ORDER

U.S. Department of Transportation
Federal Aviation Administration

1110.133

1/16/03

SUBJ: **CERTIFICATION PROCESS STUDY (CPS) RESPONSE AVIATION RULEMAKING COMMITTEE**

1. PURPOSE. This order constitutes the charter for the Certification Process Study (CPS) Response Aviation Rulemaking Committee that is designated and established pursuant to the Administrator's authority under 49 USC 106(p)(5).

2. DISTRIBUTION. This order is distributed to the Associate Administrator for Regulation and Certification; the director and division level in the Aircraft Certification and Flight Standards Services; the Office of the Chief Counsel; and the director level of the Offices of Rulemaking, Cost and Performance Management, System Safety, and Budget.

3. BACKGROUND. In January 2001, the Federal Aviation Administration (FAA) chartered CPS for U.S. transport airplanes via a study team with broad-based FAA and industry membership. The CPS study team's objective was to conduct a comprehensive review of the current U. S. processes involved with transport airplane certification and how they relate to maintenance and operation. The study was intended to assess the adequacy of all processes currently in place throughout the airplane's service life. Special emphasis was placed on the interfaces between the processes and on information flows between all stakeholders involved in design, build, operation, maintenance, or alteration of transport airplanes. The study's goal was to identify future process improvement opportunities at all stages of the life cycle. The CPS report does not contain specific recommendations, rather it describes findings and observations related to those processes.

4. OBJECTIVE. The CPS Response Aviation Rulemaking Committee is being formed to ensure that the FAA responds efficiently to the process opportunities identified in the CPS report. The committee will make its recommendations, which may include recommendations for rulemaking, process improvements, or other tasking, to the Administrator through the Associate Administrator for Regulation and Certification. As part of its task, this committee may also review existing regulations and make recommendations to delete those that are no longer needed, in an effort to reduce the burden on the public. The general goal of the committee is to develop a means to implement improvements in the following four change areas that affect safety.

5. SCOPE. In preliminary planning, four change areas were identified that support an efficient program. By grouping the study's findings and observations into these four change areas, separate although coordinated activities may be initiated with each effort focusing on improvements to different processes within the safety system. These improvements will be the result of the addition of new rules when needed, and the modification or deletion of existing regulations that are no longer necessary. Activities can be initiated for each of the change areas in parallel. The four change areas were identified as Safety Information Management, Human Factors Integration, In-Service Changes, and Aircraft Certification (AIR) & Flight Standards

(AFS) Integration. Although all change areas identify significant change objectives, FAA and industry agree that the Safety Information Management area provides the strongest opportunity for improvements to safety. Hence, this change area is divided into four areas of special emphasis. These four areas are Critical Design Information, Continued Operational Safety Information/Precursor Awareness, Lessons Learned from Aircraft Accidents and Major Incidents, and Original Equipment Manufacturer (OEM) - Operator Safety Information Transfer. The change area objectives are as follows:

a. Safety Information Management. Develop processes to manage all safety information in an integrated way, with emphasis on the following areas:

(1) Critical Design Information. Define methods to identify critical design safety features and necessary assumptions that are essential for understanding critical safety features for each aircraft in the existing fleet, as well as new designs.

(2) Continued Operational Safety Information/Precursor Awareness. Ensure that FAA and industry data management programs effectively identify accident precursors by:

(a) Developing an AVR/Industry Safety Information Model that includes a process for identifying potential accident precursors, efficient and relevant data collection requirements, and incentives for voluntarily reported data that is legally protected.

(b) Recommending elimination or consolidation of ineffective data programs.

(3) Lessons Learned from Aircraft Accidents and Major Incidents. Define methods to capture, share, and apply lessons learned from accidents and major incidents.

(4) OEM-Operator Safety Information Transfer. Define "safety related" communications and define processes to ensure that appropriate communications take place between OEMs and operators on safety recommendations related to maintenance or operational procedures.

b. Human Factors Integration. Develop industry/FAA comprehensive plan to address all human factors issues that have resulted in accidents in the past and/or that could result in accidents in the future. The plan should address both the pre-certification and post-certification Human Factors aspects throughout the life cycle.

c. In-Service Changes. Define methods to provide:

(1) An industry standard logic process for use in determining repair and alteration classification.

(2) A coordinated alteration process that ensures the original OEM safety intent is not compromised.

(3) A process that ensures consultant Designated Engineering Representative (DER) approved designs are compliant with regulatory requirements.

(4) Enhanced air carrier/repair station quality assurance programs.

d. Aircraft Certification/Flight Standards Integration.

(1) Define an AVR-level policy for improved internal and external communication and coordination between AIR and AFS.

(2) Develop a process to ensure improved communications on technical issues with industry.

6. PROCEDURES.

a. The committee provides advice and recommendations to the Associate Administrator for Regulation and Certification. 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) Airworthiness criteria and means of compliance to meet the operational objectives.

(4) Guidance material and the implementation processes.

(5) International harmonization issues and recommendations.

(6) Documentation and technical information to support recommendations.

7. ORGANIZATION.

a. The committee will be comprised of an oversight board with representatives from FAA and industry management, and will also include committee co-chairs and working group leaders as appropriate. The committee will form working groups as necessary to address the change areas described above. The oversight board will serve to guide and monitor the activities and progress of the committee and its working groups.

b. For each of the change areas listed above, committee co-chairs and working group leaders will coordinate with the accountable FAA and committee members, and monitor progress to completion. For FAA initiatives, the committee will work with FAA management to ensure incorporation of actions into existing FAA programs and activities where feasible. It is expected that FAA management will oversee implementation by establishing Business Plan Objectives within individual offices.

c. Oversight should continue for a period of time to help oversee and integrate the overall CPS implementation for all of the change areas. This function may be performed mainly by regular telecons and email among oversight personnel and the working groups. Periodic meetings would also be required to ensure that implementation is progressing as planned for the different change areas.

8. ADMINISTRATION.

a. The Associate Administrator for Regulation and Certification will have the sole discretion to appoint members or organizations to the committee. The committee shall consist of members of the aviation community, including the public and/or other Federal Government entity representatives of various viewpoints. The FAA will provide participation and support from all affected lines of business.

b. The Associate Administrator for Regulation and Certification will receive all committee recommendations and reports. The Associate Administrator, through Aircraft Certification Service and Flight Standards Service, will be responsible for providing administrative support for the committee. The Aircraft Certification Service or Flight Standards Service will provide the designated Federal official for this committee.

c. The Associate Administrator for Regulation and Certification is the sponsor of the committee, and will select FAA and industry co-chairs for the committee. The co-chairs will:

(1) Determine, in conjunction with the other members of the committee, when a meeting is required.

(2) Arrange notification of all committee members of the time and place for each meeting.

(3) Formulate an agenda for each meeting and conduct the meeting.

d. The Office of Rulemaking (ARM) will keep the committee meeting minutes.

9. MEMBERSHIP.

a. The committee membership consists of multiple associations and organizations selected by the FAA. The membership should be balanced in points of view, interests, and knowledge of the objectives and scope of the committee.

b. The membership of the committee may include the following public and government organizations:

(1) Aviation associations such as:

(a) Air Transport Association.

(b) Airline Pilot's Association.

(2) Air carriers, manufacturers, and other private sector aviation industry participants.

(3) The FAA's Regulation and Certification line of business offices such as:

(a) Aircraft Certification Service.

(b) Flight Standards Service.

(4) Other FAA Lines of Business as required to meet committee objectives.

10. COST AND COMPENSATION. The estimated cost to the Federal Government of the CPS Response Aviation Rulemaking Committee is approximately $25,000. Non-Government representatives serve without Government compensation and bear all cost related to their participation on the team.

11. PUBLIC PARTICIPATION. Interested persons or organizations who are not members of this committee, but plan to attend a meeting, must request and receive approval in advance of the meeting from one of the Team Chairpersons or their representative.

12. AVAILABILITY OF RECORDS. Subject to the conditions of the Freedom of Information Act, 5 U.S. Code, Section 522, records, reports, agendas, working papers and other documents that are made available to or prepared for or by the Committee shall be available for public inspection and copying at the Aircraft Certification Service, 800 Independence Avenue SW, Washington, DC 20591. Fees will be charged for information furnished to the public in accordance with the fee schedule published in Part 7 of Title 49, Code of Federal Regulations.

13. PUBLIC INTEREST. The formation of the CPS Response Aviation Rulemaking Committee is determined to be in the public interest in connection with the performance of duties imposed on FAA by law.

14. EFFECTIVE DATE AND DURATION. This committee is effective November 15, 2002. The committee shall remain in existence until November 14, 2004, unless sooner terminated or extended by the Administrator.

Marion C. Blakey
Administrator

CHANGE AREA (TEAM) 1B
PROPOSED SAFETY INFORMATION MODEL

April 5, 2004

Signatures

The signatories of this document agree to and accept all information presented.

David Soucie, AVR (Co-Lead)	*Signature*	*Date*
Holly Thorson, ANM–117 (Co-Lead)	*Signature*	*Date*
Dave Harrington, Airbus (Co-Lead)	*Signature*	*Date*
John Craycraft, ANM–102S	*Signature*	*Date*
John Jackson, AFS–600	*Signature*	*Date*
Chris Spinney, ANE–142	*Signature*	*Date*
Kevin Kuniyoshi, ANM–100L	*Signature*	*Date*
Roy Patzke, SEA–AEG	*Signature*	*Date*
Scott Moreen, Boeing	*Signature*	*Date*
John Budd, Atlantic Coast Airlines	*Signature*	*Date*
Christopher Roth, Southwest Airlines	*Signature*	*Date*
Ron Rhoades, ASY	*Signature*	*Date*
Terry McVenes, ALPA	*Signature*	*Date*
Jeff Kephart, ANM–108	*Signature*	*Date*
John LaPointe, FAA Technical Center	*Signature*	*Date*

Acknowledgments

In addition to the signatories above, Team 1B would like to recognize America West Airlines, Delta Air Lines, the International Association of Machinists and Aerospace Workers, and other Boeing, Airbus, and FAA representatives for their various support. We would also like to acknowledge the efforts of the Service Difficulty Reporting (SDR) subteam co-leads, John Craycraft, ANM–103, and John Jackson, AFS–620, and participants, Continental Airlines, American Airlines, America West Airlines, Atlantic Coast Airlines, Southwest Airlines, Boeing, and the Houston and Fort Worth, Texas, certificate management offices.

TABLE OF CONTENTS

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OVERVIEW

Summary

Certification Process Study (CPS) team 1B, responsible for *Continued Operational Safety Information Management* for transport category airplanes, created this model to describe the processes for sharing safety information that are needed to improve the FAA and industry's ability to identify potential accident precursors. Appendix A provides an overview of the proposed flow of safety information. CPS team 1B recommends that the FAA and industry incorporate the Safety Information Model described in this document. The CPS 1B Recommended Implementation Plans (RIP) describe the specific implementation steps that are needed to incorporate this proposed model.

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Background

In January 2001, the Federal Aviation Administration (FAA) chartered the CPS for U.S. transport airplanes through a study team with broad-based FAA and industry membership. The CPS study team's objective was to conduct a comprehensive review of the current U.S. processes and procedures associated with transport airplane certification, operations, and maintenance. The study was intended to assess the adequacy of all processes currently in place throughout an airplane's service life. The CPS team produced a report, *Commercial Airplane Certification Process Study: An Evaluation of Selected Aircraft Certification, Operations, and Maintenance Processes (March 2002),* identifying 15 findings and 2 observations related to aircraft certification, operational, and maintenance processes.

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The CPS Response Aviation Rulemaking Committee (ARC) was formed to develop a means to implement improvements to address the findings and observations identified in the CPS report. These findings and observations were organized into four change areas: Safety Information Management (change area 1), Human Factors Integration (change area 2), In-service Changes (change area 3), and AIR/AFS Integration (change area 4). The Safety Information Management change area was subsequently divided into four sub-areas: Critical Design Assumptions & Information (1A), Continued Operational Safety Information (COSI) (team 1B, Continued Operational Safety (COS)), Precursor Awareness (1C), and OEM-Operator Safety Information Transfer (1D). The Safety Information Model described in this document represents a consensus of FAA and industry subject matter experts who convened as team 1B. Together they developed recommended solutions to the following CPS findings (summarized below; reference the CPS Report for detailed findings):

- *Finding 5.* Multiple FAA-sponsored data collection and analysis programs exist without adequate interdepartmental coordination or executive oversight.
- *Finding 6.* Basic data definition and reporting requirements are poorly defined relative to the needs of analysts and other users.
- *Finding 7.* There is no widely accepted process for analyzing service data or events to identify potential accident precursors.

- *Finding 9.* There are constraints present in the aviation industry that have an inhibiting effect on the complete sharing of safety information.

Scope

Team 1B's proposed model includes U.S. commercial aviation safety information for transport category airplanes (that is, part 25 of Title 14, Code of Federal Regulations (14 CFR)) operating under 14 CFR part 121 requirements. Part 145 of 14 CFR, Repair Stations, also was considered in the data management strategy. Team 1B will make recommendations to eliminate, consolidate, or modify FAA-sponsored safety data programs based on the Safety Information Model described below, which incorporates best practices from both the FAA and industry. Because of time constraints, team 1B does not plan to evaluate all industry data programs related to safety.

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International Coordination

Because the CPS response effort is focused primarily on U.S. solutions, team 1B conducted limited international coordination. This coordination consisted of a CPS meeting with Airbus in Toulouse in September 2003 and discussions with the Airbus team 1B co-lead. Europe's recent transition to European Aviation Safety Agency (EASA) has included proposed changes to European safety data collection and analysis processes. Uncertainty about those final processes makes coordination difficult at this time. Team 1B recommends that U.S. and European safety information management practices be compared in the future to identify differences and to share best practices. Team 1B also recommends that future activities consider methods for sharing safety data between the United States and Europe whenever possible.

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SAFETY INFORMATION MODEL OBJECTIVES

The Safety Information Model intends to—

A. Improve transport airplane safety by—

i. Providing incentives to improve the quality of safety information.

ii. Promoting information sharing and collaboration among engineers, maintainers, and inspectors in the FAA (Aircraft Certification Service (AIR), Flight Standards Service (AFS), and Aircraft Evaluation Group (AEG)) and industry.

iii. Providing the capability for improved access to safety information.

iv. Providing adequate training on safety reporting criteria and processes.

v. Ensuring appropriate oversight of the Safety Information Model.

B. Provide users/stakeholders with access to secure safety data and/or information, as appropriate.

C. Encourage industry to manage the majority of all safety data, and both the FAA and industry to manage safety information.

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D. Acknowledge that the purpose for collecting data is to improve safety and not to apportion blame or liability. Promote voluntary reporting (or access to data) whenever possible and practical to facilitate data protection.

E. Respect industry marketplace dynamics and competitive interests by—

i. Leveling the "playing field" with more consistent, standardized data reporting.

ii. Reducing burdens associated with data reporting (streamline reporting and minimize redundant reporting).

iii. To the extend possible, including using 14 CFR part 193, Protection of Voluntarily Submitted Information, de-identifying and protecting data from release to the public whenever possible and practical.

F. Design a flexible data management system that can evolve as needed over time to ensure continuous improvement.

G. Provide safety information feedback to industry as appropriate.

PROPOSED SAFETY INFORMATION MODEL DESCRIPTION

The proposed Safety Information Model (reference attachment A) provides the high-level architecture for information sharing between the FAA and industry, including required and voluntary safety information. The proposed model provides a long-term vision for sharing safety information. Both near-term and long-term proposals for implementing changes to improve data sharing are addressed in team 1B's RIPs.

Before creating the proposed Safety Information Model, team 1B identified the safety information needs of the FAA and industry, and these needs are included or addressed in the model. Note that the intent of "local communication" arrows in the model is to show general communication paths, and not to prevent any other communication paths between government and industry organizations.

The data sharing processes included in the model should meet the standards of ISO 9001, via an approved Quality Management System, whenever possible. All safety data should also meet the International Civil Aviation Organization standards to facilitate international data sharing in the future (reference RIP, Issue 4).

The definitions and acronyms used to describe the proposed Safety Information Model are included as attachment B. A list of rules and policies referenced during development of the proposed Safety Information Model is included as attachment C.

The following sections provide a detailed description of the proposed Safety Information Model. The identifiers in this description match the identifiers in the Safety Information Model flowchart (attachment A).

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1.0 Operator or Repair Station Report Safety Data (1)

The following types of operator and repair station data, including voluntary and required data, are included in the model:

- Operational and maintenance occurrence data (including mechanical interruption summary (MIS) reports and other mechanic, repairman, or pilot reports),
- Design occurrence data (including failures, malfunctions, and defects), and
- Supporting data (including information on air carrier and repair station programs to ensure compliance with system safety principles and requirements, and fleet exposure data).

Team 1B recognizes that these types of data are often related (that is, design data may include operational and maintenance data and vice versa). Therefore, all safety data systems should incorporate capabilities to share data as needed among AIR, AFS, and appropriate industry groups whenever possible.

Operators and repair stations should have specific reporting criteria whenever possible to address both voluntary and required reporting. Certain types of safety data, such as Flight Operations Quality Assurance (FOQA) data, may not constitute a "report," but may be collected in a central location (reference Box 2) and made accessible to appropriate industry/FAA groups. A FOQA ARC was created to address FOQA data, and team 1B plans to acknowledge those ongoing activities in the Safety Information Model.

Data Flow "a" This arrow is to acknowledge that operators and repair stations have forums and associations for sharing safety information. Examples include the Air Transport Association, Inc., Air Line Pilots Association International, Flight Safety Foundation, and Global Aviation Information Network. There are also informal networking relationships, from individual to individual and from organization to organization.

NOTE: Repair stations are included in the model because operators outsource much of their repair, alteration, and modification work. Although a representative from the Aeronautical Repair Station Association was invited to join CPS team 1B, they were unable to participate on the team.

1.1 Operational and Maintenance Occurrence Data

1.1.1 Data Flow "i" (voluntary)

This data path includes operational and maintenance safety data (including improper process changes) voluntarily reported by flight crewmembers, repairmen, or mechanics. It also includes flight data recorder data that may be voluntarily provided through a FOQA program.

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1.1.1.1 Consider using specially designed software to de-identify and/or filter data, providing the FAA and industry with access to certain data based on agreed criteria. In addition, independent third parties, such as the National Aeronautics and Space Administration (NASA), may de-identify and filter data through programs that offer specific data protection.

1.1.1.2 *Reporting Criteria*. Report safety concerns and 14 CFR violations in accordance with approved programs. Specific reporting requirements may vary between operators.

NOTE: Team 1A will establish the process for identifying safety critical features (SCF) and other key safety information (KSI) on transport airplanes, primarily for airplane systems. Team 1A determined that critical structures, or principal structural elements, were already adequately addressed by existing FAA and industry programs. Identification of SCFs and other KSI is expected to be accomplished by design approval holders (DAHs) in conjunction with their respective aircraft certification offices (ACOs). Appropriate data, accompanied by knowledge of the SCFs, should be considered when making changes to the maintenance program. These specific data needs will be identified by team 1A. Team 1B may recommend adding an identifier (that is, a checkbox) to appropriate data systems to notify the persons analyzing operational or maintenance safety data that it is associated with an SCF or other KSI.

1.1.1.3 Ensure that operators and repair stations report in accordance with approved procedures.

1.1.1.4 Recommend that operators and repair stations develop and maintain Human Factors Safety Programs (reference team 2B recommendations). AC 120–79, Developing and Implementing a Continuing Analysis and Surveillance System (CASS), provides guidance for these safety programs, but does not provide specific guidance for reporting and disseminating human factors data. Revisions to AC 120–79 may be needed to provide additional guidance for human factors information.

1.1.1.5 Designate data voluntarily submitted to the FAA through approved programs as “protected” under part 193, whenever possible.

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1.1.2 Operator/CMO Local Communications Data Flow

Certain operational and maintenance data are transmitted directly between operators or repair stations and AFS. Generally, this data sharing occurs only at local levels (certificate management offices (CMOs) and/or flight standards district offices (FSDOs)) and includes data generated during surveillance activities, self disclosures, and error investigations.

1.2 Design Occurrence Data

1.2.1 Data Flow "k" (required)

1.2.1.1 The CPS Service Difficulty Report (SDR) subteam, comprised of representatives from five part 121 air carriers and two FAA CMOs, as well as other members of team 1B, recommends that operators and repair stations provide SDRs to the FAA using a modified Service Difficulty Reporting System (SDRS) to comply with 14 CFR 121.703. Although one air carrier representative stated for the record that his air carrier advocates eliminating the SDRS, both FAA and industry participants generally agree that a properly focused SDRS can be a valuable safety tool. The quality data would have to reach the appropriate users and be acted on. The subteam made specific recommendations to make the reporting requirements clearer and more selective, including listing items that should not be reported. The recommended changes would avoid duplication and extraneous reports, improve reporting consistency, and reduce air carriers' reporting burden. Reference attachment D, SDR Sub-Team Report to CPS 1B, for additional information.

1.2.1.1.1 *Reporting Criteria*. The CPS SDR subteam developed and recommends use of a reporting criteria consisting of approximately 37 reportable service difficulties. These criteria differ from the reporting criteria contained in § 121.703. The proposed criteria are focused on providing meaningful information on failures, malfunctions, and defects (deficiencies inherent to the airplane), and not on what was done to repair the airplane. The proposed reporting requirements were also designed to be practical from an operating airline's perspective (that is, no specialized engineering knowledge should be required to determine reportability). Because the proposed criteria includes more specific requirements than those listed in § 121.703, it is expected to reduce the number of required reports, prevent cluttering the database with unnecessary information, and provide more focused safety data.

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1.2.1.1.1.1 The reporting criteria may require revisions to include reports on SCFs and/or other KSI identified by team 1A, if they are not already addressed by the criteria. Team 1A will establish the process for identifying these features, but the actual identification is expected to be accomplished by DAHs in conjunction with their respective ACOs. SCFs could be implemented retroactively while the KSI concept is intended for new certifications. Team 1B recommends adding an identifier (that is, a checkbox) to the data system to notify persons analyzing the event that it is associated with an SCF or other KSI.

1.2.1.1.2 Team 1B recommends adding an identifier (that is, a checkbox) to the SDRS to allow identification of operational and maintenance problems so AFS can easily search for events caused by maintenance or operational problems.

1.2.1.1.3 The SDR subteam recommends reporting service difficulties within 96 hours after an in-service event and within 96 hours after return to service following shop visit discoveries. Reference attachment D, SDR Sub-Team Report to CPS 1B, for details on the proposed timing for report submittals.

1.2.1.1.4 The SDRS should include provisions for followup reports submitted to provide additional information about an event.

1.2.1.2 Required reports (for example, SDRs, reports required by ADs, and MIS reports) should be submitted electronically from a central location to simplify reporting. Although operators and repair stations would be encouraged to participate in this proposed reporting system, participation would be voluntary.

1.2.1.3 The recent issuance of § 145.221 (effective January 31, 2004) replaces 14 CFR § 145.63 and improves coordination between part 121 operators and repair stations to minimize duplicate reporting of SDRs. Minor revisions to this rule may be needed to remove references to other proposed regulations never approved during the SDR rulemaking activity.

1.2.2 **Data Flow "j" (voluntary)**

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NOTE: Special arrangements may be needed to provide access to regulatory authorities or other government organizations that need to know the identification of SDR submitters if they currently access this information through a public Web site. ¶

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This data path accounts for safety occurrence data voluntarily submitted by operators and repair stations (for example, telex reports and reliability data) to DAHs.

Team 1A may propose that operators report certain reliability data on "critical airplane features" (that is, SCFs or other KSI). SCFs and KSI may be protected by ensuring the reliability of the part or other dependent part(s) of the system for which the critical part is involved. In this case, especially in the presence of nonconservative assumptions and/or sensitivity variations (for example, maintenance and environment), certain reliability data should be collected. For example, an SCF or related function may experience a latent failure that should be identified and evaluated in conjunction with certification assumptions. If this type of data is needed, team 1B recommends that operators voluntarily report this information to the DAH.

1.3 Supporting Data/Feedback Flow This two-way data flow represents—

1.3.1 Access to information on air carrier programs needed to ensure compliance with system safety principles and requirements. Authorized viewers should have access to this information, which may be limited to the local CMO. Supporting data includes information on maintenance programs, error investigations, quality assurance programs, training programs, fleet exposure data, and similar programs.

1.3.2 Access to information from operators and repair stations concerning the status of voluntary compliance with safety-related Service Bulletins. This information would support the FAA's movement towards risk-based safety assessments by providing a better understanding of the existing risk to the fleet. The FAA has not systematically tracked this type of information in the past, but it could be a valuable resource for prioritizing ADs in the future.

1.3.3 Access to supporting data/information from FAA sources (for example, certification standards, advisory material, orders, lessons learned, and accident reports) to support safety decisions (reference section 4.4).

1.3.4 Operators and repair stations participating in the proposed Safety Information Sharing Environment (SISE).

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2.0 Safety Information Processor (2)

Operators may elect to maintain their own operational and maintenance data and use "smart" software to de-identify data and provide the FAA and industry with limited access to aggregate data (based on agreed criteria/queries). Certain operational and maintenance data may also be managed and protected by an independent party, such as

NASA, who would collect, de-identify, and provide the FAA and industry with limited access to aggregate data through the proposed Safety Information Processor.

2.1 A Safety Information Processor may provide limited access to certain de-identified operational and maintenance reports made by flight crewmembers, repairmen, and mechanics.

2.2 If needed, operational and maintenance information on "critical airplane features" (that is, SCFs or other KSI identified by team 1A) may be accessed through a Safety Information Processor. This information may be needed to provide principal maintenance inspectors with standardized, comprehensive information to ensure maintenance manual (MM) requirements for critical areas are not inadvertently changed or otherwise violated. Team 1A discussed the possibility of reviewing maintenance data from all operators (fleet-wide data) before making a decision on interval escalations for critical airplane features.

2.3 If acceptable to the FOQA ARC, certain FDR data may be accessed via a Safety Information Processor or other compatible system. Access may only be provided to those persons with a "need to know" in the interest of aviation safety. Availability of FOQA data is subject to the results of the activities being conducted by the FOQA ARC.

2.4 If needed, access to data may be limited to a specified period of time, with access prevented after the data sharing period is complete.

2.5 **Data Flow "b"**. This two-way data flow represents—

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2.5.1 Access to certain data from the proposed Safety Information Processor by authorized viewers (available from a central location, reference Box 4).

2.5.2 Requests for changes to operational and maintenance data collection program(s) that both the FAA and industry agree are warranted. Examples include changes to the collection criteria, frequency of reporting, trend criteria, and data queries.

2.6 **Data Flow "g" (feedback)**. An annual or biannual report of overall airplane health (relative to operational data for each airplane model) may be provided to operators and repair stations. This report could come from independent parties or from software designed to extract specific information. This report would provide de-identified, aggregate data.

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3.0 Manufacturer (*DAH*) 3

Section 21.3(a) requires DAHs to report any failure, malfunction, or defect in any product, part, process, or article manufactured by it that it determines has resulted in certain safety-related occurrences. Since DAHs have the expertise to recognize and respond to design-related safety deficiencies, they should ideally review and analyze all reports of defects, malfunctions, and failures (both required and voluntary reports;

Deleted: However, § 21.3(d) states that the requirements of § 21.3(a) do not apply if the occurrence was caused by improper maintenance or usage or if the occurrence was already reported to the FAA in accordance with 14 CFR. Therefore, DAHs are not required to report service difficulties submitted by operators in accordance with § 121.703. Because

reference sections 1.2.1 and 1.2.2), including reports submitted in accordance with § 121.703. Resource constraints within industry may warrant interim solutions until such a reporting/analysis system can be created.

DAHs should filter safety reports to identify those that warrant further investigation. They should also develop and follow a process to collect relevant statistical information on service difficulties to identify significant trends and to improve risk assessment capabilities. Service information, such as service bulletins, should be generated for reports or trends that warrant safety actions.

DAHs are encouraged to work with their local ACO to develop a Continued Operational Safety (COS) program that includes § 21.3 required reports in addition to voluntary safety reports that are beyond § 21.3 requirements (including manufacturing problems such as quality escapes). The Seattle ACO and Los Angeles ACO currently have approved COS program agreements with Boeing. Team 1b recommends that the FAA develop guidance for creating and managing a COS program, and understands that this guidance is already being developed by AIR in draft Order 8110.XX, Continued Operational Safety.

3.1 Data Flow "c". This two-way data flow represents—

3.1.1 DAHs providing authorized viewers with access to safety reports that meet their COS program criteria (available from a central location, reference Box 4). Authorized viewers should include the FAA and any other organization(s) the DAH chooses. Significant data trends should also be identified and made available to the FAA as appropriate. Path "c" is intended to include required § 21.3 reporting.

3.1.2 DAHs accessing safety data/information available from a central location (reference Box 4) in accordance with their authorizations.

3.1.3 DAHs participating in the proposed safety information sharing program.

3.2 Data Flow "f". This arrow is to acknowledge that DAHs have forums for sharing safety information. There are also informal networking relationships, from individual to individual and from organization to organization.

3.3 Data Flow "h" (feedback).

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3.3.1 DAHs may provide de-identified, aggregate data (feedback) to operators and repair stations. This feedback may be provided in an annual or biannual report of overall airplane health for each airplane model.

3.3.2 DAHs may also provide feedback to individual operators or repair stations in response to specific questions or to fulfill contractual obligations.

3.4 *Reporting Criteria*. DAHs are encouraged to work with their local ACO to develop COS reporting criteria that includes § 21.3 required reports in addition to voluntary safety reports beyond the § 21.3 requirements.

3.4.1 The COS reporting criteria should be revised as needed to incorporate (1) lessons learned from accidents and incidents (team 1C) and (2) safety information needs identified by team 1A processes or other COS activities. However, because the COS reporting criteria is expected to be very stable, the criteria should rarely require revision.

3.4.2 The reporting criteria in § 21.3 should be revised to reflect current safety data needs. The intent of this revision should be to "level the playing field" for those DAHs that are not participating in a voluntary COS program. However, the revised criteria should not include all 89 reportable COS events (reference Boeing/FAA COS programs).

3.4.3 Team 1A may propose that DAHs collect certain reliability data from airlines on "critical airplane features" (that is, SCFs or other KSI identified by team 1A). If needed, Team 1B recommends that DAH voluntarily report trends or significant issues found in this type of data to the FAA. Such a process could be incorporated into an approved COS program.

3.4.4 Team 1B may recommend that COS data systems include provisions for identifying reportable events associated with maintenance or operational problems. This information could be valuable to airlines, DAHs, and AFS. If available, this information should be voluntarily submitted (either in the initial COS report or in a followup report), and therefore should be protected under part 193 (reference section 3.5).

3.5 Data that is voluntarily submitted to the FAA through an approved COS program should be designated "protected" under part 193.

3.6 The COS program should include provisions for followup reports submitted to provide additional information about an event.

4.0 Safety Information Available to Industry and FAA (AIR and AFS) (*Safety Information Sharing Environment (SISE)*) 4

The SISE is proposed as a tool that would allow safety information to be shared between the FAA and industry. The SISE should function as a "virtual" database, allowing existing data sources to be used without costly modifications by translating data in real time to provide common interpretations. The SISE does not constitute, and would not create, a new database. The SISE should provide anonymity when sharing certain voluntary data and is expected to reduce costs associated with reporting through intelligent mining engines and electronic submittal of data. The SISE should be managed by a joint FAA and industry body. A SISE Proof of Concept has been successfully demonstrated by a data interoperability contractor.

4.1 The SISE should allow authorized viewers to access safety data that participating data providers have agreed to share with select organizations. Details about these authorizations should be established when new participants join the SISE.

4.2 Any data voluntarily submitted (or made accessible) to the FAA through any formal process should be designated "protected" under part 193.

4.3 Whenever possible, safety data should be de-identified (N-number, operator, or other aircraft- or operator-specific identifying information).

4.4 The SISE could provide an integrated site for System Approach for Safety Oversight (SASO) and Aviation Safety Knowledge Management Environment (ASKME).

4.5 The SISE should accommodate existing data programs (as modified by final team 1B recommendations) and new data programs (proposed in final team 1B recommendations).

4.5.1 The SISE should accommodate all required reporting (for example, SDRs, § 21.3 reports, MIS reports, and reports required by AD) to minimize reporting burdens by providing one location for all entries.

4.5.2 The SISE should accommodate voluntary reporting processes as appropriate, including processes for SCFs and other KSI identified by team 1A.

4.5.3 The SISE should provide data sharing capabilities for human factors safety data whenever it is made available.

4.5.4 The SISE should incorporate the capability to link related information to create a more comprehensive picture of a safety issue or event.

4.5.4.1 SDR and COS program reports on the same event should be linked to prevent duplication of efforts regarding corrective actions.

4.5.4.2 Operational and maintenance information associated with an SDR or COS program event should be linked to that SDR or COS program report, provided the information is available to be shared based on established industry agreements.

4.5.4.3 SDR and/or COS program reports should identify maintenance or operational issues when apparent, so that AIR can coordinate these events with AFS.

4.5.4.4 Accident/incident data (from the Accident Incident Data System) should be linked with other relevant data whenever possible.

4.5.4.5 Fleet statistics (for example, airplane hours and cycles) from a single, reliable source should be linked to all reported events to improve data analyses.

4.6 The SISE should accommodate ad hoc requests for information. Business processes for ad hoc requests should be established to prevent industry or the FAA from being inundated with requests for information not readily available (that is, requests that the SISE can't automatically respond to and that require employee interactions and resources).

4.7 The SISE should include the capability to identify duplicate reports.

4.8 The SISE should include the capability for users to provide feedback (aggregate, de-identified data – possibly on SCFs or other KSI identified by team 1A) to industry on airplane health.

4.9 The SISE should include the capability for users to post and view safety alerts when critical safety information needs to be dispersed quickly. These safety alerts could be Special Airworthiness Information Bulletins (SAIB), manufacturer telex reports, or other industry or FAA safety alerts.

4.10 Successful implementation of the SISE will depend on adequate industry participation (that is, operators, repair stations, and DAHs).

4.11 **Supporting Data/Feedback Flow.** See section 1.3 of this document. In addition, lessons learned (identified by team 1C and other sources) and other feedback concerning safety information should either be provided or made available to industry and the FAA through the SISE.

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Deleted: The SISE should provide a capability to archive certain types of safety data to provide historical records and to improve trending capabilities. Data retention agreements may be necessary to maintain certain safety information (possibly for required reporting).¶

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5.0 Certificate Management (AFS) (5)

5.1 AFS Analyzes, Filters, and Prioritizes Safety Information. AFS should access safety data and other safety information through the SISE and through local communications with operators and repair stations to ensure they comply with system safety principles and requirements.

5.1.1 **Data Flow "d".** This two-way data flow represents—

5.1.1.1 AFS accessing available safety data in accordance with its approved authorizations to identify safety problems associated with an air carrier's operations and maintenance of a transport airplane. In addition, AFS–900 analyzes the data to identify systematic safety problems associated with operations and maintenance of transport airplanes. AFS requires access to the following data:

5.1.1.1.1 Mechanical reliability data (§ 121.703) and mechanical interruption summary report (§ 121.705).

5.1.1.1.2 COS program reports (reference section 3.0).

5.1.1.1.3 Operational and maintenance data; especially reports on safety issues/events (reference sections 1.1.1, 1.2.2, 2.0, and 5.2.1).

5.1.1.1.4 Supporting data (reference section 4.11).

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5.1.1.2 AFS providing authorized viewers with access to safety data they generate. For example—

5.1.1.2.1 Results of incident investigation,

5.1.1.2.2 Results of enforcement actions, including reasons for pursuing safety actions, and

5.1.1.2.3 Results of system safety surveillance activities.

5.1.1.3 AFS participating in the proposed SISE.

5.1.2 **Operator/CMO Local Communications Data Flow**. Local communications between CMOs and operators or repair stations is required to ensure they comply with system safety principles and requirements. Certain operational and maintenance data are transmitted directly between operators or repair stations and AFS. Generally, this data sharing occurs only at local levels (CMOs and/or FSDOs) and includes data generated during surveillance activities, self disclosures, and error investigations.

5.1.3 AFS identifies hazards and determines the potential consequences using surveillance/investigation data supplemented by data obtained through the SISE. For those hazards that warrant further review, AFS assesses risk using the SASO and Air Transportation Oversight System (ATOS) risk assessment processes. The overall risk assessment value is determined based on the likelihood of occurrence and the severity of the consequence.

5.2 AFS Actions To Industry & AIR Data Flow. AFS inspectors should take various actions to mitigate safety risks, for example, revising operations specifications, increasing safety oversight on substandard performers, initiating enforcement (noncompliance safety issues, for example, unapproved parts), participating in accident prevention programs, and issuing FAA safety recommendations.

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5.2.1 *Operations specifications*. AFS approves modification to a certificate holder's operations specifications. For example, ratings can be added to or deleted from a repair station certificate.

5.2.2 *FAA safety recommendations*. AFS and AIR personnel issue FAA safety recommendations when design problems or operational/maintenance problems are apparent. These recommendations are issued in accordance with Order 8020.11B, *Aircraft Accident and Incident Notification, Investigation, and Reporting*. These recommendations are sent to the responsible AIR or AFS organizations through the FAA Office of Accident Investigations. Team 1B agrees that this process is useful for sharing safety information within the FAA. However, modifications to this process may be needed to minimize duplicate reporting and to further improve communications between AIR and AFS. Team 1B recommends the following proposals be considered:

5.2.2.1 The FAA Safety Recommendation process should be automated (short term) and possibly integrated into the SISE (long term) so that the FAA's safety information can be accessed from one system. The safety recommendation database is currently not readily available to all FAA employees. Providing access to this safety information, with appropriate search capabilities and links with other relevant safety information, would create a more comprehensive safety information system for transport airplanes.

5.2.2.2 Additional guidance or criteria for submitting safety recommendations should help to reduce the number of recommendations closed with no action necessary.

5.2.2.3 To make the most efficient use of FAA resources, FAA Safety Recommendations should only be submitted when corrective action(s) have not already been initiated for a safety issue. A sample of FAA Safety Recommendations (over some period of time) should be reviewed to determine the number of recommendations that result in new safety initiatives and to evaluate these initiatives using the FAA's risk management principles. Changes to the FAA Safety Recommendation process should be considered based on the results of this review.

5.2.2.4 FAA Safety Recommendations should be prioritized with all other safety initiatives. Currently, Order 8020.11B requires the FAA action office (the office responsible for responding to the Safety Recommendation) to provide a response to AAI-200 within 90 calendar days. Since there is no flexibility in the response time, it is currently not possible to prioritize these recommendations with other safety initiatives.

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Deleted: A review of FAA Safety Recommendations (sampling recommendations over some period of time) should be accomplished to determine the number of recommendations that result in new safety initiatives and to evaluate these initiatives using the FAA's risk management principles. Reference the Continued Operational Safety Management Implementation Committee (COSMIC) and Continued Airworthiness Assessment Methodologies (CAAM) processes described in section 6.1 for AIR risk assessments and the ATOS processes mentioned in section 5.1.3 for AFS risk assessments.

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5.2.2.5 Since AIR personnel rarely issue FAA Safety Recommendations, training may be needed to ensure AIR engineers are familiar with this process.

5.2.3 AFS identifies lessons learned from inspections and corrective actions. AFS should provide these lessons learned through SISE and forums such as accident prevention programs.

5.2.4 AFS ensures operators are reporting in accordance with an approved CASS, as described in § 121.373.

5.2.5 AFS and AIR should work together to coordinate significant safety issues or trends that warrant further study with appropriate groups for research and root cause identification.

Deleted: The FAA Safety Recommendation process should be automated and possibly integrated into the SISE so that the FAA's safety information can be accessed from one system. The safety recommendation database is currently not readily available to all FAA employees. Providing access to this safety information, with appropriate search capabilities and links with other relevant safety information, would create a more comprehensive safety information system for transport airplanes. Access to this information would also help to prevent generating safety recommendations that have already been initiated.¶

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6.0 Aircraft Certification (AIR) 6

6.1 AIR Analyzes, Filters, and Prioritizes Safety Information. AIR should access safety data and other safety information through the SISE and through local communications with DAHs. Safety issues may be identified through any data source (for example, SDRs, § 21.3 or COS program reports, and FAA Safety Recommendations). An automated system (possibly incorporated into the SISE) may be needed to sort and classify safety data to improve data review and trending capabilities. Engineering judgment, supported by communications with DAHs, should provide the initial AIR filter for taking further actions. AIR will conduct risk assessments on those safety issues that may require corrective actions using the COSMIC process (for the ACOs) and the CAAM process (for the engine certification office). These processes will help to determine what type of action is needed and will also help to prioritize AD activities.

6.1.1 **Data Flow "e"**. This two-way data flow represents—

6.1.1.1 AIR accessing available safety data in accordance with its approved authorizations to identify potential safety problems related to an airplane's design. AIR should have access the following types of data:

6.1.1.1.1 Reports from the modified SDRS (reference section 1.2.1).

6.1.1.1.2 COS program reports (reference section 3.0).

6.1.1.1.3 Maintenance or operational data that could indicate an airplane design problem, when available (reference sections 1.1.1, 1.2.2, 2.0, and 5.2.1).

6.1.1.1.4 Supporting data (reference section 4.11).

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6.1.1.2 AIR providing authorized viewers with access to safety data they generate. AIR should provide the following types of data:

6.1.1.2.1 Modified COS program reports, including reasons for pursuing safety actions or explanation for no action.

6.1.1.2.2 Modified SDR reports, including reasons for pursuing safety actions or explanation for no action.

6.1.1.2.3 Supporting data (reference section 4.11).

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6.1.1.3 AIR participating in the proposed SISE.

6.1.2 **DAH/AIR Local Communications Data Flow**. Local communications between ACOs and DAHs is needed to evaluate safety data and assess risks (reference section 6.1.3).

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6.1.3 AIR assesses risk using the COSMIC and CAAM processes, which generally requires close coordination with DAHs. Team 1B recommends that industry and AIR coordinate their risk assessment processes in an effort to standardize the processes wherever possible. Differences between industry and AIR risk assessment processes should be documented and well understood.

6.1.4 The original System Safety Assessment should be reviewed when appropriate to ensure original certification assumptions remain valid.

6.1.5 AD activities should be prioritized using the COSMIC or CAAM processes.

6.2 AIR Actions To Industry & AFS Data Flow. AIR should take various actions to mitigate safety risks, including issuing ADs, airplane flight manual (AFM) revisions, and other regulatory changes.

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6.2.1 AFS should have access to AIR actions that impact maintenance and operations as soon as possible (for example, ADs and AFM revisions) through the SISE.

6.2.1.1 AFS and AIR personnel issue FAA Safety Recommendations when design problems or operational/maintenance problems are apparent. Reference section 5.2 for a brief description of the FAA Safety Recommendation process and team 1B recommendations for this process.

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6.2.2 The reporting criteria (voluntary and required) should be revised as needed based on lessons learned from accidents and incidents.

6.2.3 When original certification assumptions are found to be inaccurate, corrections should be factored into the risk assessment and appropriate changes should be made to future certification assumptions for similar designs.

6.2.4 AIR should provide operators and repair stations with feedback on SDR usage so they are aware of the safety benefits provided by these reports.

6.2.5 AIR should have a process for ensuring DAHs are reporting in accordance with approved COS programs. Audits of SDR data may provide one method for verifying the quality of COS program reporting.

6.2.6 AIR should have a process for ACO to ACO safety communications. A team of ACO focal point contacts may be needed to review significant safety issues and ensure that root causes are identified and shared with all ACOs involved in transport airplane COS programs whenever possible.

6.2.7 AIR and AFS should work together to coordinate significant safety issues or trends that warrant further study with appropriate groups for research and root cause identification.

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7.0 Aircraft Evaluation Group (AEG) Coordinates Safety Information (7)

The AEG will access safety data and other safety information through the SISE and through local communications with both AIR and AFS. The AEG provides necessary operational and maintenance inputs to the aircraft type certification process and becomes the AIR coordination point for activities involving AFS once the aircraft enters service.

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8.0 Continuous Safety & Process Improvements (8)

Create a joint FAA and industry safety information board or consortium to—

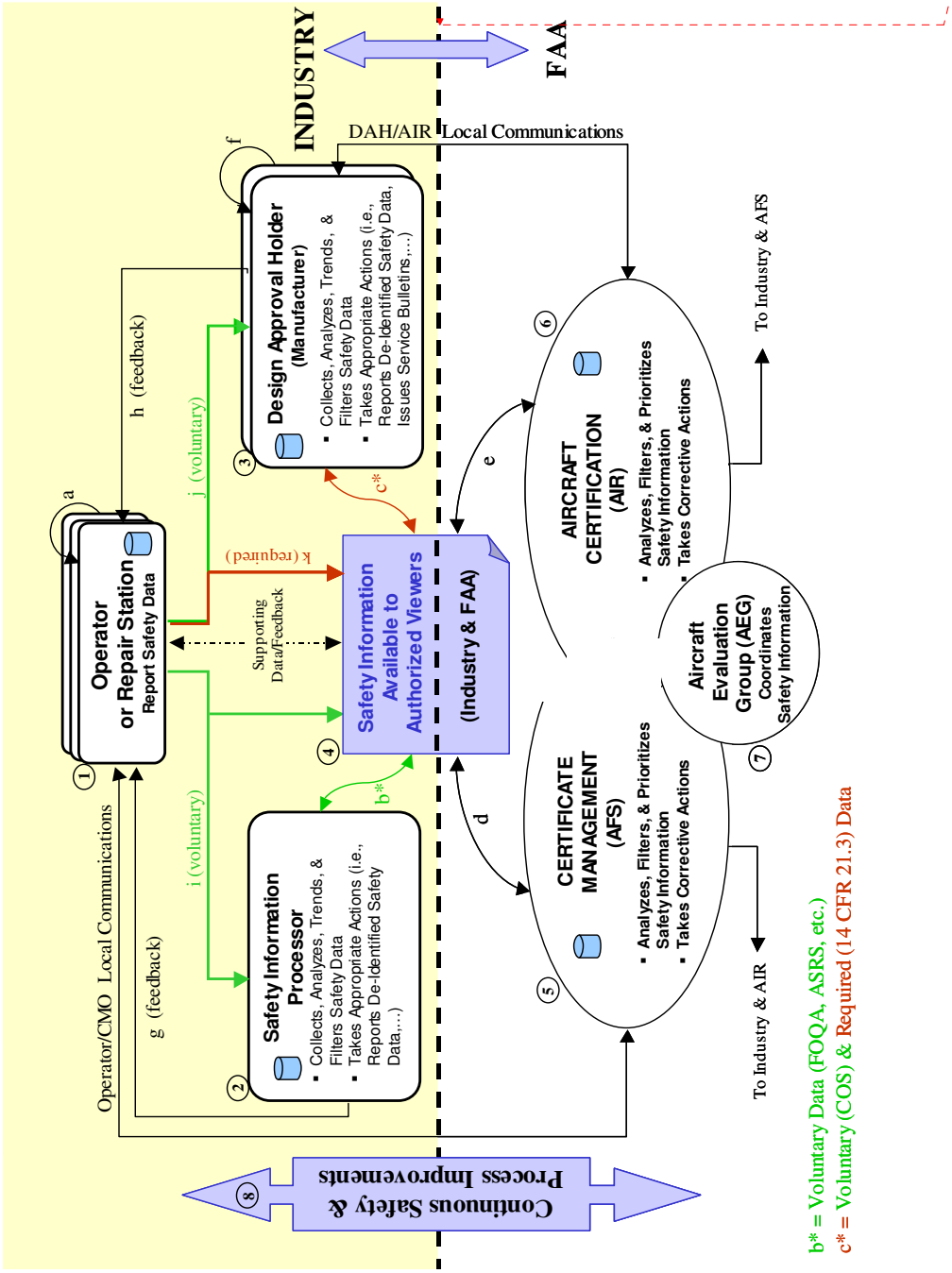
8.1 Conduct annual or biannual meetings to evaluate the health of the Safety Information Model and implement continuous improvement.

8.2 Identify and collect metrics to monitor the health of the Safety Information Model.

8.2.1 Following an accident or significant incident, compare the accident data to the safety information sharing processes to determine whether the existing processes predicted the event. If so, determine why the FAA or industry did not act to prevent the event. If the processes did not predict the event, determine what processes need to be modified or improved.

8.3 Ensure adequate oversight of all FAA-sponsored safety data programs.

ATTACHMENT A
CHANGE AREA (TEAM) 1B PROPOSED SAFETY INFORMATION FLOW FOR TRANSPORT AIRPLANES



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ATTACHMENT B
ACRONYMS AND DEFINITIONS

Acronyms

14 CFR	Title 14, Code of Federal Regulations
ACO	aircraft certification office
AD	airworthiness directive
AEG	Aircraft Evaluation Group
AFM	airplane flight manual
AFS	Flight Standards Service
AIR	Aircraft Certification Service
ARC	Aviation Rulemaking Committee
ASAP	Aviation Safety Action Program
ASKME	Aviation Safety Knowledge Management Environment
ATOS	Air Transportation Oversight System
CAAM	Continued Airworthiness Assessment Methodologies
CASS	continuing analysis and surveillance system
CMO	certificate management office
COS	continued operational safety
COSI	Continued Operational Safety Information
COSMIC	Continued Operational Safety Management Implementation Committee
CPS	Certification Process Study
DAH	design approval holder
EASA	European Aviation Safety Agency
FAA	Federal Aviation Administration
FOQA	Flight Operations Quality Assurance
FSDO	flight standards district office
KSI	key safety information
MIS	mechanical interruption summary
MM	maintenance manual
NASA	National Aeronautics and Space Administration
RIP	recommended implementation plan
SAIB	Special Airworthiness Information Bulletin
SASO	System Approach for Safety Oversight
SCF	safety critical feature
SDR	service difficulty reports
SDRS	Service Difficulty Reporting System
SISE	Safety Information Sharing Environment

Definitions

Data

- Factual information, especially information organized for analysis or used to reason or make decisions.
- Numerical or other information represented in a form suitable for processing by analysts or by computer.

Data on its own has no meaning, only when interpreted by some kind of data processing system does it take on meaning and become information.

Design approval holder (DAH) – an individual or company who has been issued a design approval by the FAA by means of one of the following (note that the last 2 bullets do not generally apply in the context of this report):

- Type certificate
- Amended type certificate
- Supplemental type certificate
- Parts Manufacturing Approval
- Technical Standard Order Authorization
- Changes to type design approved under §§ 21.95, 21.97, and 21.99
- Major repair and alterations approved by FAA Form 337

Information

- Data in a useable form.
- A collection of facts or data usually processed in some way.
- Data plus interpretation.
- Example: results of analysis.

Reporting — within the context of this report, the following terms are used:

- *Voluntary reports or voluntarily reported data* means any data or information made available by an entity that is shared, with or without the protection provided by disclosures under part 193 (for example, Aviation Safety Action Program (ASAP) reports provided by an air carrier).
- *Required reports or reporting* means information provided that is required by any part or section of 14 CFR (for example, reports made under § 121.703).

ATTACHMENT C
REGULATIONS AND POLICIES REFERENCED DURING DEVELOPMENT OF THE PROPOSED SAFETY INFORMATION MODEL

Regulations

Title 14, Code of Federal Regulations

Part 21, Certification Procedures for Products and Parts
- § 21.3, Reporting of failures, malfunctions, and defects.
- § 21.99, Required design changes.
- § 21.277, Data review and service experience (Delegation Option Authorization Procedures)
- § 21.477, Data review and service experience (Designated Alteration Station Authorization Procedures)

Part 121, Operating Requirements: Domestic, Flag, and Supplemental Operations
- § 121.373, Continuing analysis and surveillance.
- § 121.380, Maintenance recording requirements.
- § 121.563, Reporting mechanical irregularities.
- § 121.565, Engine inoperative: Landing, reporting.
- § 121.703, Mechanical reliability reports.
- § 121.704, Service difficulty reports (structural).
- § 121.705, Mechanical interruption summary report.
- § 121.707, Alteration and repair reports.
- § 121.709, Airworthiness release or aircraft log entry.

Part 145, Repair Stations
- § 145.221, Reports of failures, malfunctions, or defects. (Used to be § 145.63.)

SFAR 36, paragraph 9 (Repair Stations)

Part 193, Protection of Voluntarily Submitted Information

Title 49, Code of Federal Regulations

Part 830, Notification and Reporting of Aircraft Accidents or Incidents and Overdue Aircraft and Preservation of Aircraft Wreckage, Mail, Cargo, and Records

Advisory Circulars

AC 00–46D, Aviation Safety Reporting Program

AC 00–58, Voluntary Disclosure Reporting Program

AC 20–109B, Service Difficulty Program (General Aviation)

AC 21–9A, Manufacturers Reporting Failures, Malfunctions, or Defects

AC 25–19, Certification Maintenance Requirements

AC 120–79, Developing and Implementing a Continuing Analysis and Surveillance System

AC 120–30A, Reporting Requirements of Air Carriers, Commercial Operators, Travel Clubs, and Air Taxi Operators of Large and Small Aircraft

AC 120–42A, Extended Range Operation with Two-Engine Planes (ETOPS)

FAA Orders

Order 1110.133, Certification Process Study (CPS) Response Aviation Rulemaking Committee

Order 1370.76A, Aircraft Certification Information Resource Management Program

Order 1375.1C, Data Management

Order 8010.2, Flight Standards Service Difficulty Program

Order 8120.11B, Aircraft Accident and Incident Notification, Investigation, and Reporting

Order 8300.10 (Change 14), Flight Standards Service Airworthiness Inspector's Handbook

Draft Order 8110.XX, Continued Operational Safety

Other Document Types

FAA Data Management Strategy, September 21, 1999

FAA Information Management Strategy, September 22, 1999

Boeing/SACO & Boeing/LAACO COS Program

ATTACHMENT D
SDR SUB-TEAM REPORT TO CPS 1B

March 11, 2004

The content of this report is the result of several meetings attended by airline, FAA, and airframe manufacturer representatives. The content forms a general consensus between the participants, although not all points were unanimous in acceptance. Where points-of-view were substantially different from the report content and strongly voiced, they are noted in this report.

This team recognized that there are many different ideas about what the intent of 14 CFR 121.703 is or what it should be (one airline participant felt that the rule should be eliminated altogether). Having the intent well documented is an important step in realizing the maximum safety benefit from the rule. The team concluded that the primary purpose of the reports made in accordance with 121.703 should be to identify safety deficiencies in the airplane (using failures, malfunctions, and defects reports, i.e., service difficulties). The primary users of such data are the type design holders (manufacturers) and the regulatory authorities responsible for overseeing the manufacturers. The manufacturers should use these reports to identify deficiencies with their product and provide the needed improvements, and the overseeing authority should use these reports to independently identify unsafe conditions and mandate corrective action, where necessary. Other users are FAA AEG (to analyze maintenance task escalation in MSG III), FAA CMOs (for continuing surveillance of their airline), and consultant DERs (reviewing designs for approval).

If this is accepted as the intent of these reports (identifying safety deficiencies inherent in the airplane), then the reports should be focused on providing meaningful information on the failure, malfunction, or defect, not on what was done to repair it. Providing information on repairs was noted as taking a significant amount of time; since repair information is not needed to identify design deficiencies, it should not be required, and to avoid cluttering the database with unnecessary information, it should be discouraged. Note that if a repair fails after being in service for some time, that is a new failure, malfunction, or defect that may be reportable.

During the team meetings, a constant theme was that the reporting requirements need to be practical from an operating airlines perspective. The reporting requirements need to be clear and unambiguous at the shop level; they cannot require specialized engineering knowledge to determine reportability (reporting requirements for airlines should be less complex than reporting requirements for manufacturers, since the manufacturers have more engineering knowledge of the product). The reporting should be uniformly applied throughout the airlines.

It should be recognized that reports made per 121.703 do not need to capture every possible potential issue. There are other means of obtaining information that should be used to see the complete picture, e.g., MIS reports, engine utilization reports, the accident/incident database, etc. It should also be recognized that many issues are adequately addressed through operator reliability programs, CASS programs, and economic pressures.

Since the accident/incident database is an important part of obtaining a complete understanding of potential issues, the team recommends that any information about failures, malfunction, or defects suspected at the time to be a contributor to the accident/incident be documented in the accident/incident database. An additional database field may be useful for this documentation. This data entry is the responsibility of the FAA aviation safety inspector, not the airline's. The type design holders (manufacturers) and the regulatory authorities responsible for overseeing the manufacturers should review this database as well as the 121.703 reports.

For required time-flows in making reports, the team recommends that the report shall be submitted within 96 hours:

1. From the event occurrence for reportable events that occur during airplane operation.
2. From return-to-service for reportable discoveries made during scheduled airplane shop visits.
3. From completion-of-overhaul for reportable discoveries made during airplane component overhaul. Completion-of-overhaul occurs when the component receives an airworthiness tag or when it is found to be unserviceable.

Note: Number 3 applies to overhaul at an airline facility, not at a contracted repair-station. The team recommends that repair-stations must be responsible for reporting of discoveries made by them.

The team recommends the following reporting criteria:

Items on the airlines MEL that are deferred in accordance with the MEL relief provisions prior to flight do not need to be reported.

A.1. Any fire or evidence of fire on the aircraft, irrespective of properly functioning fire detection systems, excluding tail-pipe fires in engines or APUs.

A.2. Any accumulation or circulation of smoke, vapor or toxic or noxious fumes inside the aircraft requiring the use of emergency procedures. Excluded is smoke/fumes in cabin due to food or beverage residue smoking in the galley, fumes/smoke/vapor from dirty coalescer bag or ozone filter, or fumes/smoke/vapor from turning on packs while de-icing.

A.3. Chafing of electrical wiring on oxygen lines, bottles, and/or generators.

A.4. Failures or conditions that resulted in or could have resulted in an ignition source in a fuel tank.

B.1. Any flight control system (including auto-flight) malfunction, failure, or defect that results in interference with normal control of the aircraft. Excluded are aircraft motions due solely to atmospheric turbulence or wake turbulence.

B.2. Any loss of more than one hydraulic system.

B.3. A failure or malfunction of two attitude or two airspeed or two altitude instruments during a given flight.

B.4. Leakage from water and waste system that has resulted in electrical failures, e.g., leakage from forward lavatory/galley into the E/E Bay or electrical connectors/components/wiring.

B.5. Complete loss of electrical equipment (E/E) cooling airflow. Exclude false indications of cooling loss.

B.6. Any failure that results in a complete loss of more than one electrical power generating system.

B.7. Any failure or condition that results in total loss of VHF communication.

C.1. Any failure that results in unwanted extension or retraction or prevents extension of the landing gear. Incorrect landing gear position indications are excluded.

C.2. Gear collapse, excluding collapse from improper towing or from hitting objects other than the runway surface.

C.3. Any tire burst. Excluded is tire tread separation and bursts due to FOD.

C.4. Any wheel fracture during aircraft operation.

C.5. Any brake system failure that results in a detectable loss of braking.

C.6. Uncommanded nose steering inputs, with exception to slight drifts to the left or right.

D.1. Any failure of the flight crew oxygen delivery system to provide oxygen during flight.

D.2. Any failure of a cabin oxygen system to provide oxygen during an emergency situation.

D.3. Cabin pressurization failure that requires an emergency descent.

D.4. Defective flight crew seat system leading to uncommanded movement of seat (exclude observer seats).

D.5. Any failure of an escape slide system to successfully deploy and perform its intended function during an evacuation or an on-aircraft test. Successful deployment of evacuation slides (from either inadvertent opening of an armed door or deliberate deployment) is excluded. Also excluded is rupture of an evacuation slide if the cause of the puncture was slide deployment onto a sharp object not originating from the airplane.

D.6. Inadvertent in-flight escape slide deployment.

D.7. Any failure of an emergency exit door to perform its intended function during operations.

D.8. Any failure of a passenger escape path lighting system to perform its intended function, excluding any burned out light-bulb, or light assemblies that are broken from inadvertent impact. Also exclude replacement of batteries for failure to hold a charge or for depletion.

D.9. Any other emergency equipment that fails to perform the intended function. Those items which are intended to be periodically replaced or deplete, such as light bulbs and batteries, are excluded.

E.1. Any event that results in an uncontained engine failure (includes APU).

E.2. Any uncommanded thrust change, engine flameout, loss of thrust control, or engine shutdown other than normal engine shutdown at the end of operation. Excluded are engine shutdowns or reduced engine performance from FOD ingestion or bird-strikes, or precautionary engine shutdowns, e.g., due to fuel filter by-pass light or false fire indication.

E.3. Any engine exhaust system failure, malfunction, or defect that causes damage to the engine, adjacent airplane structure, equipment, or components.

E.4. A fuel or fuel-dumping system failure that led to emergency action.

E.5. A propeller feathering system failure or inability of the system to control propeller overspeed.

F.1. Cracks/failure (fatigue, under-strength, or structural damage resulting from an otherwise non-reportable failure) of aircraft primary or principal structure that requires repair or replacement. Secondary structure is excluded. Accidental damage to the airplane occurring on the ground that is known at time of damage (obvious damage) is also excluded; this includes acts of nature (hurricanes, tornadoes, ice, or snow). Also excluded are inspection results that are required to be reported by an AD or by MPD damage tolerance inspections (if while accomplishing an AD inspection a defect is discovered that isn't addressed by the AD, that does need to be reported). Damage from hail or lightning is excluded.

The above criteria was not unanimously accepted. An airline participant felt strongly that any defect that is repaired per approved data should not be reported. It was discussed how an "approved data" criteria could fail to identify unknown unsafe conditions (our stated intent). For example, the SRM has general repairs can be used to fix a significant failure that has occurred for the first time in-service. Another example is a defect developing much earlier than the published inspection threshold.

F.2. Any corrosion of aircraft primary or principal structure that beyond the manufacturers defined limits (e.g., SRM, MM, SBs). Secondary structure is excluded. Also excluded are inspection results that are required to be reported by an AD (if while accomplishing an AD inspection a defect is discovered that isn't addressed by the AD, that does need to be reported)

F.3. Any failure that results in the departure of engines, flight control surfaces, or high lift devices from the aircraft during the operation of that aircraft.

F.4. Any airplane vibration or buffeting requiring crew to deviate from the planned flight. Exclude vibration found to be from blown or loose seals, speed tape, doors ajar, loose access panels or straps.

F.5. Loss of parts that resulted in engine ingestion.

F.6. Any failure of a cargo-anchoring device, which results in unrestrained cargo which then causes damage to the airplane. Excluded are torn or damaged cargo nets.