO*) Manufacturing Inspection District Office, the (*specify name of AEG*) Aircraft Evaluation Group, 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 affected parties, which will outline the nature of the change.

PRODUCT APPROVAL

1. Project Description

This section should contain a description of the project. It should include a listing of the TSOs being applied for. The Plan should include a detailed description of the product. The description should consider the annunciation, control, and display requirements specified in the TSO standard and its intended installation environment. The level of software assurance used should support those requirements and be clearly identified in the TSO software documentation and installation instructions. The description should also include a detailed list of all systems functionality with an indication of any functionality that is not covered under TSO. The intended uses of each function should be documented, as well as the operational assumptions. This detailed function or features list is critical as it will help focus the FAA evaluations on the extra functionality early in the program, leaving the applicant with the traditional role in the TSO process focusing on ensuring compliance with the TSO requirements.

2. Project Schedule

A detailed project schedule should be provided as an appendix to the PSCP. It should identify all major milestones, including appropriate project management reviews and any required scheduled deliverables such as those listed below. (*Being in an appendix will facilitate schedule changes without having to revise the PSCP.*) If required, these milestones need to be established in accordance with the operating norms identified in the PSP. Every effort must be made to establish realistic schedules considering both the FAA and the applicant's total workloads and other resource commitments. Design, production, operational, and maintenance aspects, as well as foreign authority validation requirements, should be planned for and considered. All issue papers, if applicable, should also be included with a resolution plan and prioritization of the issues to be resolved. The schedule should adhere to the Phases and process flow identified in *The FAA and Industry Guide to Product Certification*. This would include identifying in the schedule all appropriate deliverables for the project such as, but not limited to, those shown below:

Deliverables:

- Familiarization, up-front planning, and technical meeting(s) minutes
- Roles and responsibilities of FAA and applicant project teams

- Product approval team and management status reviews
- Delegation plan
- Draft and Final PSCP
- Applicant's TSO Statement of Conformance
- Listing of specific TSOs being applied for
- A listing of deviations, as applicable, to the TSO performance standards
- Letter accepting TSO deviations
- Compliance Summary Document
- Quality Control Procedures
- Production approvals
- Data submittals (to support compliance and conformance (e.g., test plans/reports, analyses, installation instructions, operating manual, etc.))
- Human Factors Approval Plan, if applicable
- Other data required by applicable TSO
- TSOA letter
- Foreign approvals anticipated that will involve the ACO
- List of specific Joint Airworthiness Authorities (JAA) TSOs (JTSA) being applied for including a listing of deviations, if any, to the JTSA performance standards
- Foreign approval compliance documentation list
- Letters of conformance and application for the foreign approvals
- FAA letters of validation for the foreign approvals
- Phase Evaluation Checklist

3. TSO and JTSA Application and Means of Compliance

a. TSO Application

In this section the applicant should identify the TSO authorization requested. The applicant should also identify if a JTSA authorization is to be requested. The certification basis should also be identified, along with any requested deviations. The Certification Basis of obtaining a TSO is 14 CFR Part 21, Subpart O, the applicable TSOs. When making application for a TSO the applicant submits:

- 1) A statement of conformance certifying that the applicant has met the requirements of Part 21, Subpart O, and
- 2) A statement certifying that the article concerned meets the applicable TSO that is effective on the date of application for that article. The application, if applicable, includes the listing of deviations to the TSO and equivalent safety findings, if any. An issues list should be included to highlight for resolution those special requirements and other areas that may be significant, even though they may not warrant a special condition, exemption, or equivalent safety finding.

The Certification Basis of obtaining a JTSA is JAR Part 21, Subparts N-O, and the applicable JTSAOs. Application is made by letter to the ACO and includes:

- A copy of the statement of conformance that certifies the applicant has met the requirements of JAR 21, Subpart N-O, that the article concerned meets the applicable JTSO, and lists any deviations from the JTSO requirements.
- A copy of the list that shows the compliance data provided to the National Airworthiness Authority (NAA) by the FAA or the applicant.
- The ACO issues a letter of validation to the NAA responsible for JTSO approval.
- Other non-U.S. approvals require a process similar to the JTSO process. These applications are made to the ACO and result in an approval on an individual country basis (national approval). These approvals do not confer a TSO or JTSO authorization. The FAA maintains advisory documents that explain procedures required for different countries.

b. TSO Table and Minimum Operational Performance Standards (MOPS)

A table that lists the applicable TSO requirements should be used. This table should identify the requirements and the means used to show compliance to the requirement.

4. Communication and Responsibilities

a. Communication

This section describes the communication responsibilities of the FAA and the applicant's certification teams. The FAA and the applicant establish the appropriate communication and coordination paths by identifying the respective team members. The FAA and the applicant's PMs must be kept informed of all critical communications. Critical links should be defined to ensure that roles and responsibilities are clear to define accountable team members responsible for deliverables and to facilitate conflict resolution. This does not preclude any team member from communicating with any other member, but they need to ensure the PMs are informed. Team members typically will communicate with the PMs via email and telephone.

b. Roles and Responsibilities

This section describes the roles and responsibilities of the applicant and the FAA team members. Table 1 is a sample of the typical table to show the FAA and applicant team members and their roles and responsibilities. Please note that your program may require team members with different roles and responsibilities than those listed in the sample shown in Table 1.

In some cases, additional members should be included. For instance, the project may require FAA or applicant legal representatives on a consultation basis. If international certification is involved, other authorities should be included. This is especially important if assistance with test witnessing, conformity inspections, or type certification validations is anticipated.

Table 1: FAA/ Applicant PSCP Team Members

FAA Team Member	Applicant Team Member	Roles and Responsibilities
Name Phone Number FAX Number Email address	Name Phone Number FAX Number Email address	TSO Program Manager – FAA/applicant team leader: PSCP focal point
		Installation Program Manager: provide assistance to TSO PM
		Systems and Equipment Engineer: review test plans, data, issue request for conformity inspections, delegation approval
		Project Engineer – Software Aspects: engineering review and approval of all software documents, coordination with software DER and Installation PM
		Project flight test pilot: develop flight test plan as required; review display for symbology and human factors; review of the users manual; flight test expert to the Installation PM
		Principal Inspector related to Software Quality Assurance
		Principal Inspector related to Manufacturing/Production Quality Assurance
	N/A	FAA AIR-130 Project Officer: 14 CFR Part 21 policy and guidance
	N/A	Project Nav. – FAA AIR-130: focal point regarding policy and interpretation with Nav. MOPS, ensure standardization related to Nav. Issues
	N/A	Project Human Factors – FAA AIR-130: focal point related to human factors; policy and interpretation with MOPS and TSO technical performance standards related to human factors
	N/A	FAA Aircraft Evaluation Group – Maintenance: review and determine adequacy of maintenance documents including Instructions for Continued Airworthiness
	N/A	FAA Aircraft Evaluation Group – Operations: review and determine adequacy of system operational issues and documents including Users Manual
	N/A	FAA CSTAs, as appropriate, and as needed: Provide technical guidance.

Each member of the certification team should be listed.

5. Delegation

A TSO program is a self-certified process where the applicant makes conformance statements to the FAA indicating compliance with those items listed in 14 CFR Part 21 § 21.605 and to the applicable TSO. However, the process may be difficult if the TSO applicant is new to this process or has limited knowledge of the TSO certification process. In this case, it may be helpful for the applicant to become familiar with the certification process or use a designee who is familiar with the process to review the data that is to be submitted to support the project.

The expanded use of designees in the approval process is an important part of streamlining the avionics certification process. The FAA continues to explore ways to expand the use of DERs to help reduce the review time necessary for granting TSO authorization. When an applicant requests a TSOA, they should work closely with the FAA to determine the scope of delegation the FAA will authorize. The FAA will explain the latest policies regarding use of DERs in this process, what authorizations are needed, and how best to utilize DERs in a project approval process.

6. Testing Plan

a. General

This section should outline the applicant's approach to developing test-based compliance documentation. Plans for Hardware and Software Aspects of Certification (PHAC and PSAC respectively) are typical means used to identify Verification and Validation (V&V) methodologies. This portion of the PSCP should also consider the requirements of the specific TSO and associated MOPs where performance under normal and severe environmental conditions is concerned. A strategy for the planning, preparation, and conduct of the required environmental and qualification testing would be appropriate content. The plan should identify the proposed methods for evaluating the flight crew interface aspects of the product. The plan should address the occasions when and how FAA human factors evaluations are to occur, and recognize that the findings from such evaluations need to be documented and validated to ensure appropriate "credit" will be evaluated if needed for subsequent installation approvals.

b. Flight Test

In some cases – such as for Traffic Alert and Collision Avoidance System (TCAS) products – flight tests are necessary to provide compliance data. While FAA participation in these flight tests is not required, the responsible ACO office may have an interest in observing use of the product in its actual operating environment. This section of the PSCP should specify how to accommodate such requests. Where a concurrent aircraft level project (STC) has been initiated, use of language in the project's TIA may be used to enable FAA participation. This will also facilitate the applicant's ability to take credit for these tests as part of the STC project. Since a TIA is not necessary to authorize the applicant's conduct of flight tests associated with gathering TSO compliance data, special approval may be needed for ACO personnel to participate in flight tests that are solely in support of a TSO project. This issue should be negotiated with the responsible ACO manager early on in the TSO project.

The need for evaluation of the product's human factors attributes should also be addressed in this section. Many new and revised TSOs contain requirements for human centered design considerations. In addition, some FAA ACOs are including this type of evaluation as a part of the TSO project where the product has a major man-machine interface element (such as display systems). This item should be discussed with the ACO early in the project's life cycle. For some products, use of a bench simulator or demonstrator may be adequate. Others may require a combination of bench and flight test evaluations. Where flight test human factor assessments are warranted, a plan for FAA participation similar to that described immediately above may be needed.

c. Configuration Control

Articles used for compliance testing must be subject to a control process to ensure an accurate accounting of their configuration. This section of the PSCP should indicate the process/procedure to be used. Where an FAA-approved company quality control system exists, an inspection conducted in accordance with that system and resulting in a Certificate of Conformity is typically adequate. In general, all drawings, specifications, and other documentation defining the hardware and software design of the article should be released into the applicant's configuration control system prior to conducting any conformity inspection.

An inspection process involving MIDO personnel, or resulting in an 8100-1 Conformity Report or 8130-3 conformity finding, is not required. However, one of these alternate means of configuration control may be necessary when the TSO test article is installed on an aircraft for the purpose of obtaining certification data in support of an STC/TC project. The applicant's plan for these requirements should be included in this section.

The applicant should also describe a process to maintain configuration control of the test article throughout compliance testing. Test articles may require repair or design changes as a result of qualification testing. The applicant should establish a process to maintain configuration control for all changes or repairs incorporated into the test article. This process should be sufficient to ascertain where credit may be taken for tests already completed and where re-testing is required.

7. Compliance Documentation

This section should describe the procedures for submittal and processing of compliance documentation. The PSCP should identify what data will be submitted and by whom. It should account for all data (not just drawings) pertinent to defining the type design, including manufacturing specifications, and pertinent to conducting the showings of compliance required for FAA approval. The following list of items should be considered:

- PSAC (Plan for Software Aspects of Certification)
- Environmental test reports
- TSO MOPS compliance test reports
- Software Accomplishment Summary (SAS)
- Software Configuration Summary
- Functional Hazard Assessment (FHA)/System Safety Assessment (SSA) at LRU level
- Bill of Material
- LRU identification tag(s)

➤ Operating manual

DERs should be utilized to submit data as defined in the PSP. DERs submit FAA Form 8110-3 with data that has been DER approved or recommended for approval. Data submitted without an FAA Form 8110-3 will require FAA engineering review and approval, which may add to the processing time. This should be taken into account when developing the project schedule.

The FAA and the applicant will agree and document the amount of time needed for review, disposition, and approval or acceptance of the data, as appropriate. Typically, this may be up to four (4) weeks for designee recommended approval data. Some submittals, due to size or complexity, may require more time. Some examples include: Instructions for Continued Airworthiness and safety analyses. The timing and process for such submittals should be agreed upon between the FAA and the applicant and documented in the PSCP. Data submittals that are designee approved are reviewed only for designee oversight purposes, whereas data that is recommended for approval must be reviewed for those aspects that the designee could not or did not evaluate. Hence, communication and pre-planning for data submittal and consideration of the level of delegation between designees and the FAA is essential and encouraged to ensure timely efficient data approval.

PRODUCTION APPROVAL

This section of the PSCP should outline production quality project issues and tell how they will be managed to permit early approval of the production system. The goal is to have concurrent design and production approval issuance. The primary focal points for the production approval process are the FAA Principal Aviation Safety Inspector and the applicant's Project Quality Manager. Production approval is granted after the applicant has demonstrated, and the FAA has verified, that the applicant has developed and is capable of maintaining a quality assurance system. This system will ensure that only products and parts conforming to the design data are released for commercial service use. For existing Production Approval Holders (PAH) who will be adding a new product to an existing approved production system, issues to be considered should include the following:

- Approval of new materials, new processes, new suppliers, co-production agreements, new technologies or new applications of existing technology, etc.
- FAA undue burden assessment of either non-US suppliers or co-producers, or both
- Instructions for assembly and test of the final product to ensure conformance
- Coordination with engineering on production Material Review Board requirements and integrating engineering and production Certificate Management activities
- Controls to be placed on production as a result of design Airworthiness Limitations or the criticality of parts and components
- Configuration control requirements
- Any other reviews necessary to ensure that a conforming product will be produced under the FAA approved quality inspection system

Applicants who do not hold an existing production approval for the type of product that is being approved under this PSCP must also demonstrate, to the satisfaction of the FAA, the existence of and compliance with a quality system that satisfies ALL the requirements of the applicable subparts of 14 CFR Part 21.

POST APPROVAL REQUIREMENTS -- COMPLIANCE SUMMARY DOCUMENT

The applicant and FAA PMs will prepare a summary at the end of each approval project to capture and retain the corporate knowledge learned during the project. The summary should capture only unique data, precedent issues (for example, regulatory, policy, or technical), and both the applicant and the FAA perspectives, feedback, and lessons learned. This document is not to be a complete history of the project but should only document those areas out of the ordinary that require process improvements, affect rule/policy making, and so forth, in order to provide continuous improvement of the FAA and the applicant's working relationship. This summary, plus the phase evaluation checklists, should be evaluated by the team and appropriate changes to the PSP or future PSCPs should be made. When the team identifies where changes to the guide would be beneficial, those should be referred to AIR-100 for consideration.

PROJECT ISSUE PLANNING

The applicant and FAA PMs will jointly maintain a project issues tracking list. This list, at a minimum, should include issues identified as potential “show-stoppers.” The list will identify the issue, the plan and milestones for their resolution, as well as the primary responsible team member for ensuring the closure of each issue within the operating norms of the project schedule. The PMs will continually manage those issues to ensure adequate progress is being made on their resolution to not adversely affect the project schedule. The PMs will identify to their management and other appropriate team members, concerns and problems with open issues and seek early resolution of any items not proceeding according to the agreed PSCP. A specific issue resolution process example is shown in the PSP. (Appendix I of *The FAA and Industry Guide to Product Certification*) The process, as defined in a PSP, may be incorporated by reference in the PSCP, or a specific process could be included here to meet any unique needs of the particular project.

CONTINUOUS IMPROVEMENT

1. General

In this section a statement should be made that the continuous improvement processes detailed in the PSP will be followed.

2. Phase Evaluation Checklist

The Phase Evaluation Checklist (Appendix VII of this guide) is a tool that can be used for project management as the project moves through the five phases. The FAA and the applicant PMs should jointly prepare a Phase Evaluation Checklist at the beginning of a project. The applicant/FAA team should continuously evaluate the project for immediate process improvement. For long duration projects, the PMs should complete the “Deliverables” portion of the form at the end of each phase. For projects with a short completion time, the form should be completed at the end. The PMs are encouraged to include the completion of the Phase Evaluation Checklists as milestones when preparing their PSCP schedule.

To facilitate continuous improvement, any necessary corrective actions should be implemented by the team and the Phase Evaluation Checklist should be maintained in the FAA and applicant’s official project file for future national or local program evaluation. When the evaluation identifies the need for corrective actions or improvements, it should be included as a part of the Compliance Summary Document for future reference.

During initial CPI implementation, an FAA/AIA/GAMA Product Certification Continuous Improvement Steering Committee reviews all project evaluation feedback on current projects. The team evaluates project lessons learned and recommends guide changes for continuous improvement. This same process will be used for feedback and continuous improvement for the avionics certification process. A copy of the form should also be sent to the FAA’s Aircraft Engineering Division, AIR-100, for FAA and industry review of the CPI process.

SIGNATORIES

The FAA and the applicant agree to the provisions of this PSCP as indicated by the signature of their duly authorized representatives.

Agreed by: (This is a representative sample of possible signatories and could include others deemed appropriate to provide necessary commitments and accountability. Include Names and date)

Applicant Certification Manager

FAA ACO Manager

Applicant Project Manager

FAA Project Manager

Applicant Project Quality Manager

FAA MIDO Manager(s)

FAA Aircraft Engineering Avionics
Systems Manager

FAA Principal Inspector

FAA AEG Inspector(s)

APPENDIX VI

PROJECT SPECIFIC CERTIFICATION PLAN

For Installation or Avionics Approval
Through the Supplemental Type Certification Process

between the

FEDERAL AVIATION ADMINISTRATION

and

APPLICANT (Specify Name)

for

(List specific product here)

The material contained herein is an aid for preparing the Project Specific Certification Plan (PSCP) for installation of avionics approved through the Technical Standard Order (TSO) process or items in which a TSO does not exist. This aid is intentionally not a “boilerplate,” but allows the freedom to innovate and meet the special project needs of the applicant and the FAA. However, it is essential that the PSCP addresses the same key content areas of this aid ensuring that, as written, it captures the meaning and intent of this guide. The PSCP should include elements that were not addressed in detail in the PSP and it should incorporate by reference appropriate procedures, agreements, or other elements pertinent to the project.

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PRODUCTION CERTIFICATION

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1. Compliance Summary Document
2. Instructions for Continued Airworthiness (ICA)
3. Continued Airworthiness Management

CONTINUOUS IMPROVEMENT

1. General
2. Phase Evaluation Checklist

SIGNATORIES

PURPOSE

The purpose of this Project Specific Certification Plan (PSCP) is to define and document a product approval plan between the Aircraft Certification Service of the Federal Aviation Administration (FAA) and the applicant. The plan should expedite the issuance of a Supplemental Type Certificate (STC) for the fabrication or installation, or both, for the applicant's (*specify LRU or system*) under standardized procedures. The applicant is (*specify applicants name*).

If a TSOA is being worked as a parallel project, it should be stated as follows: As a parallel certification project, the TSOA will be covered by a stand-alone PSCP. This PSCP will provide the foundation from which to build mutual trust, teamwork, and efficient business practices between the FAA and the applicant during approval of the product. It is the mutual goal of all team members to meet or exceed the expectations of this agreement.

It is understood that this PSCP will be executed in accordance with the PSP. However there are certain situations where a PSP is not warranted. In these situations, those applicable sections for a PSP must be incorporated into this PSCP. (*Only use the following sentence if a PSP has not been developed:*) There is no current PSP with (*specify applicant*), but specific sections have to be added in this PSCP that include the CPI principles contained in a stand-alone PSP.

In the establishment of this PSCP, it is understood that a cooperative working relationship is required for these procedures to be effective. To implement successfully the PSCP procedures, it is understood that both the applicant and FAA team members work in accordance with the established guidelines. The FAA team members will recognize and utilize the knowledge of the FAA designees to the greatest extent possible and keep the applicant's team members abreast of certification issues that may arise. The PSCP schedule will be within specified ranges agreed to in the norms of the PSP and additional milestones will be considered by the FAA and the applicant as firm commitments unless they agree to a change. It is intended that all team members facilitate review and approval of the necessary design and production data and related compliance documents in a timely manner with the objective of bettering the PSCP wherever possible.

The PSCP is a living document. This means that if both the FAA and the applicant agree that modification to the Plan is needed, an amended Plan is drafted. The Plan will be developed to the greatest extent possible as soon as the FAA and the applicant agree that the certification project is a viable one for which resources can be planned and committed for its completion. As the project progresses, the PSCP will be managed and maintained jointly by the FAA and the applicant's Project Managers.

EFFECTIVITY

This PSCP shall become effective upon approval by the Managers of the (*specify name of ACO*) Aircraft Certification Office, the appropriate Standards Office (Directorate or Aircraft

Engineering Division), the (*specify name of MIDO*) Manufacturing Inspection District Office, the (*specify name of AEG*) Aircraft Evaluation Group, 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.

PRODUCT APPROVAL

1. Project Description

This section should contain a brief description of the project. This section should also include a brief description of the type of approval requested and a brief discussion of the equipment's intended function.

2. SYSTEM DESCRIPTION

This section should contain a comprehensive system description. This system description should provide enough detail about the avionics system such that the certification team can evaluate the PSCP to determine if all the issues are addressed in the PSCP. Any unique design issues should be detailed in this section. A brief summary of the product as it relates to existing flight deck displays, sensors, added sensors, switches, annunciator lights, control panels, electrical components, interior arrangement, other interfaces, and so forth, should be included. A description of the installation of the product should also be contained in this section.

3. Project Schedule

A detailed project schedule should be provided as an appendix to the PSCP and it should identify all major milestones, including appropriate project management reviews and any required scheduled deliverables such as those listed below. (*Being in an appendix will facilitate schedule changes without having to revise the PSCP.*) If required, these milestones need to be established in accordance with the operating norms identified in the PSP. Every effort must be made to establish realistic schedules considering both the FAA and the applicant's total workloads and other resource commitments. Design, production, operational, and maintenance aspects as well as foreign authority validation requirements should be planned for and considered. All issue papers, if applicable, should also be included with a resolution plan and prioritization of the issues to be resolved. The schedule should adhere to the Phases and process flow identified in *The FAA and Industry Guide to Product Certification*. This would include identifying in the schedule all appropriate deliverables for the project such as, but not limited to, those shown below:

Deliverables:

- Familiarization and technical meeting(s) minutes
- STC Application
- Project Acknowledgment
- Certification Project Notification (CPN)
- Draft and final PSCP
- Compliance data submittals (e.g., test plans/reports, analyses.)
- Statement of Conformance and Conformity Inspections
- Supplemental Type Certificate Issued
- Quality Control Procedures and documentation
- Production approvals
- PMA Issued
- Phase Evaluation Checklist

4. Certification Approach

The certification approach should be outlined in the PSCP. If the applicant chooses to use the generic STC process for installation of the avionics system, the approach should be outlined in this section. The generic STC aircraft model list should be identified in this section.

a. System Safety Assessment

The criticality of the avionics system should be identified. A system safety assessment should be performed that establishes the hazards associated with the proposed installation. Based on the System Safety Assessment (SSA), the classification of the failure condition(s) should be stated.

b. Certification Basis and Means of Compliance

The Certification Basis identifies the applicable standards to which the applicant must show compliance. It also includes the need for special conditions, exemptions, and equivalent safety findings, if any. A certification matrix should be included that identifies the applicable regulations, ACs, current policies, and the procedures or methods that will be used to comply with the regulations. The certification matrix should also identify the type of documentation that will be used to show compliance. Any testing or analyses applicable to the project that has been previously approved by the FAA should be identified in this section. When identifying those approvals, the approval date, letter reference number, and reference as to how the specific approval was granted (STC, TSOA, Design Approval, etc.) should be referenced.

c. Software

A brief discussion of the software certification approach should be outlined in the PSCP. This discussion should address software criticality. Any unique design features (Commercial Off the Shelf (COTS), Windows NT™, etc.) should also be addressed and the approach used to certify the software.

d. Human Factors

A human factors plan should be outlined in the PSCP. This outline may be brief or extensive, depending on the complexity of the equipment. For new types of avionics or applications, the human factors plan should be comprehensive. For guidance on developing a human factors plan, refer to GAMA Publication 10, *Recommended Practices and Guidelines for Part 23 Cockpit/Flight Deck Design*.

e. Other (Operational Concept, Equipment Compatibility, Envisioned Safety Enhancements)

It may be useful in developing the certification approach to provide a brief discussion of some of the above topics. These discussions should provide enough detail to support the certification approach. For well-established types of avionics systems, addressing these additional topics would not be necessary.

5. Communication and Responsibilities

a. Communication

This section describes the communication responsibilities of the FAA and the applicant's certification teams and, where appropriate, co-producers, suppliers, other Civil Aviation Authorities, and so forth. The FAA and the applicant establish the appropriate communication and coordination paths by identifying the respective team members. The FAA and the applicant's PMs must be kept informed of all critical communications. Critical links should be defined to ensure that roles and responsibilities are clear to define accountable team members responsible for deliverables and to facilitate conflict resolution. This does not preclude any team member from communicating with any other member, but they need to ensure the PMs are informed. Team members typically will communicate with the PMs via email and telephone.

b. Roles and Responsibilities

This section describes the roles and responsibilities of the applicant and FAA team members. Table 1 is a sample of the typical table to show the FAA and applicant team members and their roles and responsibilities. Please note that your program may require team members with different roles and responsibilities than those listed in the sample shown in Table 1.

Table 1: FAA/ Applicant PSCP Team Members

FAA Team Member	Applicant Team Member	Roles and Responsibilities
Name Phone Number FAX Number Email address	Name Phone Number FAX Number Email address	Installation Program Manager – FAA/applicant team leader; PSCP focal point
		TSO Program Manager: provide assistance to Installation PM
		Systems and Equipment Engineer: review test plans, data, issue request for conformity inspections, delegation approval
		Project Engineer – Software Aspects: engineering review and approval of all software documents, coordination with software DER and Installation PM
		Project flight test pilot: develop flight test plan as required; review display for symbology and human factors; review of the users manual; flight test expert to the Installation PM
		Principal Inspector related to Software Quality Assurance
		Principal Inspector related to Manufacturing/Production Quality Assurance
	N/A	FAA Directorate Project Officer: 14 CFR Part 23/25/27/29 policy and guidance
	N/A	Project Nav. – FAA AIR-130: focal point regarding policy and interpretation with Nav. MOPS, ensure standardization related to Nav. issues
	N/A	Project Human Factors – FAA AIR-130: focal point related to Human Factors; policy and interpretation with MOPS and TSO technical performance standards related to Human Factors
	N/A	FAA Aircraft Evaluation Group – Maintenance: review and determine adequacy of maintenance documents including Instructions for Continued Airworthiness
	N/A	FAA Aircraft Evaluation Group – Operations: review and determine adequacy of system operational issues and documents including Users Manual
	N/A	FAA CSTAs, as appropriate, and as needed: Provide technical guidance

Each member of the certification team should be listed.

6. Delegation

The oversight and documentation requirements of engineers, Aviation Safety Inspectors, and flight test pilot designees' requirements should be identified and agreed to in this section. This should also include reliance on existing delegation authorization agreements or working procedures generated between the FAA, the applicant, and other authorities, as appropriate, that should already be specified in the PSP.

The PSCP should be specific as to what aspects of the project are delegated and what, if any, stipulations, coordination, or limitations are placed upon that delegation. Delegation should be applied to the maximum extent practicable with appropriate safeguards and oversight as defined in Appendix VIII, the FAA's delegation management process policy, and this PSCP. Because of the close integration of the design, production, and continued airworthiness processes, it is necessary to have all stakeholders agree on the procedures and degree of delegation and oversight to be used in the project.

To facilitate certification, the FAA designee system will be utilized to the greatest extent possible. Both the FAA and the applicant agree to foster an environment where open communication between the designees and company management and between the designees and their FAA counterparts is standard practice. The applicant agrees to create a working environment where designees can make compliance and conformity findings free from undue pressure and with the support and knowledge of the FAA. It is understood that the FAA's objective is to find compliance and conformity with the regulations and not to dictate design. The FAA and the applicant agree to manage all designee activity within the regulations and policy regarding designee appointment, procedures, and oversight.

7. TESTING PLAN

a. General

This section should contain the requirements for the planning, preparation, and conduct of FAA required testing. The applicant's product development tests do not require FAA involvement. However, FAA certification credit will not be granted for development tests unless arrangements are made and agreed upon prior to testing. These pretest arrangements must be coordinated with appropriate FAA engineers, flight test pilots, and Aviation Safety Inspectors with sufficient lead-time to ensure all aspects necessary for the desired FAA credit toward certification are achieved. This is particularly important for critical parts and components or when new technology, new materials or new processes are involved, which should necessitate a greater depth of review and conformity inspection. FAA personnel will witness all ground and flight tests intended for certification credit that are not specifically delegated to designees prior to testing. Delegation should be used wherever possible. Who will witness which tests should be planned for and documented in advance in the delegation section of the PSCP and the compliance checklist. When the FAA does witness, they will meet the project schedule as agreed upon to the greatest

extent possible. The applicant should keep the FAA informed of test schedules, and changes should be negotiated with affected team members.

The following items are required prior to testing:

- Drawings and specifications that sufficiently describe the design and production of the test article;
- FAA approved test plan, including either a description or drawing, or both, of the test set-up, instrumentation, calibration requirements, etc.;
- The applicant's completed inspections and Statement of Conformity, FAA Form 8130-9;
- FAA Form 8120-10, Conformity Request; and
- FAA Form 8100-1, Conformity Report, indicating the results of the Conformity Inspection, including disposition of deviations by FAA engineering or their designee if so delegated. (A copy must be available for the official test witnessing.)

When specifically delegated as identified in the delegation section of the PSCP, designees can submit fully approved test plans with FAA Form 8110-3 and FAA Form 8120-10 requests for conformity inspection, where needed, and disposition conformity deviations. All instrumentation that is required for an FAA certification test will require calibration criteria to be agreed upon with the accountable FAA engineering team members or their designee, if so delegated, and to be documented in each test plan or in a generic calibration procedures document as appropriate.

b. Flight Test/Human Factors Evaluations

This section should contain any unique requirements for the planning, preparation, and conduct of FAA required flight testing. Flight tests are conducted in accordance with the requirements of the Type Inspection Authorization (TIA). The TIA also authorizes conformity and airworthiness inspections and flight tests to determine compliance with the certification requirements. It is important to ensure close pre-flight test coordination with the FAA, including FAA discipline managers, Aviation Safety Inspectors, and the flight test pilots, in accordance with FAA policy. The PSCP will provide the clarity to:

- Conduct conformity inspections early in the project.
- Ensure timely, high-quality documentation.
- Complete pertinent applicant flight tests and report results prior to FAA flight test.
- Coordinate within the FAA for concurrent Product Certification and AEG flight testing.
- Ensure aircraft conformity, airworthiness certification, and identify operating limitations.
- Detail scheduling.
- Specify use of delegation.
- Consider flight test risk management in conjunction with the entire team.

c. Environmental Testing

Environmental tests should be specified in the PSCP. The test requirements, as they are identified in RTCA DO-160, should be specified.

d. Conformity

14 CFR Part 21, §§ 21.33 and 21.53, require the applicant to make all inspections necessary to establish the conformity of the product being presented to the Administrator for certification and to submit a Statement of Conformity to the FAA on FAA Form 8130-9. The FAA will then determine, as far in advance as possible, which Statements of Conformity it will accept without verification and which will require FAA conformity inspections. Some factors affecting this would be the criticality of the part/component, whether there is either new material, a new process, or technology involved, or whether there is an existing quality control or inspection system that has demonstrated its ability to adequately ensure conformity, or all of these. This section of the PSCP should describe what conformities will be needed, and the FAA's and the applicant's roles in the conformity inspection process for the project. This should be consistent with the delegation section of the PSCP. It should state which conformity inspections will be conducted, which will be delegated to designees, and how deviations will be dispositioned. A system should be established to:

- Maintain custody of conformed articles destined for an official FAA test.
- Notify FAA Aviation Safety Inspector of any changes to ground/flight test articles after conformity inspection has been completed.
- Ensure requests are not duplicated and that the timely and efficient conduct of conformities and dispositioning of deviations occur.
- Identify who issues the requests, conducts the inspections, and dispositions the deviations.
- Provide for the completion of inspection, documentation, and dispositioning of deviations or changes before tests are conducted.
- Provide for timely conduct of conformity inspection at non-US suppliers.

Conformity inspections will be performed by FAA Aviation Safety Inspectors or their designees. These inspections will be performed in response to FAA Form 8120-10 (request for conformity) issued by the FAA or their designees. The applicant, FAA engineer, and FAA Aviation Safety Inspector, along with their respective designees, will agree upon and document a plan by which the designees from all disciplines can work directly together to perform conformity.

8. Compliance Documentation

This section should describe the procedures for submittal and processing of compliance documentation. The PSCP should identify what data will be submitted and by whom. It should account for all data (not just drawings) pertinent to defining the type design, including manufacturing specifications, and to conducting the showings of compliance required for FAA certification. This would include, but is not limited to, test plans, test reports, test setup schematics, test instrumentation, drawings, analyses (for example, stress, safety, damage tolerance), material or process specifications, manuals. The applicant will submit one copy of the data with each FAA Form 8110-3 (original and copy). Data submitted without an FAA Form 8110-3 will require FAA engineering review and approval, which may add to the processing time. This should be taken into account when developing the project schedule.

The FAA and the applicant will agree and document the amount of time needed for review, disposition, and approval or acceptance of the data, as appropriate. Typically, this may be up to four (4) weeks for designee recommended approval data. Some submittals, due to size or

complexity, may require more time. Some examples include Instructions for Continued Airworthiness and safety analyses. The timing and process for such submittals should be agreed upon between the FAA and the applicant and documented in the PSCP. Data submittals that are designee approved are reviewed only for designee oversight purposes, whereas data that is recommended for approval must be reviewed for those aspects that the designee could not or did not evaluate. Hence, communication and pre-planning for data submittal and consideration of the level of delegation between designees and the FAA is essential and encouraged to ensure timely efficient data approval.

PRODUCTION CERTIFICATION

This section of the PSCP should outline production quality project issues and tell how they will be managed to permit early approval of the production system. The goal is to have concurrent design and production approval issuance. The primary focal points for the production approval process are the FAA Principal Aviation Safety Inspector and the applicant's Project Quality Manager. Production approval is granted after the applicant has demonstrated, and the FAA has verified, that the applicant has developed and is capable of maintaining a quality assurance system. This system will ensure that only products and parts conforming to the design data are released for commercial service use. For existing Production Approval Holders (PAH) who will be adding a new product to an existing approved production system, issues to be considered should include the following:

- Approval of new materials, new processes, new suppliers, co-production agreements, new technologies or new applications of existing technology, etc.
- FAA undue burden assessment of either non-US suppliers or co-producers or both
- Instructions for assembly and test of the final product to ensure conformance
- Coordination with engineering on production Material Review Board requirements and integrating engineering and production Certificate Management activities
- Controls to be placed on production as a result of design Airworthiness Limitations or the criticality of parts and components
- Configuration control requirements
- Any other reviews necessary to ensure that a conforming product will be produced under the FAA approved quality inspection system

Applicants who do not hold an existing production approval for the type of product that is being certificated under this PSCP must demonstrate, to the satisfaction of the FAA, the existence of and compliance with a quality system that satisfies ALL the requirements of the applicable subparts of 14 CFR Part 21.

POST CERTIFICATION REQUIREMENTS

1. Compliance Summary Document

The applicant and FAA PMs will prepare a summary at the end of each certification project to capture and retain the corporate knowledge learned during the project. The summary should capture only unique data, precedent issues (for example, regulatory, policy, or technical), and both the applicant and FAA perspectives, feedback, and lessons learned. This document is not to be a complete history of the project but should only document those areas out of the ordinary that require process improvements, affect rule/policy making, and so forth, in order to provide continuous improvement of the FAA and the applicant's working relationship. The team should evaluate this summary, plus the phase evaluation checklists, and appropriate changes to the PSP or future PSCPs should be made. When the team identifies where changes to the guide would be beneficial, those should be referred to AIR-100 for consideration.

2. Instructions for Continued Airworthiness (ICA)

The process used to ensure Continued Airworthiness should be outlined in this section.

3. Continued Airworthiness Management

The details of how the FAA and the applicant will handle continued airworthiness issues will be agreed upon and documented. This will be consistent with the 14 CFR and FAA policy on certificate management, reporting, self-disclosure and the requirements for implementing corrective actions in both the type design and production systems.

CONTINUOUS IMPROVEMENT

1. General

In this section, a statement should be made that the continuous improvement processes detailed in the PSP will be followed.

2. Phase Evaluation Checklist

The Phase Evaluation Checklist (Appendix VII of this guide) is a tool that can be used for project management as the project moves through the five phases. The FAA and the applicant PMs should jointly prepare a Phase Evaluation Checklist at the beginning of a project. The applicant/FAA team should continuously evaluate the project for immediate process improvement. For long duration projects, the PMs should complete the "Deliverables" portion of the form at the end of each phase. For projects with a short completion time, the form should be completed at the end. The PMs are encouraged to include the completion of the Phase Evaluation Checklists as milestones when preparing their PSCP schedule.

To facilitate continuous improvement, any necessary corrective actions should be implemented by the team and the Phase Evaluation Checklist should be maintained in the FAA and applicant's official project file for future national or local program evaluation. When the evaluation identifies the need for corrective actions or improvements, it should be included as a part of the Compliance Summary Document for future reference.

During initial CPI implementation, an FAA/AIA/GAMA Product Certification Continuous Improvement Steering Committee reviews all project evaluation feedback on current projects. The team evaluates project lessons learned and recommends guide changes for continuous improvement. This same process will be used for feedback and continuous improvement for the avionics certification process. A copy of the form should also be sent to the FAA's Aircraft Engineering Division, AIR-100, for FAA and industry review of the CPI process.

SIGNATORIES

The FAA and the applicant agree to the provisions of this PSCP as indicated by the signature of their duly authorized representatives.

Agreed by: (This is a representative sample of possible signatories and could include others deemed appropriate to provide necessary commitments and accountability. Include Names and date)

Applicant Certification Manager

FAA ACO Manager

Applicant Project Manager

FAA Project Manager

Applicant Project Quality Manager

FAA MIDO Manager(s)

FAA Designee(s)

FAA Principal Inspector

FAA Standards Staff Manager

FAA Standards Staff Project Officer

FAA AEG Inspector(s)

APPENDIX VII

Phase Evaluation Checklists

The Phase Evaluation Checklists are a tool used for project evaluation during the appropriate Phases. The FAA and Applicant Project Managers (PMs) should jointly prepare a Phase Evaluation Checklist at the close of each Phase of a Product Certification. These forms should be continuously evaluated by the Applicant/FAA team for immediate process improvement. The PMs are encouraged to include the completion of the Phase Evaluation Checklists as milestones when preparing their PSCP schedule.

During initial implementation of this Guide, a FAA/AIA/GAMA Product Certification Continuous Improvement Steering Committee reviewed the Phase Evaluation Checklist feedback from certain initial projects and recommended Guide changes for continuous improvement. To facilitate continuous improvement, the Phase Evaluation Checklists should be maintained in the official project file and included as a part of the Compliance Summary Document for future national or local program evaluation.

PHASE EVALUATION CHECKLIST

PHASE I: CONCEPTUAL DESIGN

Project Name: _____

FAA Project Number: _____

Project Managers: Names: Applicant: _____ FAA: _____

Company: _____ Office: _____

Were the following Deliverables completed? (check where applicable):

- Meeting minutes and correspondence to document decisions, agreements, schedules, milestones, and action item assignments
- Preliminary certification basis considering the intended means of compliance, initial safety assessments, and relevant policy material and begin formulation of PSCP
- Definition and plan for resolution of critical issues such as new designs, technology or processes; potential special conditions, exemptions or equivalent safety findings; co-production or foreign supplier arrangements requiring undue burden assessments; etc. as appropriate
- Identify core team for commitment to developing the preliminary PSP elements to ensure continuity

Answer the following questions appropriate to this Phase (attach separate sheets as needed):

Ph1	Questions
n/a	1 Were the PSCP milestones based on the norms?
n/a	<input type="checkbox"/> If not within the norms, Why?
n/a	2 Were the milestones periodically validated and mutually readjusted by the PSCP signatories throughout the program as needed?
n/a	3 Were the final milestones met?
n/a	4 Was the delegation plan followed?
n/a	<input type="checkbox"/> What worked well?
n/a	<input type="checkbox"/> What didn't work well?
x	5 Was the Issue Resolution Process established/applied as needed?
x	<input type="checkbox"/> What worked well?
x	<input type="checkbox"/> What didn't work well?
x	6 Changes required for next Phase?
x	<input type="checkbox"/> If yes, explain action needed.

PHASE EVALUATION CHECKLIST

PHASE II: REQUIREMENTS DEFINITION

Project Name: _____
 FAA Project Number: _____
 Project Managers: Names: Applicant: _____ FAA: _____
 Company: _____ Office: _____
 Were the following Deliverables completed? (check where applicable):

- Submission of Application, FAA Form 8110-12 (FAA Order 8110.4)
- Acknowledgment of Application
- Certification Project Notification (FAA Order 8110.4) and Establishment of Project
- Establishment of FAA and Applicant Certification Team
- Meeting minutes and correspondence to document decisions, agreements, schedules, milestones, and action item assignments
- Preliminary PSCP including project milestones and related events such as program status reviews (See Appendix II)
- Agreement of TC Certification Basis plan and definition of project issues such as means of compliance including special conditions, equivalent safety findings, exemptions, etc.

Answer the following questions appropriate to this Phase (attach separate sheets as needed):

Ph2	Questions
x	1 Were the PSCP milestones based on the norms?
x	<input type="checkbox"/> If not within the norms, Why?
x	2 Were the milestones periodically validated and mutually readjusted by the PSCP signatories throughout the program as needed?
x	3 Were the final milestones met?
n/a	4 Was the delegation plan followed?
n/a	<input type="checkbox"/> What worked well?
n/a	<input type="checkbox"/> What didn't work well?
x	5 Was the Issue Resolution Process established/applied as needed?
x	<input type="checkbox"/> What worked well?
x	<input type="checkbox"/> What didn't work well?
x	6 Changes required for next Phase?
x	<input type="checkbox"/> If yes, explain action needed.

PHASE EVALUATION CHECKLIST

PHASE III: COMPLIANCE PLANNING

Project Name: _____
 FAA Project Number: _____
 Project Managers: Names: Applicant: _____ FAA: _____
 Company: _____ Office: _____
 Were the following Deliverables completed? (check where applicable):

- Meeting minutes and correspondence to document decisions, agreements, schedules, milestones, and action item assignments
- Signed PSCP (See Appendix II in this Guide)
- Project schedule with established FAA/Applicant milestones for completion of analyses, test plan submission, TIA, conformities, flight test, AEG evaluations, critical issues resolution plan, and other items affecting the completion of the project
- Agreed Type Certification Basis
- Compliance Checklist
- Completion of Stage 1 on all issue papers
- Identification of stakeholders, including suppliers, installers in the case of engines, propellers, or systems, etc.
- Delegations defined with oversight criteria
- Resource Requirements
- Conformity Procedures
- Project evaluation measures

Answer the following questions appropriate to this Phase (attach separate sheets as needed):

Ph3	Questions
x	1 Were the PSCP milestones based on the norms?
x	<input type="checkbox"/> If not within the norms, Why?
x	2 Were the milestones periodically validated and mutually readjusted by the PSCP signatories throughout the program as needed?
x	3 Were the final milestones met?
N/a	4 Was the delegation plan followed?
N/a	<input type="checkbox"/> What worked well?
N/a	<input type="checkbox"/> What didn't work well?
x	5 Was the Issue Resolution Process established/applied as needed?
x	<input type="checkbox"/> What worked well?
x	<input type="checkbox"/> What didn't work well?
x	6 Changes required for next Phase?
x	<input type="checkbox"/> If yes, explain action needed.

PHASE EVALUATION CHECKLIST

PHASE IV: IMPLEMENTATION

Project Name: _____

FAA Project Number: _____

Project Managers: Names: Applicant: _____ FAA: _____

Company: _____ Office: _____

Were the following Deliverables completed? (check where applicable):

- Meeting minutes and correspondence to document decisions, agreements, and action item assignments
- Meet milestones for completion of analyses, test plan submission, TIA, conformities, flight test, AEG evaluations, critical issues resolution plan, and other items affecting the completion of the project
- Completed test plans/reports, conformity requests, inspections, and compliance documentation
- Issue Papers, Special Conditions, Exemptions, Equivalent Safety Findings
- Compliance and conformance findings
- Type Design and Production approval issuance

Answer the following questions appropriate to this Phase (attach separate sheets as needed):

Ph4	Questions
x	1 Were the PSCP milestones based on the norms?
x	<input type="checkbox"/> If not within the norms, Why?
x	2 Were the milestones periodically validated and mutually readjusted by the PSCP signatories throughout the program as needed?
x	3 Were the final milestones met?
x	4 Was the delegation plan followed?
x	<input type="checkbox"/> What worked well?
x	<input type="checkbox"/> What didn't work well?
x	5 Was the Issue Resolution Process established/applied as needed?
x	<input type="checkbox"/> What worked well?
x	<input type="checkbox"/> What didn't work well?
x	6 Changes required for next Phase?
x	<input type="checkbox"/> If yes, explain action needed.

PHASE EVALUATION CHECKLIST

PHASE V: POST CERTIFICATION

Project Name: _____

FAA Project Number: _____

Project Managers: Names: Applicant: _____ FAA: _____

Company: _____ Office: _____

Were the following Deliverables completed? (check where applicable):

- Meeting minutes and correspondence to document decisions, agreements, schedules, milestones, and action item assignments
- Compliance Summary Document
- Type Inspection Report
- Instructions for Continued Airworthiness
- Continued Airworthiness Management Plan

Answer the following questions appropriate to this Phase (attach separate sheets as needed):

Ph5	Questions
x	1 Were the PSCP milestones based on the norms?
x	<input type="checkbox"/> If not within the norms, Why?
x	2 Were the milestones periodically validated and mutually readjusted by the PSCP signatories throughout the program as needed?
x	3 Were the final milestones met?
x	4 Was the delegation plan followed?
x	<input type="checkbox"/> What worked well?
x	<input type="checkbox"/> What didn't work well?
x	5 Was the Issue Resolution Process established/applied as needed?
x	<input type="checkbox"/> What worked well?
x	<input type="checkbox"/> What didn't work well?
x	6 Changes required for next Phase?
x	<input type="checkbox"/> If yes, explain action needed.

APPENDIX VIII DELEGATION PLANNING

This Appendix on *Delegation Planning* was developed to assist both the industry and the FAA in making better delegation decisions. The delegation decisions called for by the Project Specific Certification Plan should be integrated with other planning data in the project's compliance checklist. Each finding in the certification basis should be evaluated for delegation. This guide provides a compliance checklist template that serves as a tool to assist with delegation planning.

Introduction

The FAA and Industry Guide to Product Certification (CPI Guide), dated January 25, 1999, describes certification process improvements based on up-front project planning, project management, and documenting the certification process, which will allow delegation to be used to the maximum extent practicable. This addendum to the CPI Guide will address risk assessment and risk management in the project management process and define how delegation decisions should be made. This will permit the maximum use of delegation, and allow FAA employees to focus in critical areas. Delegation at this level will require the utmost in mutual trust, leadership, and teamwork between the FAA and applicants.

Project Planning Goals

The tools of CPI are the building blocks that allow the FAA to maximize the use of delegation on a project. By developing the partnership for safety plan and through the use of project specific certification plans the FAA can document delegation decisions that clearly define the responsibilities of the applicant and their designees. These project management decisions should be made using criteria based in the value of direct FAA employee involvement. When a particular decision or event is critical to the success of the project or the safety of the product, the FAA employees should be directly involved. However, FAA trust in the applicant's designees should allow the norm to be full delegation in areas that do not benefit from direct FAA involvement. In order to apply risk management to these project decisions, FAA project managers must involve project team members and use their experience to identify critical issues. Critical safety findings must be identified based on the safety impact or the complexity of the requirement or the method of compliance. Additional factors to consider in determining the areas of direct FAA involvement include the FAA's confidence in the applicant, the applicant's experience, the applicant's internal processes, and trust in the applicant's designees.

Making Delegation Decisions Based on Value of FAA Involvement

Once the project team has determined the findings that require direct FAA involvement all others should be considered acceptable for delegation. Once a finding is delegated, any increase in direct FAA involvement in that finding should be determined based on the value of that involvement. Keep in mind that the value of direct FAA involvement decreases when appropriate trust and designee capability exists to make the finding. However, when confidence in the designee is lacking or the designee is inexperienced, then value of direct FAA involvement increases. There will also be less tangible reasons for direct FAA involvement in a delegated finding including involvement that is the result of project oversight or DER oversight, or for the purpose of developing FAA team-member experience. This type of FAA involvement should be planned so that it does not adversely impact the project schedule. It is also possible that FAA

involvement will need to be increased if unsatisfactory DER performance is experienced previously in the project.

Internal FAA Oversight Considerations

FAA DER managers should plan for levels of individual designee oversight they will perform based on the value of their review and the risk of not reviewing the delegated finding. For the purpose of estimating the amount of direct FAA involvement the DER managers should classify findings into the following three categories:

(a) Findings that will need no further ACO review – The FAA is confident that the applicant’s designees are solely responsible for the scheduling and making of the finding. The FAA will accept the finding without additional involvement or impact to the project schedule. Findings in this category require no direct FAA involvement.

(b) Findings that will benefit from ACO review – Although the applicant’s designees will be delegated to make these findings the FAA may review the findings for the purpose of project oversight or DER oversight. The FAA will have discretion to identify what to review and the amount of review necessary. FAA review can vary from cursory review of the DER’s submittal to complete evaluation of the DER’s methods. Deficiencies identified during review should be addressed with the DER or applicant as appropriate. Findings in this category require judicious use of the available FAA resources in order to effectively manage the project and DERs.

(c) Findings that will require FAA involvement – Although the applicant’s designees may be involved by recommending approval of data, the FAA is responsible for making these findings. These findings should be related to key areas reserved for the FAA, derive significant value from direct FAA involvement, or result in unacceptable risk if the ACO is not involved. Findings in this category result in a commitment of ACO resources to support the agreed-to-project schedule.

NOTE: Although the applicant needs to be informed of which findings are reserved for the FAA, the review/non-review of delegated findings is a matter of internal ACO resource planning, and should not be communicated to the applicant or designees. Items planned to be accepted without review may change status and require review due to applicant/designee performance during the project, for example, when deficiencies are identified in other findings.

By requiring team members to identify the specific areas that they will be involved in, the project manager will be able to better manage the direct FAA resources and commitment to the project schedule.

External Coordination Tools:

A Delegation Plan should be an integral part of each Project Specific Certification Plan’s compliance checklist. Each required finding in the certification basis should be evaluated for delegation eligibility. When a delegation decision is made the plan should be updated to define the “who, what, when, how, and where” of each delegated finding. For each delegated finding the designees should be defined by name, the method of compliance specified and agreed to, the schedule and location of the finding established, and the extent of FAA involvement specified as

described in the categories above. As these details are established and agreed to, the project team should commit to the schedule and level of involvement. This will allow increased confidence in the project schedule. However, if the applicant causes changes in agreed to details such as schedule slippage or substitution of designees, or if the FAA observes designee performance problems, the previously agreed-to delegation decisions are subject to review and change by the FAA.

The Compliance Checklist Template may be tailored to each individual project but should as a minimum include:

- The regulatory requirement,
- A summary of the method of compliance,
- The level of delegation and of FAA review,
- The schedule and location of the finding, and
- The designee authorized to make the finding, by name and number.

The Criticality column will be used in the future to capture the relative value of FAA involvement or risk of not being involved. It will be based on Risk Management techniques being developed to meet the AIR Strategic Plan.

An example of the template is shown below:

Regulation		MOC	Criticality				DER Name/number	Projected Date of finding	Test Location
Section	Amdt.		(scale 1-5)	DER Approve	DER Recommend	FAA Approve			
25.301(a)	23	Analysis using computer loads model B700	2	x			Fred Evans DERY123456NM	2/22/02	N/A
25.789(a)	46	Inspection of aircraft installation	3	x			Mary Anderson DERY123457NM	5/22/02	N/A
25.1309(a)	41	Review of hazard functional hazard analysis	4		x		Jess Meyer DERY123458NM	3/22/02	N/A
25.1329(a)	46	Flight Test	5			x	N/A	9/22/02	Yuma

Summary

Industry demand for product certification relative to the limited FAA resources available to perform such services requires more efficient project management and maximum use of delegation with appropriate oversight. Risk management must be applied in the project planning stages to determine where FAA involvement has the most value. The FAA project team must then commit to delegation decisions and schedules and allow the applicant's designees to perform their responsibilities on behalf of the FAA. Any increase in FAA involvement should be based on applicant performance or reevaluation of the risk of the FAA not being involved. The goal of the FAA when working with CPI partners should be to achieve a level of trust that allows for project management and delegation decisions to be made early in the project planning stages. The expectation that follows is that the FAA and the applicant will then adhere to their commitments, decisions, and schedules.

APPENDIX IX GLOSSARY AND ACRONYMS

GLOSSARY

Applicant: An individual or organization seeking FAA approval of a specific aircraft component or installation. The approval may be a Technical Standard Order authorization (TSOA), Parts Manufacturer Approval (PMA) or Supplement Type Certificate (STC).

Approval: The FAA issues approvals that include certifications, authorizations, and other forms of approval. Approval may be a Technical Standard Order Authorization (TSOA), Parts Manufacturer Approval (PMA), Type Certificate (TC), or Supplemental Type Certificate (STC), as applicable. The FAA may issue an approval only after determining that all applicable requirements have been met.

Certification: A form of FAA approval where a certificate is issued, such as TC, STC, Production Certificate, or Airworthiness Certificate.

Certification Basis: The applicable airworthiness, aircraft noise, fuel venting and exhaust requirements of 14 CFR §§ 21.17, 21.101, and 21.115, as appropriate; special conditions; and equivalent level of safety; to which the Applicant must show compliance, or not show compliance when granted an exemption.

Criteria for Success: Attributes that are expected in the successful completion of each Phase.

Deliverables: Items to be produced during any particular Phase of the Product Certification Process by either the FAA, Designees, or the Applicant.

Designee: For the purposes of this Guide, Designee includes individual and organizational delegations.

FAA Form 337: Used to record major repairs or alterations to an airframe, powerplant, propeller or appliance. The form should be completed in accordance with 14 CFR § 43.9; 14 CFR part 43, Appendix B; and Advisory Circular 43.9-1(), Instructions for Completing Form 337.

First-of-Type STC: An initial Supplemental Type Certificate (major design change) issued for a particular make and model of aircraft.

Follow-on STC: A Supplemental Type Certificate (STC) subsequent to the first-of-type STC, issued for a similar make and model of type certificated aircraft.

Installation Approval: Installation Approval is described in 14 CFR § 43.5 and requires the following three specific criteria to be met:

1. A maintenance record is accomplished;
2. A Major Repair and Alteration form (FAA form 337) has been properly executed; and,
3. If the alteration results in any change in the aircraft operating limitations or flight data contained in the approved Aircraft Flight Manual (AFM), then appropriate revisions will be required.

Intended Function: The defined characteristic(s) that equipment must demonstrate and achieve to meet the specific requirements.

Key Players: Accountable FAA, FAA Designees, and Applicant personnel required for successful completion of any particular Phase of the Product Certification Process.

Operational Approval: Operational Approval is a 5-step process used by Flight Standards to authorize an operator to conduct operations using a specific aircraft and associated equipment in a specific operating environment. See FAA Order 8400.10.

Partnership for Safety Plan (PSP): The high level standing Plan of how the FAA and the Applicant will work and interact together. It sets the expectations and needs of both parties for the relationship. It is not a legally binding agreement but a mutual statement of the intent of the FAA and the Applicant to hold their respective personnel accountable for building the professional working relationships and business practices upon which successful product certification projects are built.

Parts Manufacturer Approval (PMA): Issued by the FAA to manufacture aircraft modification or replacement parts, that includes design approval by the Aircraft Certification Office (ACO) and a production system approval by the Manufacturing Inspection District Office (MIDO).

Plan for Software Aspects of Certification (PSAC): An agreement between the applicant and the FAA describing how the applicant will satisfy the objectives of RTCA Document DO-178B, Software Considerations in Airborne Systems and Equipment Certification.

Product Certification: The complete certification cycle that includes type certification (design approval), production certification (production approval), airworthiness certification (airworthiness approval) and continued airworthiness management.

Project Specific Certification Plan (PSCP): A Plan that addresses the specific issues of a specific project. It sets the expectations for the project. It is not a legally binding agreement but a mutual statement the intent of the FAA and the Applicant to hold their respective personnel accountable for the success of the project.

Type or Significant Supplemental Type Certificate Project: (For the purposes of this document) Any new type certificate application. Any application for amended type certificate or new/amended supplement type certificate in which:

- The design appears to require special conditions, exemptions, or equivalent safety findings or a certification basis derived from an unusual application of 14 CFR §§ 21.101(a)(2) or 21.101(b).
- The design uses novel or unusual methods of construction.
- The design changes the kinematics, dynamics, or configuration of either the flight control system or rotor drive system.
- The design change would substantially alter the aircraft's flight characteristics.
- The design affects an area that has been the subject of a major service difficulty, accident, or airworthiness directive action.
- The aircraft design changes the engine configuration from reciprocating to turbopropeller or turbojet powered.
- The integrity of the basic load-bearing structure necessary for continued safe flight and landing or operation of the aircraft within approved limits is affected.
- The design consists of new state-of-the-art systems of components that have not been previously certificated or for which adequate certification criteria have not been published.
- The certification is likely to be controversial or highly visible.
- Other significant projects or amendments as defined in FAA Order 8110.4.

ACRONYMS

ACO - Aircraft Certification Office
AEA - Aircraft Electronics Association
AEG - Aircraft Evaluation Group
AIR - Aircraft Certification Service
AFM - Aircraft Flight Manual
AFS - Flight Standards Service
AIA - Aerospace Industries Association
CEO - Chief Executive Officer
CFR - Code of Federal Regulations
COTS - Commercial Off The Shelf
CPI - Certification Process Improvement
CPN - Certification Project Notification
CSTA – Chief Scientific and Technical Advisor
DER - Designated Engineering Representative
EMI/RFI - Electro-Magnetic Interference/ Radio Frequency Interference
FAA - Federal Aviation Administration
FAR - Federal Aviation Regulations
FHA - Functional Hazard Assessment

FMEA - Failure Modes and Effects Analysis
FSDO - Flight Standards District Office
GAMA - General Aviation Manufacturer's Association
JAA - Joint Airworthiness Authorities
JTSO - JAA TSO
LRU - Line Replaceable Unit
MIDO - Manufacturing Inspection District Office
MOPS - Minimum Operational Performance Standard
MIO - Manufacturing Inspection Office
NAA - National Airworthiness Authority
PHAC - Plan for Hardware Aspects of Certification
PM - Project Manager
PSAC - Plan for Software Aspects of Certification
PSCP - Project Specific Certification Plan
PSP - Partnership for Safety Plan
RTCA - Radio Technical Commission for Aeronautics
R&D - Research and Development
SAS - Software Accomplishment Summary
SSA - System Safety Assessment
STC - Supplemental Type Certification
TCAS - Traffic Alert and Collision Avoidance System
TC - Type Certification or Type Certificate
TIA - Type Inspection Authorization
TSO - Technical Standard Order
TSOA - Technical Standard Order Authorization
VP - Vice President
V&V - Verification and Validation