



August 26, 2005

WHS 05-41

Mr. David Hempe
Federal Aviation Administration
Aircraft Engineering Division (AIR-100)
800 Independence Avenue, S.W.
Washington, DC 20591

Dear Dave,

Enclosed is a report and presentation outlining the development of a proposed framework for the establishment and oversight of Certified Design Organizations (CDO), that certify compliance with the applicable airworthiness standards as authorized by Congress in the "Vision 100-Century of Aviation Reauthorization Act." This report is the result of a working group jointly comprised of members of the Aerospace Industries Association (AIA) and General Aviation Manufacturers Association (GAMA).

The CDO Industry Working Group set out to develop a conceptual outline defining the scope and approach for implementing CDO, and proposing recommendations for Federal Aviation Administration (FAA) consideration. These recommendations include a detailed CDO framework and supporting processes that are seen as necessary to implement CDO. The recommendations are based upon a shared FAA and Industry desire to improve and streamline the type certification process thereby enhancing aviation safety while reducing the burden and costs of design approvals for both FAA and industry.

AIA and GAMA would like to express our appreciation for your personal involvement and contribution and to the FAA specialists for their participation and cooperative approach to the CDO project - one which will undoubtedly enhance the safety of our aviation industry.

In this spirit of cooperation, we would like to personally brief you and other members of the FAA Aviation Safety Management team on the recommendations the CDO team has developed.

Please contact us within the next couple of weeks to schedule a time when we can present and discuss the proposed framework for establishing CDO.

Sincerely,

Dr. Michael Romanowski
Vice President – Civil Aviation
Aerospace Industries Association

Walter Desrosier
Vice President, Engineering and Maintenance
General Aviation Manufacturers Association

Enclosures

Copy: John Hickey, Director, Aircraft Certification Service (AIR-1)
Web Heath, Chair, AIA/GAMA DCDO Working Group
John Tighe, Chair, AIA/GAMA DCDO Sub-Team

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CDO Working Group Report August 24, 2005

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Background

This paper is the product of a working group representing the General Aviation Manufacturers Association (GAMA), the Aerospace Industries Association (AIA) and the Federal Aviation Administration (FAA). FAA, AIA, and GAMA management tasked this working group with defining:

- the essential elements of a Certified Design Organization (CDO)
- the CDO gates for FAA involvement
- the use for CDO
- the levels of CDO usage
- a CDO implementation plan and schedule
- an Aviation Rulemaking Committee (ARC), and
- a go-forward plan

Deliverables for the working group consisted of a presentation suitable for briefing Executive Management and a paper detailing the findings of the group. This paper is submitted in partial fulfillment of these requirements.

Congressional Mandate

Congress included in *Section 227 of the Vision 100-Century of Aviation Reauthorization Act of 2003*, the requirement for development and oversight of a system for certification of design organizations. The act also allows for the Administrator to rely on certifications of compliance by a design organization when making a finding to issue a type certificate.

*Not later than **4 years** after the date of enactment of this Act, the Administrator of the Federal Aviation Administration shall transmit to the Committee on Transportation and Infrastructure of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate **a plan for the development and oversight of a system for certification of design organizations to certify compliance with the requirements and minimum standards prescribed under section 44701(a) of title 49, United States Code, for the type certification of aircraft, aircraft engines, propellers, or appliances***

*Beginning **7 years** after the date of enactment of this subsection, **the Administrator may issue a design organization certificate to a design organization to authorize the organization to certify compliance with the requirements and minimum standards prescribed under section 44701(a) for the type certification of aircraft, aircraft engines, propellers, or appliances.***

See Appendix A for the complete text of Section 227 of the Reauthorization Act.

CDO Fundamentals

A CDO is an aviation design organization that has been examined and certified by the FAA Administrator to have adequate engineering, design, inspection, and testing capabilities, controlled by appropriate processes, standards, and safeguards. The CDO ensures that its products are properly designed, meet the regulatory standards, and continue to operate safely throughout their service life.

CDO, like Organization Designation Authorization (ODA), requires a robust organizational design certification approach but CDO uses 'certificate management' rather than delegation. CDO requires enhanced processes (e.g. self-audit and enforcement) for ensuring compliance on the part of the holder. FAA examination of a proposed type design would rely on certification of compliance by the CDO rather than on FAA designees. The CDO is similar to an Operations Specification approach patterned after Air Agency Certificates.

The CDO working group believes the CDO concept should encompass Repairs, Alterations, Production Approvals, Parts Manufacturer Approvals (PMA), and possibly Technical Standard Order Authorizations (TSOA). The group understands that expanding the CDO concept may not be viable at this time.

The working group envisions that, just as DDS organizations will transition to ODA organizations, TC / STC ODA's will transition to CDO certificate holders after CDO rulemaking is effective. As CDO is currently limited to TC and STC design work, ODA holders doing PMA, Repairs/Alterations will continue to act under ODA. The DDS organizations are expected to become ODA organizations by 2009. CDO rulemaking is scheduled to be complete in 2010. CDO's can be small or large organizations and may have extensive or very limited authority. The working group envisions that the individual delegation system will remain for those applicants who can not, or do not elect to, use the organizational delegation approach.

Obtaining CDO Certification

CDO approval would not require the applicant to have previously had a design delegation system in place. The CDO applicant would submit organizational information, processes, and measures of organizational performance to the FAA. FAA guidance would specify a minimum set of processes that must be defined. The FAA may choose to withhold the initial CDO certificate until the FAA has had an opportunity to conduct 'shadow certification' evaluations of the applicant's processes. A 'shadow certification' would consist of FAA specialists monitoring the applicant's activities and findings on a design approval project while the applicant conducts the project according to the submitted processes.

In lieu of a 'shadow certification', the FAA could give credit for past experience with the applicant and their processes through programs such as DDS (Order 8100.9), ODA, or QMS processes.

FAA's Role

There will be multiple aspects of FAA involvement with the CDO. At the higher level, the FAA makes an assessment of an organization seeking CDO authority and issues the CDO Certificate if the requirements are met. The FAA will develop and publish a process for reviewing and approving CDO applicants. After approval, FAA monitors the performance of the CDO through participation in non-routine projects, audits, technical evaluations, and spot checks of on-going projects. The FAA will use the results of this surveillance as the basis for ensuring compliance and for enforcement actions.

The second aspect of FAA involvement is at the project level. The FAA must concur with the CDO's assessment that a program is routine. The FAA will concur with the CDO's proposed certification basis. However, the CDO and the FAA may establish a class of projects within which the CDO may apply a previously agreed certification basis without further review by the FAA. The FAA will continue to issue Equivalent Level of Safety findings, Special Conditions, Exemptions, TC's, STC's, and AD's.

FAA project level involvement would be related to:

- Exemptions
- Special Conditions
- TC / STC issuance
- Interaction with other airworthiness authorities
- New technology
- New Means of Compliance including Equivalent Safety Findings
- New regulations or policy
- Areas of high-risk service difficulties
- Areas outside CDO's experience / competence
- Published risk/compliance matrix based on likelihood and severity of non-compliance

CDO does not eliminate the FAA review of applicant compliance showings. The FAA may choose to observe the applicant's showing of compliance during the design approval project. However, the CDO working group envisions that most reviews will be for process and product audit purposes and most will be conducted during audits (formal, informal, etc.)

To ensure the needs of the CDO and the FAA are met, areas of FAA project involvement must be defined early for each program. The CDO concept envisions early communication between CDO and FAA in accordance with existing CPI principles. The expectation is most certification work will be routine, i.e. within CDO's previous experience and will therefore not require direct FAA involvement. When there is FAA involvement, the FAA should provide a rationale for their participation based on criteria listed above. When the FAA chooses to be involved in an issue, the FAA should give credit to the CDO in subsequent projects for the CDO's successful demonstration of understanding and showing compliance for the issue.

Appendix B contains a flowchart showing a typical design certification project. Text boxes accompanying the flow chart steps describe required processes and more detailed descriptions of the step's contents.

The CDO working group envisions ongoing discussions between the CDO and the FAA about possible upcoming non-routine certification projects. These discussions will provide both parties an opportunity to anticipate the need for areas of FAA involvement in the certification projects. This communication norm is in keeping with current CPI principles and will permit the FAA to remain familiar with design certification activity within the CDO.

The project begins with a Project Notification Letter (PNL) from the CDO to the FAA. The letter will describe the nature of the project and whether it is a “routine” project per the CDO manual. The CDO is responsible for proposing a Certification Basis and making a statement of significance per §21.101. It may be agreed that no letter is necessary if the CDO determines that the project is “routine” based on FAA accepted criteria.

If the project is not “routine”, The CDO will conduct a Familiarization Meeting for the FAA. The meeting should cover such things as new technology, supplier / partner arrangements, new means of compliance, the project schedule, plans for conformity and testing, the effect of new regulations and policy, and the applicable service history. The FAA will determine if there are issues requiring FAA involvement and, if so, define the nature of their involvement. FAA involvement may create a need for a certification plan using CPI principles. Routine projects are defined by agreement with the FAA and non-routine may require FAA involvement. However, both routine and non-routine projects will be within the scope, i.e. the limitations, of the CDO certificate.

When all certification work is satisfactorily completed, the CDO will submit a Statement of Compliance signed by the senior company official identified in the CDO manual. Upon receipt of the Statement of Compliance, the FAA will issue the design approval.

While the program proceeds, the FAA may make in-process spot checks. Upon completion of the program, the FAA may make post-certification audits.

The CDO has responsibility for continued operational safety. The CDO will issue Service Bulletins. The CDO will draft recommended Airworthiness Directives and submit them to the FAA for consideration. The CDO must adhere to all reporting requirements for products in the field.

Surveillance

The FAA will surveil/ audit the CDO against both system/procedures items and against project-specific items. CDO audits will include self audits including self-disclosures, on-going FAA audits, and scheduled audits based on risk. The CDO team envisions that new CDO’s would receive more frequent audits than more mature CDO certificate holders. The number and severity of self-audit results should dictate the frequency and focus of FAA audits.

Procedural items would be based on the CDO Procedures Manual and its sub elements. For example:

- Management of CDO Manual
- Organization

- Design Assurance System
- Design function
- Airworthiness function
- Independent Monitoring function /self-audit

See the list of proposed CDO process requirements later in this paper for a more complete list.

Project-specific surveillance items would include adherence to the Certification Plan (PSCP), the planned means of compliance, and actual compliance certification.

Enforcement

Failure to adhere to approved CDO processes or failure to properly show compliance would result in FAA directed corrective actions and the FAA could pursue prescribed enforcement actions. FAA corrective / enforcement actions may be mitigated by CDO self-disclosure and internal CDO corrective actions.

The working group envisions enforcement based primarily on audit results but could also be in response to FAA reviews during an ongoing certification program. Like DDS audits, there will be process audits and technical audits. Like production audits today, the FAA must distinguish between a failure to follow approved procedures and a finding that approved procedures are not adequate. Pre TC/STC certification enforcement would have to be a failure to follow approved procedures rather than non-compliance to the Airworthiness Standards as the company has not actually made a showing of compliance until the applicant presents the Statement of Compliance Letter to the FAA. Post TC/STC certification enforcement could be for not following approved procedures or for making a statement of compliance that was not correct.

The working group recognizes that the FAA's transition from engineering reviews and findings to audits and enforcement will be a challenging cultural change for FAA's engineering workforce.

The CDO ARC should review current work in Organizational Delegation Management underway in Canada and Europe.

ODA / CDO Differences

Under ODA, the applicant shows compliance to all requirements and the applicant's Authorized Representatives (AR's) make findings of compliance for all of the showings. Under CDO, the applicant's showings and compliance determinations will be integrated with the product development process. FAA requirements will be part of the overall project requirements and will be the subject of individual specialists' review, system level design reviews, and product level design reviews. The CDO process will produce compliance determinations for all requirements.

In addition, there are differences related to the privileges of a certificate holder versus a delegation. A delegated organization must seek delegation approval for each project and is

subject to the historical uncertainties and inconsistencies of the delegation decision process whereas the certificate holder has authority to proceed within the limitations of the certificate. For CDO's working within areas of demonstrated competencies, the certification approach should permit them to proceed with design certification with little or no real-time review by the FAA. This will expedite a great deal of routine certification work associated with design changes on existing products and repetitive certification of similar products. CDO's undertaking projects that go beyond their previous experience should expect more FAA involvement.

Sub-Tier Design Authority

If a CDO chooses to go outside its organization for design expertise, it may do so. If the CDO makes use of an individual outside of the CDO who has FAA design credentials (DER e.g.), that individual would be working under the auspices of the CDO rather than under his/her individual FAA authority. It would be the responsibility of the CDO to manage the individual as an agent of the CDO. The top level CDO has responsibility for the qualifications and performance of all outside sources whether they are individual experts, suppliers, or approved organizations. The top level CDO has ultimate responsibility for total integration and compliance of the product regardless of the source of data, analysis, or inspections. The determination is the responsibility of the top tier CDO applicant, not the FAA office.

Although the CDO may not have enough in-house expertise to do all the compliance determination work the CDO, at a minimum, must have competency to oversee outside sources of design and compliance determinations. The CDO must have a quality assurance process to evaluate the quality of the design input and compliance determination from sub-tier design suppliers. The CDO must integrate the sub-tier design supplier into the CDO processes including CDO procedures training and project-specific requirements as well as integrate the supplier's design into the final product. The depth of the design evaluation and integration may vary as a function of risk and complexity of compliance determination.

CDO Requirements

The working group compiled the following processes that it deems essential to CDO approval and operation. For limited CDO certificates, these processes may likewise be limited and tailored to the scope of the CDO's authority.

- A top-level procedure that defines how the CDO System will perform the certification function and how the FAA will participate in the certification process
- Design process that includes the showing of compliance in the process. This may include:
 - A Design Manual defining standard design practices
 - A Means of Compliance (MOC) manual with standard MOC practices
 - Design review procedures including flight readiness reviews
 - Engineering requirements incorporating FAA regulations and policy
 - Processes for compliance test article and test set-up conformity

- Process for documentation of compliance
- Configuration Management (CM) process

The CDO design and compliance processes must account for system integration, system-level compliance, and installation of multiple STC's.

- Process for supplier/partner involvement
 - CDO permits the use of outside expertise. Outside experts or organizations would not make findings using FAA Form 8110-3 but would pass scrutiny as a holder of expertise. The applicant CDO would cite supplier/expert as a CDO operative. The process must define applicant CDO's selection, oversight, and review criteria for outside compliance work.
- Process for CDO internal issue resolution
 - Note: The working group suggests the ARC review Transport Canada's issue resolution process.
 - Within a CDO, issues must be brought to light, therefore, a process for internal CDO issue identification and resolution is required. The CDO's management must ensure that there are incentives to promote issue identification and resolution as opposed to a "shoot the messenger" culture.
- Process for issue resolution between CDO and FAA
- Process for CDO interface with foreign civil aviation authorities (FCAA)
 - This process may be identical to the current process initially but the working group believes that there are efficiencies to be gained over the current system. Recognizing that bilateral agreements require the participation of the certifying authority and the validation authority, the team believes that a tiered approach offers advantages for all concerned. In this approach, at the Tier 1 or higher issue level, both authorities participate with the applicant to agree on the nature and methods of the validation program. After this agreement, more routine, Tier 2 contacts and submittals to execute the agreed plan would be allowed. These contacts and submittals would be from the applicant directly to the validating authority with copies to the certifying authority. The working group understands that this issue may be constrained by current procedures but believes that such an approach should be pursued.
- Process for administrative closure
 - This process must define the deliverables that must be in place to obtain FAA or FCAA approval. These deliverables will include:
 - Compliance Statement
 - Compliance record
 - Final certification readiness review (CDO final type board)
- Process for the involvement of suppliers, partners, and outside experts

- Process for dissemination of Regulatory Requirements/Guidance material including
 - Regulations and policy for each certification basis needed
 - Foreign regulations and policy
 - Where to go to get questions answered or get help with regulatory research
- Process for CDO training including
 - Showing compliance
 - CDO Organization
 - CDO process tree
 - How to find and use rules and guidance
 - Standard MOC
 - Design reviews (design reviews as a second level to show compliance)
 - Project closure
 - Self-audits
 - FAA audits
 - Record retention
 - Reporting requirements (§21.3, non-compliance, non-conformity)
 - Issue resolution
- A Self-audit system that verifies that the CDO is functioning in accordance with the approved processes and procedures and reports the audit results to the FAA. This system should include a process for accountability / disclosure
- Process for record retention, storage, and retrieval of records
- Processes and procedures for in-service difficulty investigation and reporting that include:
 - Identification of service difficulties
 - Notification requirements – what, who, when, how
 - Subsequent investigations
 - Reaching final resolution / corrective action
 - Service documents
 - Drafting and requesting AD's
 - structured communications or regular service reviews
- FAA process to evaluate the CDO applicant prior to granting CDO possibly based on the ACSEP audit template, DDS technical evaluation template, or ISO / AS 9100 QMS
- FAA process for review and response to Project Notification Letters (PNL)
- CDO process for AEG functions including
 - Instructions for Continued Airworthiness
 - Training
 - Type Ratings

- Identification of critical positions within the CDO and a process for notification of personnel changes in these positions
- Description of infrastructure and work environment features related to CDO processes

The working group envisions that a CDO will do trending, service information analysis, and risk management as many type design holders do today. There is considerable difficulty defining what would be required and what constitutes evidence of fulfillment. FAA and industry requirements in this area may well be independent of the CDO approach to certification. The working group recommends leaving this issue to the CDO ARC and FAA's Safety Management organization.

Benefits of CDO from Industry Team Members' Perspective

Industry believes that CDO will create significant benefits because CDO will eliminate delegation for those organizations that qualify. Delegation is granted on a case-by-case basis while a CDO certificate gives holder a right to proceed. Today, FAA does not consistently apply delegation from project to project. This inconsistency makes planning project schedules and costs difficult.

Delegation, in current practice, does not give credit to company processes, controls, and experience (as opposed to the experience of the individual AR's/DER's). Each applicant is managed in the same way, whether a new entrant to design certification or one with a long history of successful certification. CDO illuminates and reinforces the applicant's responsibility to show compliance as the design approval holder.

Thirdly, CDO could be the appropriate catalyst to create needed 'cultural change' within FAA. Taking routine work off of the FAA's shoulders will permit the FAA to leverage the expertise of its specialists by focusing their activities on system management and safety critical investigations.

Benefits of CDO from FAA Team Members' Perspective

Successful implementation of CDO would result in the ultimate expression of Safety Management concepts at work. CDO will require the certificate holder to develop and maintain the most robust of processes for their entire certification system. This will reinforce the holder's responsibility for their type designs.

CDO Concerns from Industry Team Members' Perspective

Because CDO is not a delegation, CDO organizations cannot make a finding. DAS organizations converting to CDO will lose their existing ability to issue STC's.

CDO Concerns from FAA Team Members' Perspective

Smaller applicants may not find CDO a desirable certification path as it will have considerable up-front costs.

Legally based on the Congressional language under CDO a current DAS organization converting to CDO will lose their existing ability to issue STC's.

The effect on FAA resources will not necessarily be less in the short term.

Sub-tier design suppliers will require accountability and strong process of quality assurance by the CDO.

Enforcement in support of CDO will have a tendency to stifle cooperation. Have to look at best practices currently used in the manufacturing area.

Outline for Aviation Rulemaking Committee (ARC)

SCHEDULE

Item	To Meet Congressional Date	FAA Aggressive But Realistic Proposal
FAA forms ARC	September '05	September '05
FAA Plan to Congress	October '05	October '05
NPRM	December '06	September '07
Final Rule	October '08	September '09
Final supporting policy	April '09	September '10
Begin training (FAA & Industry)	October '09	January '11
Implement	October '10	January '12

ARC (Order 1110.133)

Background

US industry expressed dissatisfaction with the current delegation structure used by FAA's Aircraft Certification Service. The dissatisfaction stemmed from the variations in application of delegation among the FAA's Aircraft Certification offices and the uncertainty associated with variations in delegation from project to project. Industry sought a certificate approach similar to that used for other functions such as Repair Stations, Air Carriers, and Production Approvals. Industry believes that a certificate for design organizations that entitled the holder to perform specified design certification tasks in accordance with FAA approved procedures would remove a considerable amount of the risks and uncertainty associated with delegation.

Congress included in the Vision 100-Century of Aviation Reauthorization Act the requirement for development and oversight of a system for certification of design organizations. The act also allows for the Administrator to rely on certifications of compliance by a design organization when making a finding to issue a type certificate.

Objective

The CDO Aviation Rulemaking Committee is being formed to ensure that the FAA responds effectively to that portion of the Act mandating that FAA develop a system for certification of design organizations. These design organizations will be authorized to certify compliance with the requirements and minimum standards prescribed under Title 49 USC 44701. The committee will make its recommendations, which may include recommendations for rulemaking, processes, policy, guidance, or other tasking, to the Administrator through the Associate Administrator for Aviation Safety. As part of its task, this committee may also review existing regulations and make recommendations to amend or delete those as appropriate.

Scope

The system for certification of design organizations is limited to type certificates, amended type certificates, supplemental type certificates, and amended supplemental type certificates.

Procedures of doing the ARC (if required)

- a. The committee provides advice and recommendations to the Associate Administrator for Aviation Safety. The committee acts solely in an advisory capacity.
- b. The committee will present and discuss whatever input, guidance and recommendations the members of the committee consider relevant to the ultimate disposition of issues. Discussion will include, but not be limited to, the following:
 - (1) Recommendations for rulemaking necessary to meet objectives.
 - (2) Operational objectives, recommendations, and requirements.
 - (3) Guidance material and the implementation processes.
 - (4) Documentation and technical information to support recommendations.

Organization, Administration, and Membership of the ARC

AIA
Bell Helicopter
Boeing
The New Piper Aircraft
Cessna
Embraer
GAMA
GE
Gulfstream
Dassault Falcon Jet
HEICO
Sabreliner / Midcoast Aviation
Honeywell

Raytheon
Bombardier
Air Line Pilots Association (ALPA)
Modification & Replacement Parts Association (MARPA)
Small Aircraft Manufacturers Association (SAMA)
Aeronautical Repair Station Association (ARSA)
FAA
NATA
Sikorsky

Recommendations

1. Clarify Legislative intent to include PC, PMA, Repairs & Alterations, and possibly TSOA
2. Address issue of international agreements and how CDO organizations could interface with FCAA's directly for routine work.
3. CDO's should make emissions and noise determinations of compliance (14 CFR parts 34 and 36) based on agreements with FAA.
4. CDO's should make determinations in areas evaluated by AEG based on agreements with FAA.
5. FAA surveillance and management of the CDO's should be through a Certificate Management Office concept that includes design, inspection, airworthiness, and AEG functions. This should be similar to FAA's Center of Excellence concept.
6. The ARC should model CDO certificate management function within FAA. Examine current system and define a more efficient system compatible with CDO. The system should define lines of communication between the CDO and the FAA including CDO contact with the Directorate. Which FAA offices/functions will be involved?
7. Resolve joint FAA/Industry concern about STC CDO not being able to issue own STC's.
8. Provide means for CDO approval (without requiring FAA involvement) of changes that are "routine" per the CDO procedures manual and that do not require re-issuance of the TC, STC, TSOA, or PMA.

Appendix A

VISION 100 – CENTURY OF AVIATION REAUTHORIZATION ACT SECTION 227 DESIGN ORGANIZATION CERTIFICATES

SEC. 227. DESIGN ORGANIZATION CERTIFICATES.

(a) GENERAL AUTHORITY TO ISSUE CERTIFICATES.—Effective on the last day of the 7-year period beginning on the date of enactment of this Act, section 44702(a) is amended by inserting “design organization certificates,” after “airman certificates,”.

(b) DESIGN ORGANIZATION CERTIFICATES.—

(1) PLAN.—Not later than 4 years after the date of enactment of this Act, the Administrator of the Federal Aviation Administration shall transmit to the Committee on Transportation and Infrastructure of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate a plan for the development and oversight of a system for certification of design organizations to certify compliance with the requirements and minimum standards prescribed under section 44701(a) of title 49, United States Code, for the type certification of aircraft, aircraft engines, propellers, or appliances.

(2) ISSUANCE OF CERTIFICATES.—Section 44704 is amended by adding at the end the following:

“(e) DESIGN ORGANIZATION CERTIFICATES.—

“(1) ISSUANCE.—Beginning 7 years after the date of enactment of this subsection, the Administrator may issue a design organization certificate to a design organization to authorize the organization to certify compliance with the requirements and minimum standards prescribed under section 44701(a) for the type certification of aircraft, aircraft engines, propellers, or appliances.

“(2) APPLICATIONS.—On receiving an application for a design organization certificate, the Administrator shall examine and rate the design organization submitting the application, in accordance with regulations to be prescribed by the Administrator, to determine whether the design organization has adequate engineering, design, and testing capabilities, standards, and safeguards to ensure that the product being certificated is properly designed and manufactured, performs properly, and meets the regulations and minimum standards prescribed under section 44701(a).

“(3) ISSUANCE OF TYPE CERTIFICATES BASED ON DESIGN ORGANIZATION CERTIFICATION.—The Administrator may rely on certifications of compliance by a design organization when making a finding under subsection (a).

“(4) PUBLIC SAFETY.—The Administrator shall include in

a design organization certificate issued under this subsection terms required in the interest of safety.

“(5) NO EFFECT ON POWER OF REVOCATION.—Nothing in this subsection affects the authority of the Secretary of Transportation to revoke a certificate.”.

(c) REINSPECTION AND REEXAMINATION.—Section 44709(a) is amended by inserting “design organization, production certificate holder,” after “appliance,”.

(d) PROHIBITIONS.—Section 44711(a)(7) is amended by striking “agency” and inserting “agency, design organization certificate, ”.

(e) CONFORMING AMENDMENTS.—

(1) SECTION HEADING.—Section 44704 is amended by striking the section designation and heading and inserting the following:

“§ 44704. Type certificates, production certificates, airworthiness certificates, and design organization certificates”.

(2) CHAPTER ANALYSIS.—The analysis for chapter 447 is amended by striking the item relating to section 44704 and inserting the following:

“44704. Type certificates, production certificates, airworthiness certificates, and design organization certificates.”.

Appendix C

Disposition of Comments and Items to be included in the ARC:

Rockwell Collins (Enterprise Product Assurance Organization)

Comment: The concept clearly requires a level of "self-audit" to internally assure compliance to documented processes. While the level of audit is yet undefined, based on the list of processes included in the blue paper, we would expect that an audit program would be required to evaluate compliance to all the processes listed, which would expand the scope of many manufacturers' current audit activity. Resources to support that expanded scope would need to be developed. Can existing Design Quality Engineering (DQE) and Software Quality Engineering (SQE) functional activities satisfy some of the self-audit requirement? Manufacturers' current processes may require enhancement depending on the expectations for issue identification and resolution. What about CMMI level certification - will that be taken into consideration by the FAA when certifying a CDO?

Disposition: CDO is not intended to be a function inside of a company, CDO will contain the entire company. The highest levels of management will be responsible for assuring compliance with the CDO procedures and each design function will be performed to a procedure which is contained in the CDO manual. Each CDO will have opportunity to include appropriate audit functions and to designate the types of individuals who are qualified for those roles. The ARC will cover these issues in more detail.

General Electric (GE)

Comment: The Working Group Report states that repairs are outside the scope of the legislation. However, GE believes that some repairs should be included in the CDO proposal. Under 14 CFR Part 33, Airworthiness Standards: Aircraft Engines, an applicant for a Type Certificate must prepare Instructions for Continued Airworthiness under section 33.4 in accordance with Appendix A. Appendix A states that the ICA must contain "details of repair methods for worn and otherwise substandard parts and components..." GE therefore believes that repairs that are developed by a TC Holder for inclusion in the Engine Overhaul Manual, both original issue and revisions, would fall within the scope of the CDO under the current legislation.

Disposition: A meeting will be held on September 9, 2005 to discuss the scope of the legislation with the FAA Legal Department. This comment will be discussed during this meeting.

Sikorsky

CDO Concerns from FAA Team Member's Perspective [Page 10]

Comment: There is not an explicit reference to aircraft flight manuals. The CDO should be authorized to approve flight manuals.

Disposition: Approval of flight manuals and flight manual revisions is an item which would be an appropriate function of a CDO. This issue will be discussed in the ARC.

Comment: There should be more explicit guidance regarding interface between CDO/FAA and EASA/NAAs (e.g. should at least initial NAA contact be through FAA?).

Disposition: Validation procedures will need to be discussed in the ARC as CDO must be internationally recognized.

Comment: Sikorsky expresses its interest and desire to be a member of the ARC.

Disposition: Sikorsky will added to the list of organizations requesting participation in the ARC.

Pratt & Whitney (UTC)

CDO Fundamentals [Page 2]

Comment: Insert the word '*inspection*' in the first sentence. Comment: There must be an inspection function to perform conformity inspections.

Disposition: The word inspection was added to the blueprint.

Obtaining CDO Certification [Page 2]

Comment: Added '*...or if the applicant is a consortium with one or more members holding its own CDO.*' to last sentence of section. When two or more established TC holders form a new consortium, the consortium should not be treated as a brand-new inexperienced entity.

Disposition: The ARC will discuss the attributes which qualify an organization for a CDO. This comment will be included in the ARC discussion on this topic.

FAA's Role [Page 4]

Comment: Added '*...responsibility for...*' to the last paragraph of the section.

Disposition: This was be added to the blueprint.

CDO Requirements [Page 6,7]

Comment: Deleted '*Processes for compliance test article and test set-up conformity*' and moved it to the new bullet on page 7 that reads '*Quality Assurance System processes for compliance test article and test set-up conformity.*' The quality assurance system is required to assure that the conformity inspections are done correctly, with properly selected and calibrated equipment, by qualified personnel.

Disposition: Each CDO manual will detail the abilities of a CDO. This item will be discussed in the ARC to assure CDO guidance materials recommend such functions.

Rockwell Collins (Certification Department)

CDO Presentation

Slide 11, Rationale For FAA Project Level Involvement last bullet

Comment: What is meant by a "published risk/compliance matrix"? Rockwell Collins recognizes the advantage of utilizing a method to direct the limited FAA resources to the areas that can benefit most from direct FAA involvement. It is unclear from this bullet what is intended. For example, is it the intent to have an FAA published list of CDO projects that require additional FAA involvement? If this is the case then what are the criteria for placing a project on the FAA published list. Alternatively, is it the intent to have a published method for identifying projects that require FAA oversight similar to that proposed by RAISC team 7 for resource targeting of supplier oversight and allowing the FAA to utilize that method for selecting the projects to be considered for additional involvement?

Disposition: The FAA will implement a risk based approach to delegation which will become common place in the next year. The FAA is determining critical regulations which need close scrutiny and those which are less important to assure that oversight effort is expended on the more critical items. The FAA risk based approach will be introduced along with ODA and will not be a change associated with CDO. It is expected that the same risk based approach mentality will be carried over into CDO however.

Slide 17, Proposed Evolution of Certification Paths

Comment: The time line shown on Slide 17 shows Individual Delegations continuing after the formation of CDOs. Rockwell Collins understands the rationale and advantages of maintaining a pool of independent individual designees (e.g. Consultant DERs) to provide additional delegated resources as needed by the various CDOs. Is it the intent to have all individual designees be independent of the CDO (e.g. Consultant DERs)? In other words, is it redundant to have Company DERs in the CDO environment?

Disposition: CDO will perform the function which today completed by company DERs and ARs. There will not be delegation titles under a CDO, each company CDO manual will dictate the qualifications necessary to perform different CDO job functions. Companies will use individual DERs to perform duties not contained in the CDO manuals because they are new functions or the company has not demonstrated proficiency in the task. There may be some individuals working for the Company CDO that may also hold a Company DER ticket but those will be rare cases. There may also be a consultant DER working for a Company CDO but his DER ticket will not be used for the CDO.

Slide 22, Concerns from Industry Team Members Second bullet

Comment: Rockwell Collins also believes that the intent of the Congressional mandate is to include TSOA and PMA equipment. This is consistent with the desire to delegate approvals to those organizations with the appropriate level of domain knowledge and processes. In the case of TSOA and PMA the use of a subsequent installation approval provides an independent confirmation of the appropriateness of the equipment.

Disposition: A meeting will be held on September 9, 2005 with the FAA Legal Department to discuss the legislative intent of CDO. This comment will be discussed during the meeting.

Slide 23, Concerns from FAA Team Members Item 2

Comment: Loss of ability to issue STCs when a DAS converts to a CDO is a significant issue.

Disposition: The inability to issue an STC is an apparent drawback which will be discussed in the ARC. The possibility of having an administrative AR function to issue certificates will be discussed as well.

Slide 23, Concerns from FAA Team Members Item 5

Comment: Rockwell Collins recognizes that the absence of program level involvement by the FAA offers less opportunity for cooperation and interaction between the FAA and the CDO on a day-to-day basis. Rockwell Collins nevertheless suggests that regularly scheduled FAA audits, such as those conducted by the MIDO today, do provide an opportunity to develop a cooperative environment. A positive team relationship between the FAA and the CDO will be essential in achieving the goals of both the FAA and the CDO.

Disposition: The CDO FAA relationship will involve similar interactions as those seen between the FAA and a DAS or a DOA today. Most if not all of the interaction between the CDO and the FAA will occur up front during the project planning.

Comment: There appears to be no discussion regarding any requirement for the applicant's CDO office to have independence/autonomy from the parent organization. Rockwell Collins recommends that independence/autonomy guidance similar to that contained in the draft ODA order be included for CDOs.

Disposition: A CDO will encompass the entire company, the highest levels of management will be responsible for assuring the procedures of the CDO are followed. CDO procedures will be the operational procedures for the company, one of the individual positions in each CDO will be high level management responsible for assuring procedures are being followed.

Rolls-Royce

CDO Fundamentals [Page 2]

Comment: 3rd paragraph, suggest expanding last sentence to clarify that expanding the CDO concept may not be viable at this time due to practical reasons rather than functional or technical reasons.

Disposition: There will be discussion in the ARC as to the ability to expand CDO to these functions or whether other methods can be used in conjunction with CDO to accomplish them .

Comment: 4th paragraph, TC/STC ODA's may transition to CDO's after CDO rulemaking is effective. This transition is not expected to be automatic. I suggest changing the words "become" to "transition" where appropriate.

Disposition: This change was implemented.

Obtaining CDO Certification [Page 2]

Comment: 2nd paragraph, suggest rewording "give credit" sentence to convey that confidence in an organization's abilities can be supported based on successful experience through existing programs and relationships such as DDS, ODA, etc.

Disposition: The blueprint is a general framework, the ARC will further discuss what items qualify an organization for CDO.

CDO Requirements [Page 6,7]

Comment: It wasn't clear within the current listing of bulleted responsibilities where the process defining communication and interface relationships between the various FAA entities (MIDO, ACO, standards staff, etc.) resides. Also, the bullet speaking about in-service difficulty investigation and reporting, I'd suggest that this be strengthened language-wise into processes pertaining to overall safety management. Maybe the topic of safety management could be a separate bullet entirely.

Disposition: Each CDO will create a manual which is appropriate to their organization function and safety management will be an important section. The issue of safety management will be detailed in the ARC discussions.

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Certified Design Organizations (CDO)

Presentation of AIA/GAMA CDO Working Group Report

August 24, 2005

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Congressional Mandate

- Congress included in the Vision 100-Century of Aviation Reauthorization Act the requirement for development and oversight of a system for certification of design organizations.
- The act also allows for the Administrator to rely on certifications of compliance by a design organization when making a finding to issue a type certificate.

CDO Reauthorization Language

- *Not later than **4 years** after the date of enactment of this Act, the Administrator of the Federal Aviation Administration shall transmit to the Committee on Transportation and Infrastructure of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate **a plan for the development and oversight of a system for certification of design organizations** to certify compliance with the requirements and minimum standards prescribed under section 44701(a) of title 49, United States Code, **for the type certification of aircraft, aircraft engines, propellers, or appliances***
- *Beginning **7 years** after the date of enactment of this subsection, **the Administrator may issue a design organization certificate to a design organization** to authorize the organization to certify compliance with the requirements and minimum standards prescribed under section 44701(a) for the type certification of aircraft, aircraft engines, propellers, or appliances.*

CDO Fundamentals

- A design organization that has been examined and certified by the Administrator to have adequate engineering, design, and testing capabilities, standards, and safeguards. The CDO ensures that the product is properly designed, meets the regulatory standards, and continues to operate safely.
- CDO, like ODA, is a robust organizational certification approach but uses 'certificate management' rather than delegation. CDO requires enhanced processes (self-audit and enforcement e.g.) for ensuring compliance on the part of the holder
- CDO Sub-Team believes CDO should encompass Repairs & Alteration, Production Approvals, PMA, and possibly TSOA. The sub-team understands that pursuing this change may not be viable at this time.

The method of FAA investigation of a proposed type design would shift from reliance on FAA designees to reliance on certification of compliance by the CDO.

CDO Fundamentals

- CDO Order will define a minimum set of processes
- Initial CDO certificate may be withheld until FAA 'shadow' evaluation is complete. CDO approval would not require a previously approved delegation system to be in place
- In lieu of a 'shadow' evaluation, FAA could give credit for past experience with applicant such as DDS (Order 8100.9), ODA, or QMS processes.
- CDO limitations will be similar to ops spec approach used for air agency certificates.

CDO Fundamentals

- The top level CDO has responsibility for the qualifications and performance of all outside sources contributing to compliance determinations
- The top level CDO has ultimate responsibility for total integration and compliance regardless of the source of data
- Sub-tier design suppliers, individuals or organizations, working for a CDO would be managed as agents of the CDO

CDO Fundamentals

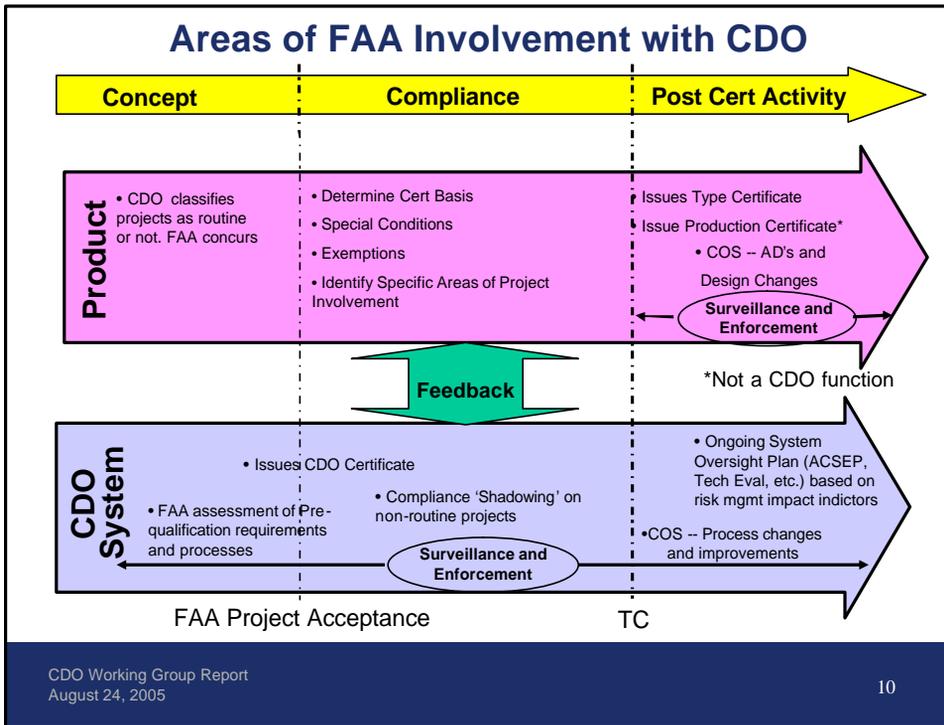
- CDO does not eliminate FAA reviewing company compliance determinations, but most reviews will be during regularly scheduled audits
- FAA will act as observer in areas of involvement vs. compliance finders for specific CFR sections
- Areas of FAA project involvement will need to be defined early for each program providing a rationale for FAA participation
- FAA should give credit to CDO in subsequent projects for success on previous issues requiring FAA involvement

CDO Fundamentals

- Expectation is most certification work will be routine, i.e. within CDO's previous experience and will therefore not require FAA involvement
- CDO concept envisions early communication between CDO and FAA in accordance with CPI principles

Criteria for CDO Certification

- Senior Management commitment
- Processes in place
- Previous organizational delegation experience if any
- Shadow certification process if required
- Robust, competent staff
- Defined limitations / competencies



Rationale For FAA Project Level Involvement

- ✓ Exemptions
- ✓ Special Conditions
- ✓ TC / STC issuance
- ✓ Interaction with other airworthiness authorities
- ✓ New technology
- ✓ New Means of Compliance including Equivalent Safety Findings
- ✓ New regulations or policy
- ✓ Areas of high-risk service difficulties
- ✓ Areas outside CDO's experience / competence
- ✓ Published risk/compliance matrix based on likelihood and severity of non-compliance

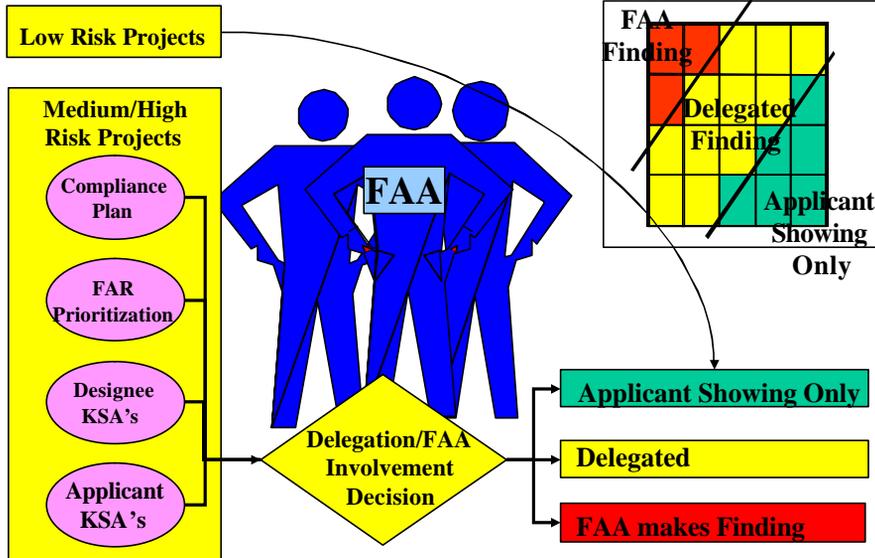
Continued Airworthiness

CDO must include processes and procedures for in-service difficulty investigation and reporting that include:

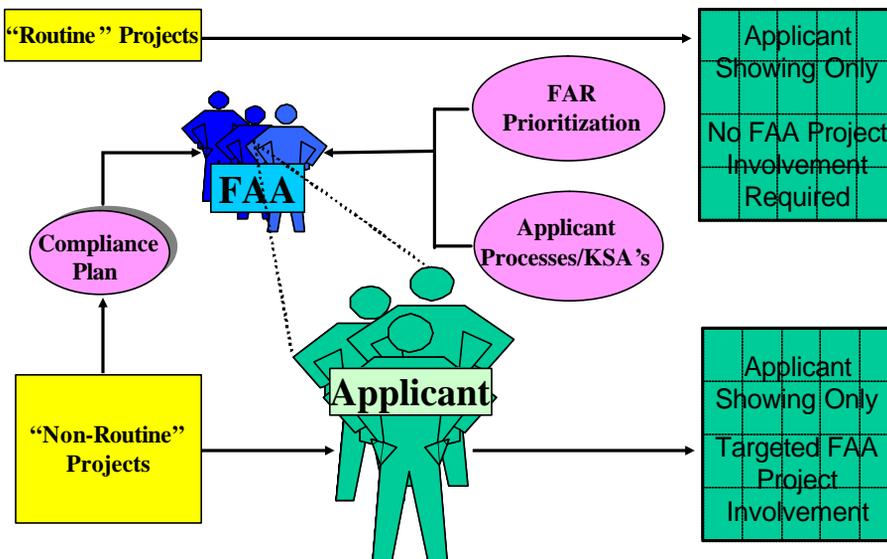
- ✓ Identification of service difficulties
- ✓ Notification requirements – what, who, when, how
- ✓ Subsequent investigations
- ✓ Reaching final resolution / corrective action
- ✓ Service documents
- ✓ Drafting and requesting AD's
- ✓ Structured communications or regular service reviews

Differences between CDO and FAA's Planned Approach to ODA using Safety Management Concepts

Product Cert Path - ODA with SM Concepts Applied



Product Certification - CDO (No Delegation)

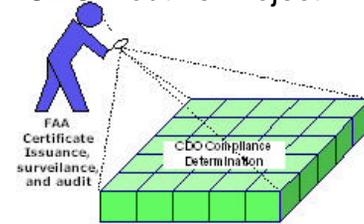


Design Certification Systems Comparison

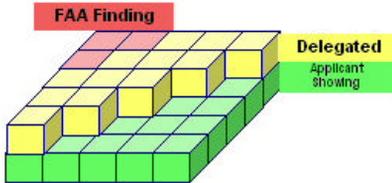
Current State



CDO Routine Project



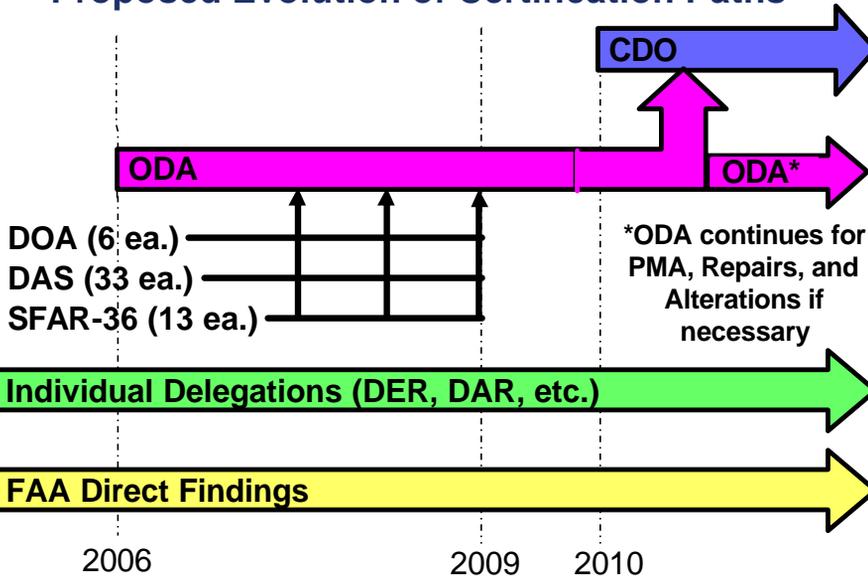
ODA



CDO Non-Routine Project



Proposed Evolution of Certification Paths



Potential Processes with CDO

- Top-Level Certification Manual
 - Incorporate the best of SAE AS9100, ACSEP, DDS Technical Evaluations, ISO, and current industry best practices.
- Design manual
 - Design reviews including flight readiness
- MOC manual
- Process for certification verification
- Self audit / self-disclosure / corrective actions
- Training
- Service difficulty investigation and reporting
- Disseminating rule/guidance material within the CDO

Potential Processes with CDO

- AEG function
- Issues resolution within the CDO
- Issues resolution with FAA
- Compliance testing
- Conformity
- Statement of Compliance and administrative closure
- Compliance documentation / record retention
- Role of FAA in process
- Supplier/partner involvement
- Process for CDO interface with foreign authority
- Process for the FAA to evaluate the CDO applicant prior to CDO approval

Benefits of CDO from Industry Team Members

- CDO reinforces industry's responsibility in compliance as a design approval holder
- CDO removes redundancy in design review
- CDO gives holder a right to proceed while ODA still grants a privilege on a case-by-case basis
- Could be appropriate catalyst to force needed 'cultural change' within FAA
- CDO provides more consistency than delegation from project to project. CDO makes it easier for industry to plan project costs and schedules.

Benefits of CDO from FAA Team Members

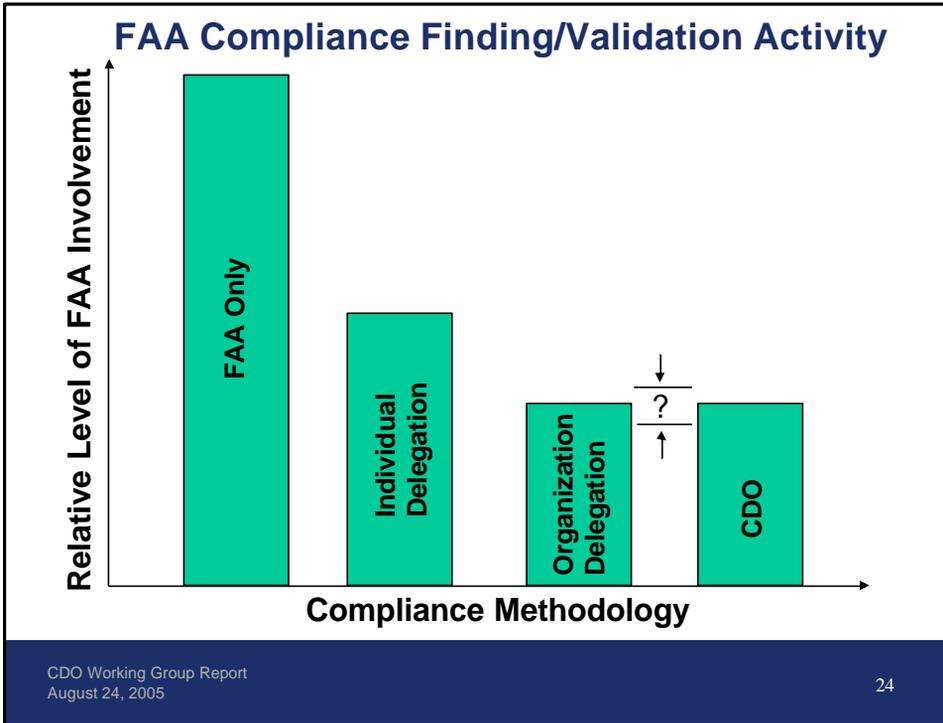
- Successful implementation would result in the ultimate expression of Safety Management concepts at work
- Requires holder to develop and maintain the most robust of processes for their entire certification system
- Reinforces holders responsibility for their type designs

Concerns from Industry Team Members

- Because CDO is not a delegation, CDO organizations cannot make a finding thus DAS organizations converting to CDO will lose their existing ability to issue STC's.
- Concerned that current FAA belief is that CDO is limited to TC/STC only which severely limits utility of CDO. Industry believes intent of Congressional mandate is that CDO should include Repairs & Alterations, TSOA, PMA.

Concerns from FAA Team Members

1. Smaller applicants may not find CDO a desirable certification path
2. Legally based on Congressional language under CDO, current DAS converting to CDO will lose ability to issue STC's
3. Effect on FAA resources will not necessarily be less in the short term
4. Sub-tier design suppliers will require accountability and strong process of quality assurance by the CDO
5. Requires FAA to perform surveillance and enforcement action which could tend to stifle cooperation
 - Must look at best practices in manufacturing area



CDO Program Schedule

Item	To Meet Congressional Date	FAA Aggressive But Realistic Proposal
FAA forms ARC	September '05	September '05
FAA Plan to Congress	October '05	October '05
NPRM	December '06	September '07
Final Rule	October '08	September '09
Final supporting policy	April '09	September '10
Begin training (FAA & Industry)	October '09	January '11
Implement	October '10	January '12

CDO Working Group Report
August 24, 2005 25

Recommendations

1. Clarify Legislative intent to include PC, PMA, Repairs & Alterations, and possibly TSOA
2. Address issue of international agreements and how CDO organizations could interface with FCAA's directly for routine work.
3. CDO's should make emissions and noise determinations of compliance (14 CFR parts 34 and 36) based on agreements with FAA.
4. CDO's should make determinations in areas evaluated by AEG based on agreements with FAA.
5. FAA surveillance and management of the CDO's should be through a Certificate Management Office concept that includes design, inspection, airworthiness, and AEG functions. This should be similar to FAA's Center of Excellence concept.

Recommendations

6. The ARC should model CDO certificate management function within FAA. Examine current system and define a more efficient system compatible with CDO. The system should define lines of communication between the CDO and the FAA including CDO contact with the Directorate. Which FAA offices/functions will be involved?
7. Resolve joint FAA/Industry concern about STC CDO not being able to issue own STC's.
8. Provide means for CDO approval (without requiring FAA involvement) of changes that are "routine" per the CDO procedures manual and that do not require re-issuance of the TC, STC, TSOA, or PMA.