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**Federal Aviation
Administration**

Aircraft Certification Systems Evaluation Program (ACSEP) FY 2003 Report

Prepared by
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TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
TABLE OF CONTENTS	<i>i</i>
LIST OF FIGURES	<i>iii</i>
LIST OF TABLES	<i>iv</i>
EXECUTIVE SUMMARY	<i>1</i>
FY 2003 Report	<i>3</i>
1. <i>Introduction</i>	<i>3</i>
1.1 <i>Report Structure</i>	<i>3</i>
1.2 <i>Program Overview of ACSEP</i>	<i>4</i>
1.3 <i>Significant Events During the Fiscal Year</i>	<i>4</i>
1.3.1 <i>Order 8100.7 Revision B</i>	<i>4</i>
1.4 <i>Overview of the ACSEP Activity</i>	<i>6</i>
1.5 <i>The Data Collected During an ACSEP Evaluation</i>	<i>9</i>
1.5.1 <i>The Various Types of Noncompliances</i>	<i>10</i>
1.5.2 <i>Noncompliances are Classified into System Elements</i>	<i>10</i>
1.5.3 <i>System Elements Classified into Criteria</i>	<i>11</i>
2. <i>Conclusions based on the Data</i>	<i>12</i>
3. <i>Data Analysis — Manufacturing Facilities</i>	<i>13</i>
3.1 <i>Safety Related Noncompliances</i>	<i>13</i>
3.2 <i>Systemic Noncompliances</i>	<i>13</i>
3.3 <i>Isolated Noncompliances</i>	<i>15</i>
3.4 <i>CFR-Based Noncompliances</i>	<i>15</i>
3.5 <i>System Element Noncompliances</i>	<i>15</i>
3.5.1 <i>Similarity Among Approval Types</i>	<i>15</i>
3.6 <i>Analysis of Evaluation Criteria</i>	<i>21</i>
3.6.1 <i>A View of Industry</i>	<i>21</i>
3.6.1.1 <i>Systemic findings and observations</i>	<i>21</i>
3.6.2 <i>A Facility Focus</i>	<i>22</i>
3.6.3 <i>A Facility Focus (Procedures In Place)</i>	<i>25</i>
3.7 <i>Delegated Facilities</i>	<i>26</i>
3.7.1 <i>Designated Alteration Stations (DAS) Facilities</i>	<i>26</i>
3.7.2 <i>Special Federal Aviation Regulation No.36 (SFAR-36) Facilities</i>	<i>28</i>
3.7.3 <i>Delegation Option Authorization (DOA) Facilities</i>	<i>28</i>
4. <i>Improvement Emphasis</i>	<i>29</i>
4.1 <i>Industry Feedback</i>	<i>29</i>
4.2 <i>Lessons Learned</i>	<i>30</i>
APPENDIX A	<i>1</i>

Definitions..... *1*

LIST OF FIGURES

Figure 1-1.—Growth in annual ACSEP evaluations.	6
Figure 1-2.—Distribution of ACSEP evaluations at manufacturing facilities by facility type — domestic and international combined.	7
Figure 1-3.—Distribution of ACSEP evaluations at manufacturing facilities by directorate — domestic and international combined.	8
Figure 1-4.—Distribution of ACSEP evaluations at delegated facilities by delegation type.	9
Figure 1-5.—Distribution of ACSEP evaluations at delegated facilities by directorate. .	9
Figure 3-1.—Systemic Noncompliances — all facility types.	15
Figure 3-2.—Isolated Noncompliances — all facility types.	16
Figure 4-1.—ACSEP as graded by industry.	30
Figure 4-2.—Trend of lessons learned — favorable experiences.	31
Figure 4-3.—Trend of lessons learned — no difficulties with Order 8100.7.	31
Figure 4-4.—Trend of lessons learned — evaluation completed.	32
Figure 4-5.—Trend of lessons learned — no new criteria needed.	32
Figure 4-6.— Distribution of subsystems not evaluated.	33

LIST OF TABLES

TABLE 1-1.—The population of PAHs for fiscal years 19965 through 2003	7
TABLE 1-2.—The population of delegated facilities for fiscal 2003	8
TABLE 3-1.—CFR-based noncompliances	15
TABLE 3-2.—Counts of PMA noncompliances	17
TABLE 3-3.—Counts of PC noncompliances	18
TABLE 3-4.—Counts of TSOA noncompliances	19
TABLE 3-5.—Counts of all noncompliances	20
TABLE 3-6.—Summary of the most prevalent systemic noncompliances — FY 2003 ..	21
TABLE 3-7.—Most reported criteria with systemic noncompliances	22
TABLE 3-8.—Predominant systemic noncompliances — PC holders	23
TABLE 3-9.—Predominant systemic noncompliances — PMA holders.....	23
TABLE 3-10.—Predominant systemic noncompliances — TSO authorization holders..	24
TABLE 3-11.— Predominant systemic noncompliances — PC holders with applicable procedures	25
TABLE 3-12.— Predominant systemic noncompliances — PMA holders with applicable procedures	25
TABLE 3-13.— Predominant systemic noncompliances — TSO authorization holders with applicable procedures	25
TABLE 3-14.—DAS noncompliances by criteria	27
TABLE 4-1.—Distribution of industry feedback	30
TABLE 4-2.—Comments received from lessons learned sheets.....	34

EXECUTIVE SUMMARY

This report documents the fiscal year (FY) 2003 results of the Federal Aviation Administration (FAA) Aircraft Certification Service (AIR) Aircraft Certification Systems Evaluation Program (ACSEP).

The ACSEP was designed to determine if FAA production approval holders and delegated facilities are complying with the requirements of applicable Code of Federal Regulations (CFR) and the procedures established to meet those requirements. It also surveys the application of standardized industry practices, not required by the CFR or FAA-approved data, to identify national trends that may require development of new or revised regulations, policy, or guidance. The elements of the evaluation are referred to as criteria. Data was collected on noncompliance and applicability with respect to those criteria. The background of ACSEP, a program overview, the process for scheduling evaluations, and training evaluators are discussed in Addendum A: History and Background of ACSEP. The Addendum is located on the internet at <http://www.faa.gov/certification/aircraft>. Click ACSEP under Continued Operational Safety.

Analysis Results and Conclusions

Of the 507 noncompliances recorded at the 203 Production Approval Holders (PAH) evaluated in FY 2003, none identified a significant safety concern, i.e., a noncompliance for which immediate corrective action was required. There were 25 noncompliances recorded at 8 Delegated Facilities. There were two safety related noncompliances recorded at Designated Alteration Stations. One Safety-Related noncompliance was recorded for failure to comply with 25.1309 to conduct safety analyses of all systems installed. A safety analysis was only conducted for electrical systems and not mechanical systems. One Safety-Related noncompliance was recorded for failure to comply with 25.1316 to conduct a "System Lightning Protection" analysis.

The system elements and sub-elements where the most noncompliances were reported for PAHs are as follows:

Manufacturing and Special Manufacturing Processes - Specific functions and operations necessary for the fabrication and inspection of parts and assemblies (e.g., machining, riveting, and assembling). Also included are methods whereby materials, parts, or assemblies are worked or fabricated through a series of precisely controlled steps, and which undergo physical, chemical, or metallurgical transformation.

Material Handling, Receiving, and Storage – The methods used to accept and protect raw materials, parts subassemblies, assemblies, and completed products during receipt, manufacture, inspection, test, storage and preparation for shipment.

Supplier Control - The system by which the evaluated facility ensures that supplier materials, parts, and services conform to FAA-approved design.

Design Data Control - The planning and integration of the evaluated facility's procedures for continuously maintaining the integrity of design data, as approved by the FAA or FAA-delegated representatives, in the completed product.

Organizational Management - This system element addresses the evaluated facility's organizational management structure and responsibilities for design control and production functions. This includes procedures and methods used to notify FAA of specific conditions as required by the applicable CFR (such as recording, reporting, investigation, determining cause, and effecting corrective actions of significant or reported failures, malfunctions, or defects). This function also addresses internal audits whereby the facility ascertains its own abilities and procedural compliance to established policy and guidance.

Airworthiness Determination - The function that provides for evaluation of completed products/parts thereof, and related documentation, to determine conformity to FAA-approved design data and their condition for safe operation.

A more detailed discussion of the data is presented throughout Section 3 of the report.

The percentage of teams reporting favorable experiences was consistent with FY02. There were some reports of teams having difficulties using the order. This can be attributed to the implementation of the new Order and the significant change in definitions and criteria. The percentage of evaluations completed decreased slightly from last year. As in previous years, the evaluation teams did not, as a whole, require the need for new criteria. See Section 4 for additional information on the continuous improvement program of ACSEP.

FY 2003 Report

1. Introduction

This report summarizes the results of the Aircraft Certification Systems Evaluation Program (ACSEP) and provides a comprehensive view of the program's results from October 2002 through September 2003. The presentation of the data provides insight into procedural compliance trends with production approval holders.

1.1 Report Structure

Section 1 provides an introduction and overview of the program status.

Section 2 provides a summary of the data presented in this report.

Section 3 provides a consolidation of the data that led to the conclusions presented in Section 2.

Section 4 provides the results of the ACSEP improvement effort including feedback from industry, lessons learned, and comments received regarding the ACSEP evaluations.

There is one appendix: Appendix A provides definitions. Previous ACSEP Annual Reports included an appendix providing detailed data tables regarding the number and percentage of occurrence of a noncompliance for each specific criteria. This information will now be provided on the internet and may also be requested from AIR-200 at (202) 267-8361. The internet address is <http://www.faa.gov/certification/aircraft>.

1.2 Program Overview of ACSEP

This subsection provides an overview of the ACSEP and a brief history of its growth. The ACSEP was developed as a result of numerous years of experience with Quality Assurance Systems Analysis Review (QASAR) audits and observations made during an interim audit program called "Operation SNAPSHOT."

- a) ACSEP evaluations are performed in accordance with consistent and standardized evaluation criteria.
- b) The evaluation criteria used during an ACSEP evaluation were developed with extensive input and cooperation from the aviation industry.
- c) ACSEP evaluation results are maintained in a centralized database.
- d) An annual report of the aggregate ACSEP evaluation results is published.
- e) ACSEP actively incorporates the evaluation of facilities with engineering delegations. The facilities that are evaluated by ACSEP are:
 - Approved Production Inspection System (APIS)
 - Production Certificate (PC) and Production Certificate Extension (PCEX)
 - Parts Manufacturer Approval (PMA)
 - Technical Standard Order (TSO) authorization
 - Delegation Option Authorization (DOA)
 - Designated Alteration Station (DAS)
 - Special Federal Aviation Regulation No. 36 (SFAR-36)

1.3 Significant Events During the Fiscal Year

The following significant events either changed policy that affects the structure of ACSEP, are measures intended to improve PAH quality systems thereby reducing noncompliances, or are significant activities initiated as a result of ACSEP evaluation activity.

1.3.1 Order 8100.7 Revision B

This change was issued to reflect the implementation of revised certificate management guidance. As a result, certain guidance and procedures such as resource targeting and CAA notification procedures that were specific to ACSEP were made a part of the overall certificate management program and are documented in FAA Order 8120.2, Production Approval and Certificate Management Procedures. This change also incorporated items recommended by the various Directorate Continuous Improvement Teams (DCIT), through the National Continuous Improvement Team (NCIT), and other items as a direct result of special technical audits conducted by the FAA. Specific items included in this change were:

- a. FAA Order 8100.7A and changes 1 through 5 to FAA Order 8100.7A have been incorporated.

-
- b.** The ACSEP Life Cycle flowchart was deleted and is now a part of the Certificate Management Life Cycle Process in FAA Order 8120.2.
 - c.** The terms “finding” and “observation” have been replaced by the term “noncompliance.” The term “noncompliance” is explained in FAA Order 8120.2.
 - d.** The assignment of an ACSEP project coordinator and their associated tasks have been removed and are now a part of overall certificate management described in FAA Order 8120.2.
 - e.** Procedures for the principal inspector (PI) and delegated facility assigned engineer (AE) to request corrective action have been removed. The procedures are now a part of overall certificate management described in FAA Order 8120.2.
 - f.** Procedures for other actions based on the ACSEP evaluation report have been removed and are now a part of overall certificate management described in FAA Order 8120.2.
 - g.** Requirements for establishing an ACSEP quality improvement program have been removed and are now a part of overall certificate management described in FAA Order 8120.2.
 - h.** References to the Production Subsystem Control File (referred to as FAA Form 8120–2) have been removed because the form has been removed from the FAA forms inventory and the relevant information is stored in the Manufacturing Inspection Management Information System (MIMIS).
 - i.** ACSEP standardized evaluation criteria for PAHs and delegated facilities have been removed and placed on the FAA’s Web site and AIR’s Regulatory Guidance Library Web site.
 - j.** All forms with instructions and examples have been modified to reflect revised standardized evaluation criteria and new definitions incorporated.
 - k.** The requirement has been deleted for supervisors appointing team members and team leaders to send a copy of the appointment and renewal-of-appointment documents to AIR–200 for database input.
 - l.** Instructions have been removed for notification and conduct of an ACSEP evaluation at a satellite MMF. Satellite MMFs are now subject to evaluation under the certificate management program described in FAA Order 8120.2.
 - m.** General numbered standard paragraphs 4, 8, 9, 14, and 15 have been added.
 - n.** The number of system elements for PAHs was reduced from 17 to 7. The number of criteria for PAHs was reduced from 228 to 140.
 - o.** Definitions for category products, parts, and appliances were deleted. The definitions are now a part of overall certificate management described in FAA Order 8120.2.
 - p.** Officials authorized to appoint team members and team leaders now include managers of manufacturing inspection district offices (MIDO) and certificate management offices (CMO).

q. A requirement was added that a minimum of one product audit be performed during an ACSEP.

1.4 Overview of the ACSEP Activity

The transition from QASAR to ACSEP occurred in FY 1993. *Figure 1-1* shows a seven year look back of the annual number of ACSEPs conducted from FY 1997 to FY 2003. The evaluation of delegated facilities began in FY 1998 after the release of Notice N8100.13, Aircraft Certification Systems Evaluation Program Criteria for Delegated Facilities.

From FY 1994 through FY 1998, the number of evaluations performed at production approval holders increased annually at an average of 24 percent. The growth of the program was facilitated by an increase in the number of qualified manufacturing, engineering, and flight test personnel fully trained to perform ACSEP evaluations. The reduction in the number of ACSEP evaluations from FY 1999 thru FY 2003 is the result of the transition of Category 3 Part manufacturers from ACSEP to PI audits and the full implementation of Resource Targeting. *Table 1-2* itemizes the population of various production approval holders¹.

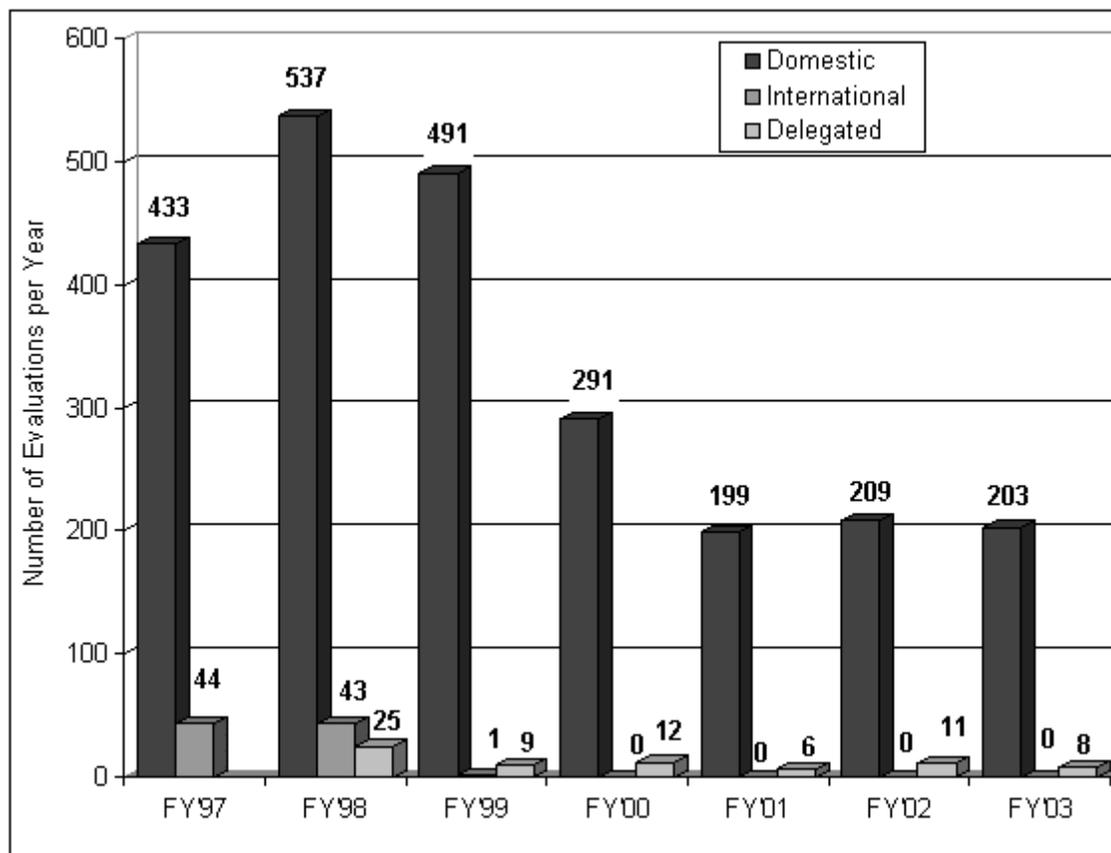


Figure 1-1.—Annual ACSEP evaluations.

¹ Facilities with multiple production approvals are accounted for only once in accordance with the following order of precedence: PC (or PCEX), TSO, APIS, and PMA.

TABLE 1-1.—The population² of PAHs for fiscal years 1996 through 2003

Fiscal Year	Parts Manufacturer Approval (PMA) ³	Technical Standard Order (TSO) Authorization ³	Production Certificate (PC) ³	Approved Production Inspection Systems (APIS)	Total number of Production Approval Holders (PAH)
1996	1,413	342	70	13	1,838
1997	1,437	364	98	8	1,907
1998	1,211	307	98	5	1,621
1999	1,208	306	96	5	1,615
2000	1,229	302	109	9	1,649
2001	1,547	367	101	6	2,021
2002	1,466	349	92	3	1,910
2003	1,480	347	91	2	1,920

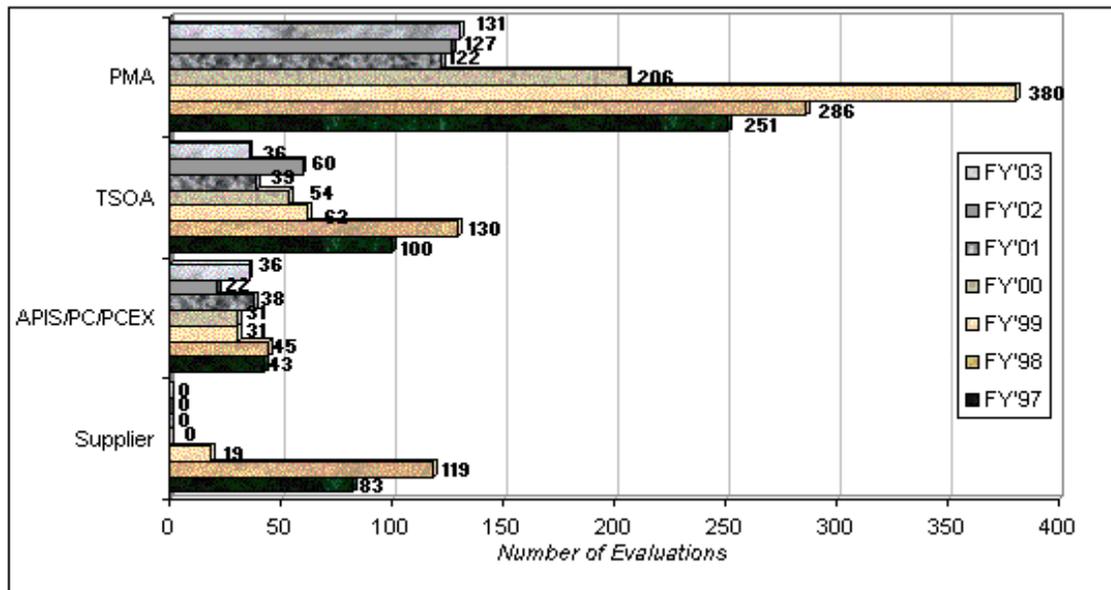


Figure 1-2.—Distribution of ACSEP evaluations at manufacturing facilities by facility type — domestic and international combined.

The distribution of ACSEP evaluations among the various facility types is presented in Figure 1-2. Figure 1-2 shows the reduction in the number of supplier facilities evaluated in FY 1999 — the result of supplier surveillance being conducted through PI audits versus ACSEP. As presented in the FY 1999 ACSEP Annual Report, the reduction in the number of evaluations of PC holders, PC extensions, APIS, and TSO authorizations is a direct result of Resource Targeting for FY 1999. The number of evaluations of PMA holders decreased to a number that was consistent with both the population of PMA facilities and current ACSEP policy. Any future increase or decrease in the number of PMA holders evaluated will reflect solely the growth or decline in the total population of

² This table is a compilation of data received from the individual directorates and is included in this report for reference only.

³ Includes extensions.

PMA holders. The reduction in the number of FY 2000 thru FY 2003 evaluations is a direct result of the transition of Category 3 Part manufacturers from the ACSEP process.

ACSEP evaluations were conducted by the Aircraft Certification Service's four directorates. *Figure 1-3* shows the distribution of all manufacturing evaluations among the four directorates.

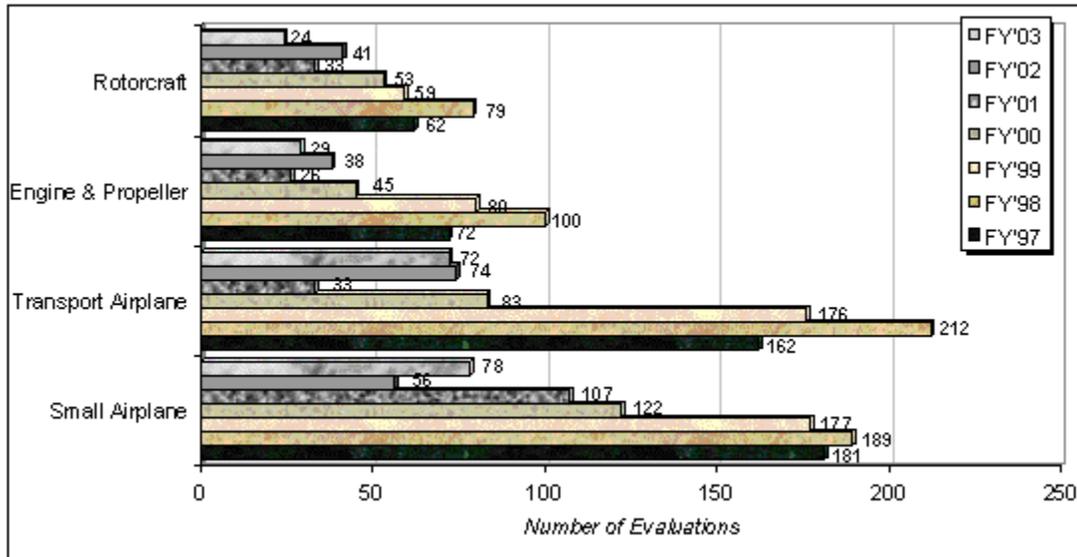


Figure 1-3.—Distribution of ACSEP evaluations at manufacturing facilities by directorate — domestic and international combined.

Table 1-2 lists the population of the various delegations. The distribution of the ACSEP evaluations among the various delegation types and among the various directorates is shown in Figures 1-4 and 1-5 respectively.

TABLE 1-2.—The population⁴ of delegated facilities for fiscal 2003

Fiscal Year	Designated Alteration Station (DAS)	Special Federal Aviation Regulation No. 36 to CFR part 121 (SFAR-36)	Delegation Option Authorization (DOA)	Total number of Delegated Facilities
2000	31	13	6	50
2001	33	13	6	52
2002	32	12	6	50
2003	35	14	6	55

⁴ This table is a compilation of data received from AIR-100 and is included in this report for reference only.

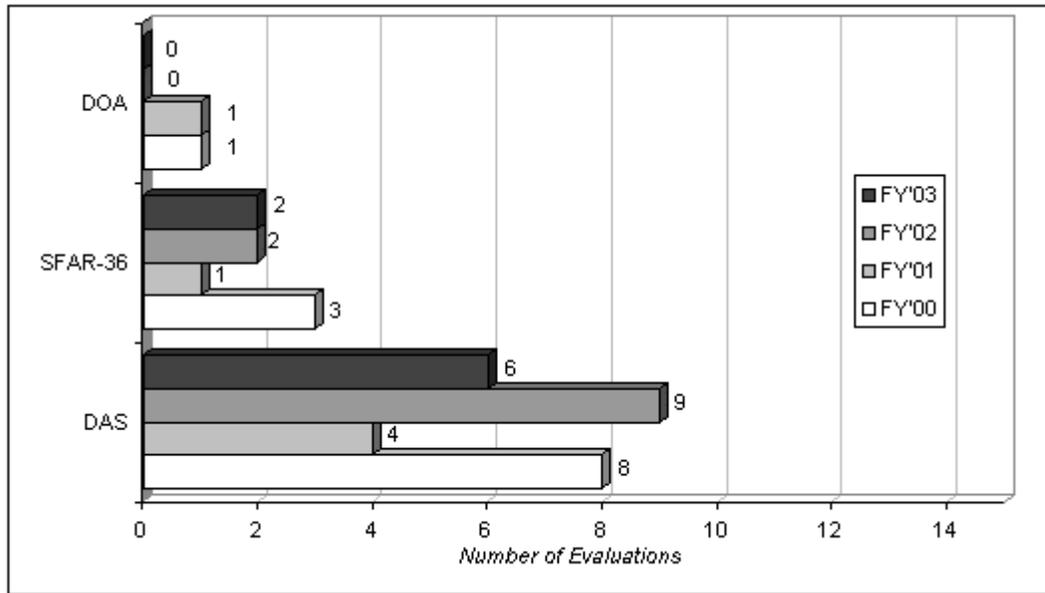


Figure 1-4.—Distribution of ACSEP evaluations at delegated facilities by delegation type.

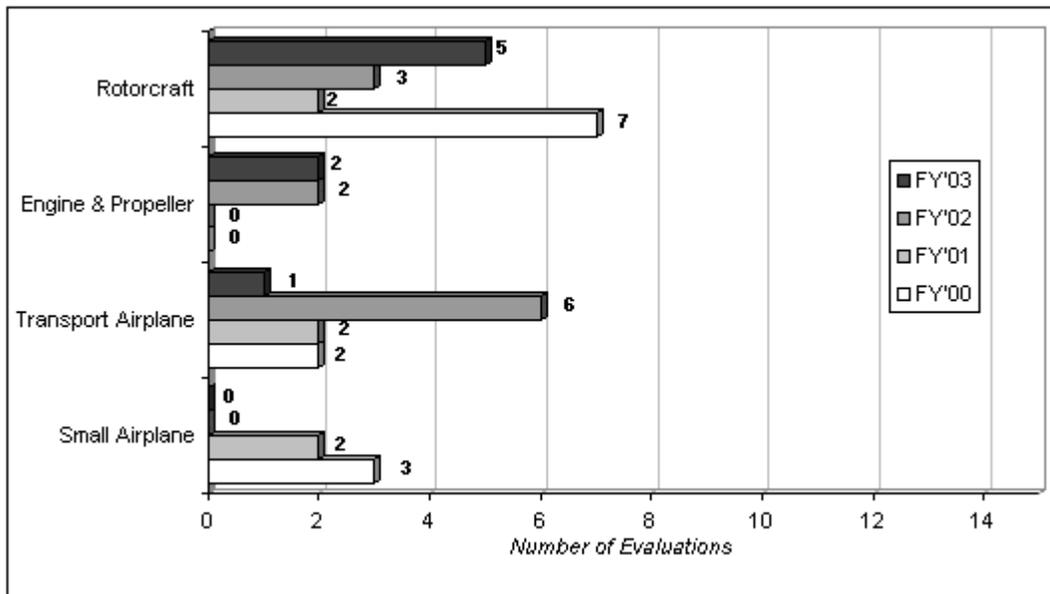


Figure 1-5.—Distribution of ACSEP evaluations at delegated facilities by directorate.

1.5 The Data Collected During an ACSEP Evaluation

The ACSEP was designed to determine if FAA production approval holders and delegated facilities are complying with the requirements of applicable CFR and the procedures established by these facilities to meet those requirements. It also surveys the application of standardized industry practices not required by the CFR to identify national noncompliances that may require development of new or revised regulations,

policy, or guidance. The elements of the evaluation are referred to as criteria. Data is collected on noncompliance, nonconformance, and applicability with respect to those criteria.

1.5.1 The Various Types of Noncompliances

During an ACSEP evaluation, the actual operating practices of a facility are compared to the CFR, FAA-approved data, and the facility's internal procedures. Any inconsistency discovered (termed "noncompliance" in this report) is classified and recorded. A noncompliance is classified by its type and the system element under which it is noted. There are four noncompliance types:

Safety Related Noncompliance – A safety-related noncompliance to the CFR, FAA-approved data, the facility's internal procedures, or purchase order requirements that compromises immediate continued operational safety and requires immediate corrective action.

Systemic Noncompliance – A noncompliance with an applicable CFR, FAA-approved data, the facility's internal procedures or purchase order requirements that is not safety-related and is systemic in nature, i.e., is pervasive, repeatable, and represents a breakdown in the quality control or inspection system.

Isolated Noncompliance – A noncompliance to the CFR, FAA-approved data, the facility's internal procedures, or purchase order requirements that is not safety-related and is of an isolated or nonsystemic nature, i.e., is not pervasive or repeatable, and does not represent a breakdown in the quality control or inspection system.

Certification Related Noncompliance – an occurrence of FAA-approved data not in compliance to the Code of Federal Regulations (CFR).

The number and type of procedures that are FAA-approved varies widely among the various approval types. Additionally, the CFR requirements differ among the various approval types.

1.5.2 Noncompliances Classified into System Elements

Noncompliances are classified using system elements. In total, there are 7 system elements that represent a quality system for a production approval holder:

- | | |
|--|---------------------------------------|
| 1 Organization and Responsibility | 5 Manufacturing Controls |
| 2 Design Data Control | a. Statistical Quality Control |
| 3 Software Quality Assurance | b. Tool and Gauge |
| 4 Manufacturing Processes | c. Testing |
| a. Manufacturing and Special Manufacturing Processes | d. Non-Destructive Testing |
| b. Material Handling, Receiving & Storage | e. Nonconforming Material |
| c. Airworthiness Determination | 6 Supplier Control |
| | 7 Manufacturer's Maintenance Facility |

There are 10 system elements that represent a quality system for a delegated facility:

- | | | | |
|---|---------------------------------|----|------------------------|
| 1 | Organization and Responsibility | 6 | Project Management |
| 2 | Design Data Approval | 7 | Design Change Approval |
| 3 | Testing | 8 | Conformity Inspection |
| 4 | Airworthiness Certification | 9 | FAA Notification |
| 5 | Continued Airworthiness | 10 | Audit |

1.5.3 System Elements Classified into Criteria

Each system element is further divided into “criteria.” The criteria were developed with extensive assistance from industry in order to fully represent the detailed areas within each of the system elements. A process also exists to identify potential new criteria should the existing criteria not address a particular functional area within a system element. The subclassification of noncompliances into the detailed criteria allows the FAA to identify specific areas of concern and allows industry to focus corrective action on these specific areas of concern. For example, the supplier control system element is composed of 19 individual criteria. Specific areas of concern that may be identified include: the use of approved suppliers; periodic evaluations of suppliers; flowdown of applicable technical and quality requirements to suppliers; raw material verification; and others.

Through the use of detailed criteria and their relevant system elements, quality management systems can be evaluated in a consistent manner.

2. Conclusions based on the Data

Review of the FY 2003 ACSEP evaluation data supports the following conclusions:

- There were two safety related noncompliances recorded at Designated Alteration Stations. One Safety-Related noncompliance was recorded for failure to comply with 25.1309 to conduct safety analyses of all systems installed. A safety analysis was only conducted for electrical systems and not mechanical systems. One Safety-Related noncompliance was recorded for failure to comply with 25.1316 to conduct a “System Lightning Protection” analysis.
- Of the 507 noncompliances recorded at the 203 Production Approval Holders (PAH) evaluated in FY 2003, none identified a significant safety concern, i.e., a noncompliance for which immediate corrective action was required. There were 25 noncompliances recorded at 8 Delegated Facilities.
- The majority of systemic noncompliances are concentrated within a few system elements: manufacturing and special manufacturing processes, material handling, supplier control, design control, organizational management, and airworthiness determination.
- Industry feedback with regard to the ACSEP evaluations continues to be very positive. Of particular note are comments received that addressed the overall knowledge and professionalism displayed by the ACSEP teams.
- Lessons Learned, as reported by the ACSEP teams, remained fairly consistent with those reported last year with a slight increase of teams having difficulty using the Order. This may be attributable to the change in definitions and criteria.

3. Data Analysis — Manufacturing Facilities

3.1 Safety Related Noncompliances

Of the 507 noncompliances recorded at production approval holder facilities in FY 2003, none identified an immediate safety concern.

3.2 Systemic Noncompliances

There were 356 systemic noncompliances reported in FY 2003. At least one systemic finding was recorded at 79 percent of the production approval holders evaluated in FY 2003. Of all of the systemic noncompliances recorded, 79 percent were recorded within only six of the system elements or their sub elements. These six system elements or sub elements are displayed in *Figure 3-1*.

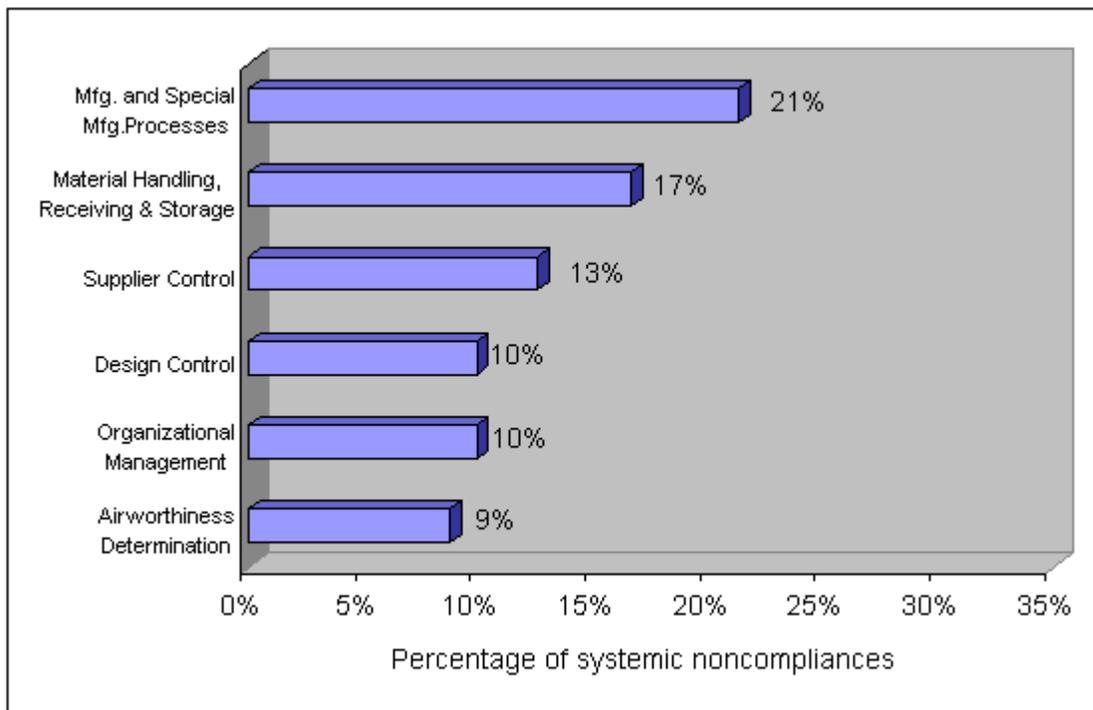


Figure 3-1.— Systemic noncompliances — all facility types.

3.3 Isolated Noncompliances

There were 146 isolated noncompliances reported in FY 2003. At least one isolated noncompliance was recorded at 32 percent of the production approval holders evaluated in FY 2003. Of all of the systemic observations recorded, 84 percent were recorded within only six of the system elements or their sub elements. These six system elements or sub elements are displayed in *Figure 3-2*.

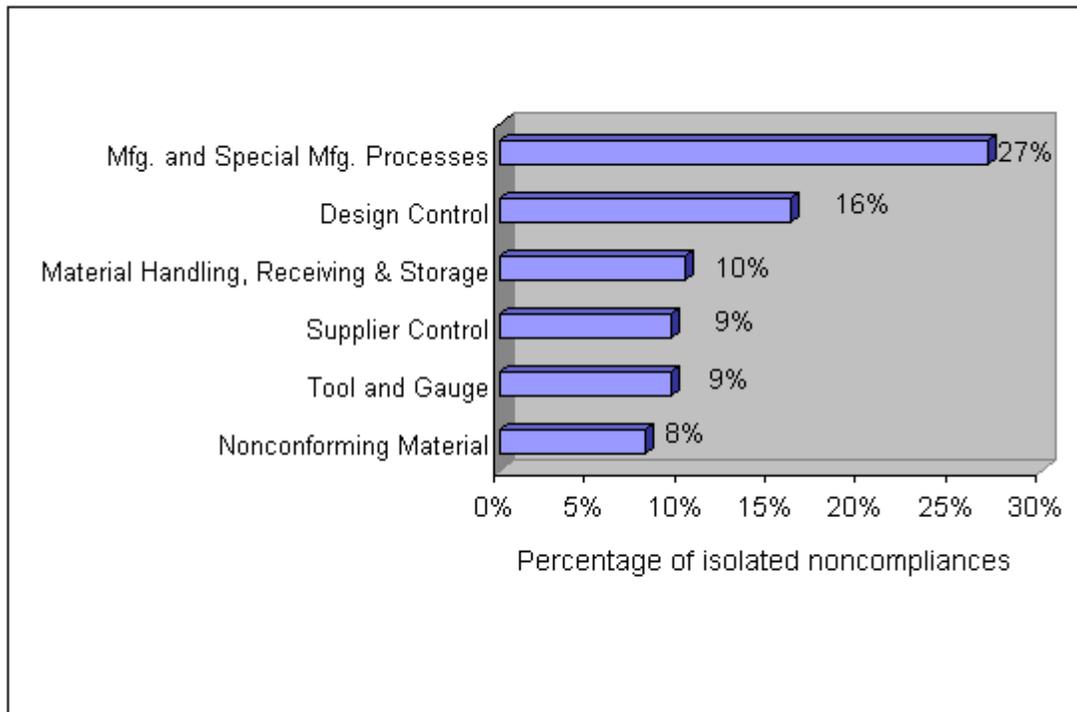


Figure 3-2.— Isolated noncompliances — all facility types.

3.4 CFR-Based Noncompliances

There were 28 CFR-based noncompliances reported in FY 2003. *Table 3-1* lists those system elements or sub elements where the CFR-based noncompliances were reported. There were 39 CFR-based observations, with Manufacturing Processes having the greatest number of noncompliances, reported in FY 2002.

TABLE 3-1.—CFR-based noncompliances

Element	Number of CFR-based noncompliances reported
Manufacturing and Special Manufacturing Processes	8
Design Data Control	5
Airworthiness Determination	4
Nonconforming Material	3
Organizational Management	2
Tool & Gauge	1
Material Handling	1

3.5 System Element Noncompliances

3.5.1 Similarity Among Approval Types

Tables 3-2 through *3-4* show the most prevalent noncompliances, as defined by the total number of noncompliances, for each of the approval types. There is no table presented for APIS because there were no ACSEPs performed at an APIS this year.

Table 3-5 shows the most prevalent noncompliances for all of the approval types combined. It is apparent from this presentation that the distribution of noncompliances for all of the approval types combined is similar to that for any individual approval type alone. *Table 3-6* summarizes the data contained in the figures by comparing the most prevalent noncompliances among the various facility types.

Please note that direct comparison of the approval types cannot be done with these charts. As revealed in the FY1999 Annual ACSEP Report, the proportion of facilities with systemic noncompliances is strongly related to system complexity. Because there are significant differences in system complexity among the various approval types, these charts cannot be used to compare compliance between approval types.

TABLE 3-2.—Counts of PMA noncompliances.

System Element	Systemic Noncompliance	Isolated Noncompliance	CFR-Based Noncompliance
Organizational Management	17	5	0
Design Control	24	13	2
Software Quality Assurance	2	1	0
Manufacturing and Special Manufacturing Processes	30	8	4
Material Handling, Receiving & Storage	26	7	1
Airworthiness Determination	19	4	3
Statistical Quality Control	0	2	0
Tool & Gauge	11	7	0
Testing	3	1	2
Nondestructive Testing	3	3	0
Nonconforming Material	4	6	0
Supplier Control	27	7	1
Manufacturer's Maintenance Facility	1	0	0
TOTAL	167	64	13

TABLE 3-3.—Counts of PC noncompliances.

System Element	Systemic Noncompliance	Isolated Noncompliance	CFR-Based Noncompliance
Organizational Management	4	2	1
Design Control	3	6	2
Software Quality Assurance	7	2	0
Manufacturing and Special Manufacturing Processes	28	28	0
Material Handling, Receiving & Storage	15	3	0
Airworthiness Determination	2	0	1
Statistical Quality Control	0	1	0
Tool & Gauge	6	2	1
Testing	1	1	0
Nondestructive Testing	5	1	0
Nonconforming Material	6	3	3
Supplier Control	11	3	0
Manufacturer's Maintenance Facility	0	0	1
TOTAL	88	48	9

TABLE 3-4.—Counts of TSOA noncompliances.

System Element	Systemic Noncompliance	Isolated Noncompliance	CFR-Based Noncompliance
Organizational Management	13	1	1
Design Control	7	3	0
Software Quality Assurance	3	1	0
Manufacturing and Special Manufacturing Processes	16	5	4
Material Handling, Receiving & Storage	15	4	0
Airworthiness Determination	9	1	0
Statistical Quality Control	2	1	0
Tool & Gauge	6	4	0
Testing	2	0	0
Nondestructive Testing	1	0	0
Nonconforming Material	9	2	0
Supplier Control	5	3	0
Manufacturer's Maintenance Facility	0	0	0
TOTAL	88	25	5

TABLE 3-5.—Counts of all noncompliances.

System Element	Systemic Noncompliance	Isolated Noncompliance	CFR-Based Noncompliance
Organizational Management	34	8	2
Design Control	34	22	4
Software Quality Assurance	12	4	0
Manufacturing and Special Manufacturing Processes	73	37	8
Material Handling, Receiving & Storage	57	14	1
Airworthiness Determination	30	5	4
Statistical Quality Control	2	4	0
Tool & Gauge	23	13	1
Testing	6	2	2
Nondestructive Testing	9	4	0
Nonconforming Material	19	11	3
Supplier Control	43	13	1
Manufacturer's Maintenance Facility	1	0	1
TOTAL	343	137	27

TABLE 3-6.—Summary of the most prevalent systemic noncompliances — FY 2003

System Element	ALL	PC	PMA	TSOA
Mfg. And Special Mfg. Processes	8	8	8	8
Material Handling, Receiving and Storage	8	8	8	8
Supplier Control	8	8	8	
Organizational Management	8	8	8	8
Design Data	8		8	8
Airworthiness Determination	8		8	8
Tool & Gauge	8	8		
Software Quality Assurance		8		

Leading issues for industry

8= One of the top six systemic noncompliances

3.6 Analysis of Evaluation Criteria

The following subsections contain lists of the most significant criteria noncompliances at any given facility type. This data can be used by industry to focus corrective action and by the FAA for resource allocation initiatives. The data is presented in three forms: a view of industry as a whole; a focus on individual approval types in which systemic noncompliances are separated by approval type; and a focus on individual facilities with applicable procedures in place. For clarity, only the top noncompliances are reported in these subsections.

3.6.1 A View of Industry

This subsection lists the most prevalent criteria noncompliances within the industry as a whole. The data from all of the ACSEP evaluations performed in FY 2003 are first presented pooled together (*Table 3-7*). The table column titled “Percent of All Facilities” presents the proportion of facilities evaluated that had noncompliances recorded.

3.6.1.1 Systemic Noncompliances

The ten evaluation criteria most frequently recorded with systemic noncompliances are presented in *Table 3-7*. These eleven criteria accounted for 51 percent of all reported systemic noncompliances.

TABLE 3-7.— Most reported criteria with systemic noncompliances.

Rank	Criteria	Description	Number of Systemic Noncompliances	Percent of Systemic Noncompliances	Percent of All Facilities
1	401	Work instructions control the manufacturing process	21	6%	10%
2	413	Receiving inspection verification	20	6%	9%
3	602	Initial and period evaluation of suppliers	18	5%	8%
4	508	Approval/inspection of tools and gauges	16	5%	8%
5	402	Special processes identified and defined	15	4%	7%
6	427	Part marking	14	4%	7%
7	116	Internal auditing program	12	3%	6%
7	409	Inspection methods and plans	12	3%	6%
7	416	Identification of age control products	12	3%	6%
8	405	Inspection records	11	3%	5%
8	530	Control of nonconforming products	11	3%	5%
9	601	Use of approved suppliers	10	3%	5%
10	206	Minor design change approval	9	3%	4%

3.6.2 A Facility Focus

This section lists the criteria noncompliances separated by approval type (*Tables 3-8 to 3-10*). This allows the reader to focus on the noncompliances pertinent to a particular approval type without bias from the other approval types. For example, the data from the relatively few PC holders is not skewed by the data from the much larger population of PMA holders. For clarity, only the top noncompliances are reported in this section.

TABLE 3-8.—Predominant systemic noncompliances — PC holders

Rank	Criteria	Description	Number of Systemic Noncompliances	Percent of Systemic Noncompliances for PC Holders	Percent of PC Holders with Noncompliances
1	401	Work instructions control the manufacturing process	8	21%	35%
2	405	Manufacturing records	6	15%	26%
3	402	Special processes identified and defined	5	13%	22%
4	409	Inspection methods	4	10%	17%
4	413	Receiving inspection	4	10%	17%
4	424	Segregation of parts in storage	4	10%	17%
4	508	Tool and gauge calibration	4	10%	17%

TABLE 3-9.—Predominant systemic noncompliances — PMA holders

Rank	Criteria	Description	Number of Systemic Noncompliances	Percent of Total Systemic Noncompliances for PMA Holders	Percent of PMA Holders with Noncompliances
1	602	Initial and periodic evaluation of suppliers	13	9%	22%
2	413	Receiving inspection	12	9%	21%
3	427	Part marking	11	8%	19%
4	401	Work instructions control the manufacturing process	10	7%	17%
5	601	Use of approved suppliers	9	7%	16%
6	116	Internal audit	8	6%	14%
6	206	Minor design changes	8	6%	14%

TABLE 3-10.—Predominant systemic noncompliances — TSO authorization holders

Rank	Criteria	Description	Number of Systemic Noncompliances	Percent of Total Systemic Noncompliances for TSO Authorizations	Percent of TSO Authorizations with Noncompliances
1	508	Tool and gauge calibration	5	14%	22%
1	530	Nonconforming products controlled	5	14%	22%
2	402	Special processes identified and defined	4	11%	17%
2	413	Receiving inspection	4	11%	17%
2	426	Storage of conforming parts	4	11%	17%
3	102	Operating within production limitations	3	8%	13%
3	116	Internal audit	3	8%	13%
3	411	Issuance of stamps	3	8%	13%
3	422	Prevention of part damage/contamination	3	8%	13%
3	427	Part marking	3	8%	13%

3.6.3 A Facility Focus (Procedures In Place)

This section lists the criteria noncompliances separated by approval type but only takes into account the number of facilities that had applicable procedures in place (*Tables 3-11 to 3-13*). This allows the reader to focus on the noncompliances pertinent to a particular approval type with applicable procedures in place without bias from the other approval types. For example, the data from the relatively few PC holders is not skewed by the data from the much larger population of PMA holders nor is it skewed by the assumption that all PC holders have applicable procedures in place for all criteria. For clarity, only the top noncompliances are reported in this section.

TABLE 3-11.—Predominant systemic noncompliances — PC holders with applicable procedures

Rank	Criteria	Description	Number of Systemic Noncompliances	Percent of Systemic Noncompliances for PC Holders	Percent of PC Holders with Procedures
1	401	Work instructions control the manufacturing process	8	21%	21%
2	405	Manufacturing records	6	15%	16%
3	402	Special processes identified and defined	5	13%	14%
4	409	Inspection methods	4	10%	11%
4	413	Receiving inspection	4	10%	11%
4	424	Segregation of parts in storage	4	10%	11%
4	508	Tool and gauge calibration	4	10%	11%

TABLE 3-12.—Predominant systemic noncompliances — PMA holders with applicable procedures

Rank	Criteria	Description	Number of Systemic Noncompliances	Percent of Systemic Noncompliances for PMA Holders	Percent of PMA Holders with Procedures
1	602	Initial and periodic evaluation of suppliers	13	9%	12%
2	413	Receiving inspection	12	9%	9%
2	427	Part marking	11	8%	9%
2	116	Internal audit	8	6%	9%
2	401	Work instructions control manufacturing process	10	7%	9%

TABLE 3-13.—Predominant systemic noncompliances — TSO authorization holders with applicable procedures

Rank	Criteria	Description	Number of Systemic Noncompliances	Percent of Total Systemic Noncompliances for TSO Authorizations	Percent of TSO Authorizations with Procedures
1	402	Special processes identified and defined	4	11%	19%
2	530	Nonconforming products controlled	5	14%	15%
3	508	Tool and gauge calibration	5	14%	15%
4	413	Receiving inspection	4	11%	12%
5	426	Storage of conforming parts	4	11%	12%

3.7 Delegated Facilities

This was the sixth year that data was collected for facilities with engineering delegation authority. Delegated facilities include Designated Alteration Stations (DAS), Special Federal Aviation Regulation No. 36 (SFAR-36) facilities, and Delegation Option Authorization (DOA) facilities. For this fiscal year, 2 Safety Related Noncompliances, 11 systemic noncompliances, 9 isolated noncompliances, and 3 CFR-based noncompliances were recorded. A summary of the data follows.

3.7.1 Designated Alteration Stations (DAS) Facilities

Six evaluations were performed at DAS facilities. 2 Safety-Related noncompliances, 11 systemic noncompliances, 9 isolated noncompliances, and 3 CFR-based noncompliances were recorded.

One Safety-Related noncompliance was recorded for failure to comply with 25.1309 to conduct safety analyses of all systems installed. A safety analysis was only conducted for electrical systems and not mechanical systems. One Safety-Related noncompliance was recorded for failure to comply with 25.1316 to conduct a “System Lightning Protection” analysis.

Data for all DAS recorded noncompliances is presented by criteria in Table 3-14.

TABLE 3-14.—DAS noncompliances by criteria

Safety-Related	Systemic	Isolated	CFR-Based	Description
3D3				Classification of data being approved
2D4				Coordination of certification basis with FAA
	1D18			Tags, forms, etc., described/controlle d
	8D1			Submittal of required information to FAA
	6D2			Conformity inspections documented
	2D13			Coordination between technical disciplines
	2D12			Management promotion of staff communications
	5D4			Safety equipment availability

Safety-Related	Systemic	Isolated	CFR-Based	Description
	2D1			Certification basis established
	2D2			Use of latest airworthiness standards
	3D5			Technical/repair data is approved
	7D2			Limitations and conditions for experimental airworthiness
	9D9			Record of reported service difficulties maintained
		6D2		Conformity inspections documented
		6D1		Statements of conformity submitted
		10D1		Internal auditing program
		1D16		Training of delegated facility staff
		4D3		Minor design change approval
		1D2		Current Procedure Manual/Handbook
		3D2		Use of approved documents and forms
		4D1		Control of changes to type design data
		3D5		Technical/repair data is approved
			7D2	Limitations and conditions for experimental airworthiness
			3D5	Technical/repair data is approved
			4D2	Major/minor determination

3.7.2 Special Federal Aviation Regulation No. 36 (SFAR-36) Facilities

Two evaluations were performed at an SFAR-36 facility. No noncompliances were recorded.

3.7.3 Delegation Option Authorization (DOA) Facilities

There were no evaluations performed at DOA Facilities for this reporting period.

4. Improvement Emphasis

The goal of the ACSEP is to support continuing operational safety and promote continuous improvement.

4.1 Industry Feedback

As part of the ACSEP Quality Improvement Program, a performance feedback report (FAA Form 8100-7, FAA ACSEP Evaluation Feedback Report) is provided to each individual organization when notified that an evaluation is scheduled to take place. Each facility evaluated is requested to use this report to critique the FAA ACSEP evaluation process. The feedback report is used to record the facility's impression for each step of the evaluation, from notification to the post-evaluation conference. A question concerning the professionalism of the ACSEP evaluation team is also included on the report. The facility's management is encouraged to complete the report and return it for analysis. Feedback reports were returned by 53 percent of the facilities.

Overall, the feedback was very good. As with the previous year, greater than 99 percent of the responses were "Satisfactory" or better (see *Table 4-1*). *Figure 4-1* gives the average scores for each of the feedback categories measured and an overall average. The data presented remains consistent from the previous years.

The feedback report also allows for the inclusion of comments/suggestions. Many very positive comments were received regarding the overall knowledge and professionalism displayed by the ACSEP teams. There were very few suggestions provided this year. Examples of suggestions submitted include:

- Would like a detailed agenda provided prior to the audit.
- Would like a better explanation why noncompliances were written up.
- Team should spend more time on the manufacturing floor.
- Would like team assignments provided prior to the audit.
- Presenters should not just "read" the briefing slides.
- Teams should not re-evaluate the data certification basis.
- Teams should use "accepted" audit methods.
- Engineers should have a background in the field they are evaluating.

Note: The Production and Airworthiness Division, AIR-200, will evaluate and disposition these comments/suggestions independent of this report.

TABLE 4-1.—Distribution of industry feedback

Rating	Percentage
Excellent	63.6%
Good	31.6%
Satisfactory	4.4%
Poor	0.2%
Unsatisfactory	0.2%

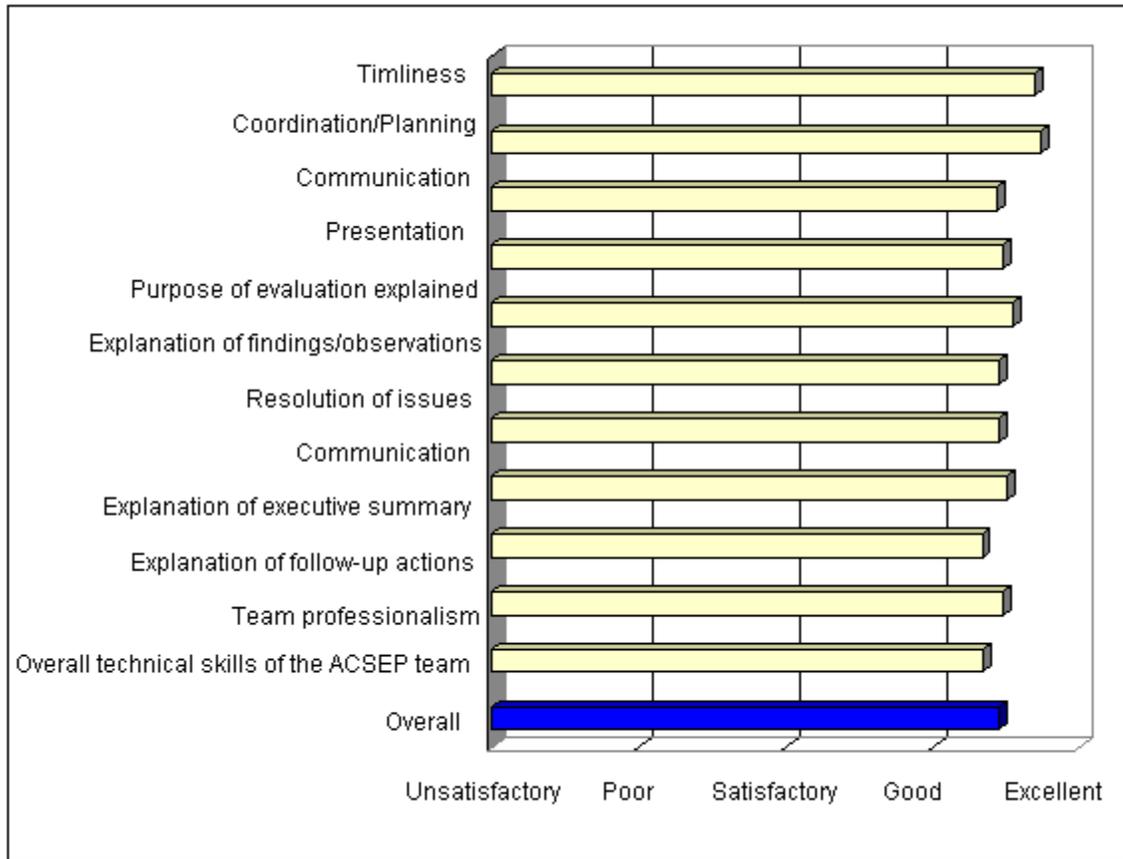


Figure 4-1.—ACSEP as graded by industry.

4.2 Lessons Learned

An additional part of the continuous improvement process is the gathering and analyzing of lessons learned that the evaluation team documented at the conclusion of each ACSEP evaluation. Each ACSEP evaluation team submits a “lessons learned” form that records the team’s general assessment of the evaluation, difficulties with the order, system elements not evaluated, and any proposed new criteria. *Figure 4-2 through figure 4-5* show the trend in these lessons learned from FY 1998 to FY 2003.

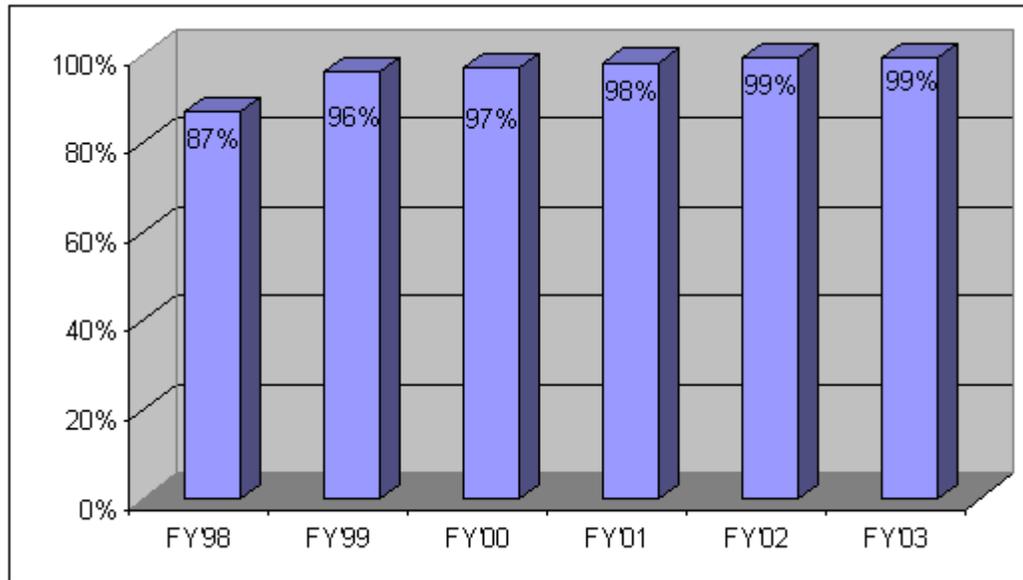


Figure 4-2.—Trend of lessons learned — favorable experiences.

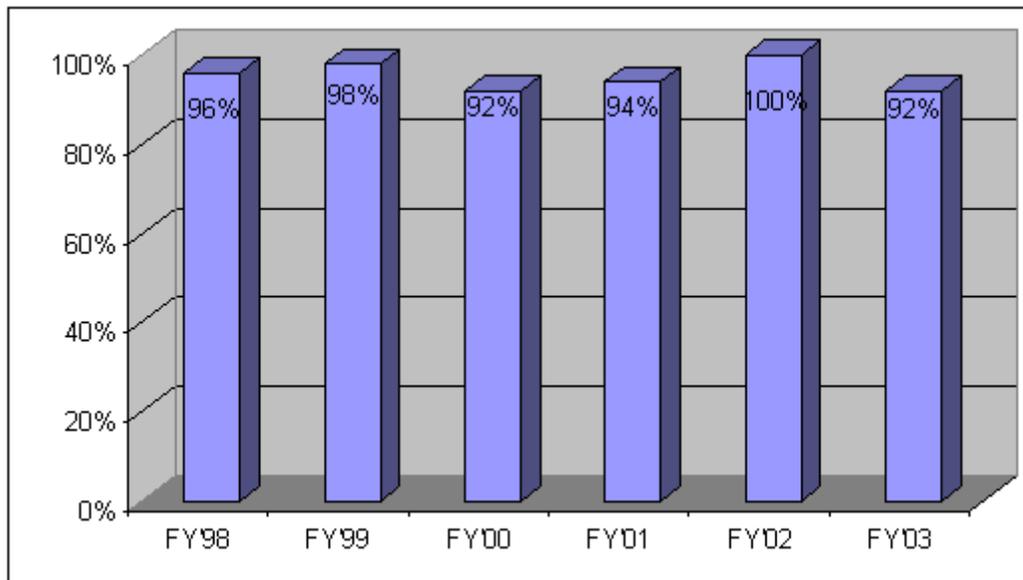


Figure 4-3.—Trend of lessons learned — no difficulties with Order 8100.7

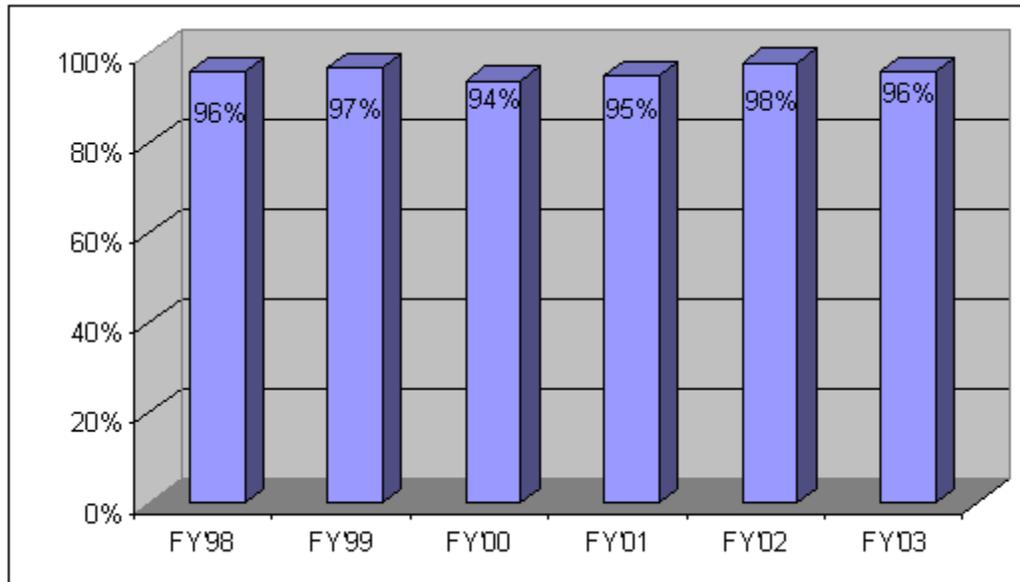


Figure 4-4.—Trend of lessons learned — evaluation completed.

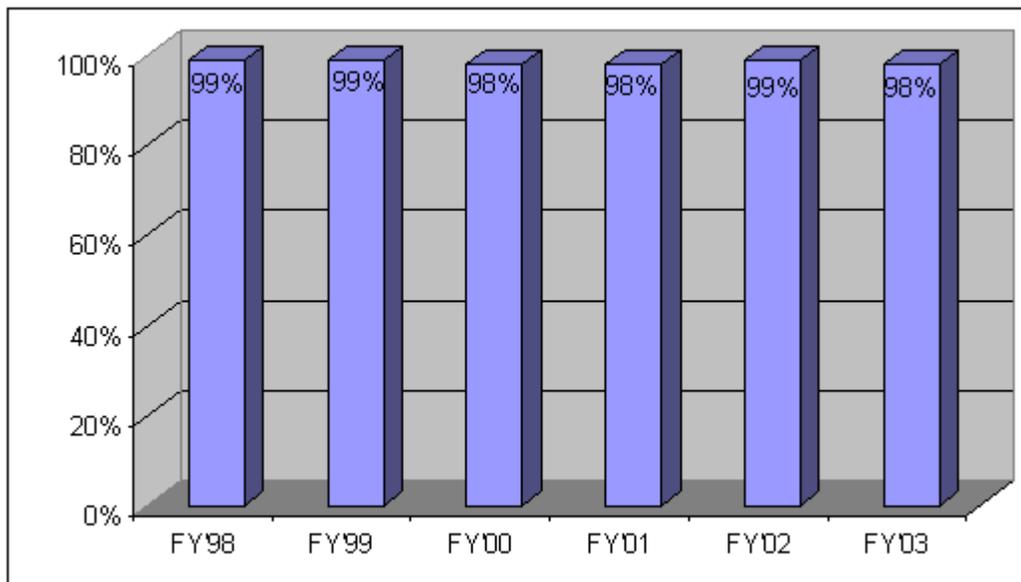


Figure 4-5.—Trend of lessons learned — no new criteria needed.

The percentage of teams reporting favorable experiences was consistent from last year. There were some reports of teams having difficulties using the order. This can be attributed to the implementation of the new Order and the significant change in definitions and criteria. The percentage of evaluations completed decreased slightly from last year. As in previous years, the evaluation teams did not, as a whole, require the need for new criteria.

Figure 4-6 presents the number of ACSEPs with system elements not completed. The total number of system elements not evaluated slightly increased from the previous year.

The one ACSEP where Manufacturing and Special Manufacturing Process was not completed was in the area of Airworthiness Determination. This was because there were no recent tags available for review. One ACSEP where Design Control was not completed was because of time constraints encountered due to a power failure at the facility. The other ACSEP where Design Control was not evaluated was due to time constraints and having to reassign the team member to an area of greater concern.

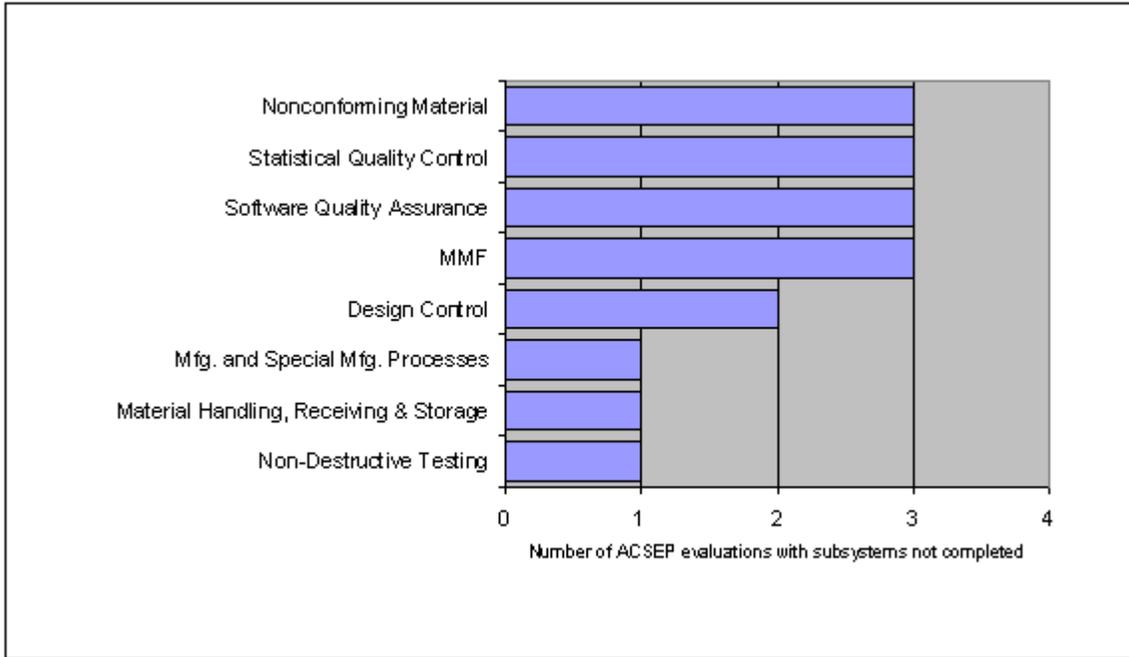


Figure 4-6.— Distribution of subsystems not evaluated.

Table 4-2 presents a detailed breakdown of comments received with the Lessons Learned. The only notable increase was in relation to comments received about the new criteria. As stated previously, this can be attributed to the implementation of the new Order and the significant change in definitions and criteria. It is expected that these comments will decrease as teams become more familiar with the new Order.

TABLE 4-2.—Comments received from lessons learned sheets

General Issues/Comments	FY'99	FY'00	FY'01	FY'02	FY'03
Time scheduled at facility was too short or too long	3%	7%	6%	2%	5%
Computer or ACSEP software issues	1%	2%	1%	0%	1%
Logistics; no escorts or QC mgr., facility not notified	0%	1%	1%	1%	0%
QC Manual: incomplete, outdated, conflicts with other procedures	0%	1%	1%	0%	0%
Production is very low, inactive, or inappropriate for audit	1%	2%	1%	0%	1%
Management defensive/uncooperative	1%	0%	0%	0%	0%
ISO 9000 certification better prepared the facilities for ACSEP evaluation	1%	1%	2%	0%	0%
Recommend extending evaluation frequency	1%	0%	0%	0%	1%
Misc. other issues	1%	1%	2%	0%	0%
Difficulty with Order	FY'99	FY'00	FY'01	FY'02	FY'03
Criteria; add, incorrect, or system element issues	2%	2%	3%	1%	7%
ACSEP too big for facility	1%	1%	0%	0%	1%
Noncompliances; confusion with definitions	1%	1%	2%	0%	1%
Confusion about recording multiple occurrences of findings or observations	1%	0%	0%	0%	1%
Instructions for Form 8100-6 not in Order 8100.7A	n/a	4%	3%	0%	1%
Form 8100-4 not clear/not necessary	n/a	4%	3%	0%	1%

APPENDIX A DEFINITIONS

- Approved Production Inspection System (APIS)* – Federal Aviation Administration (FAA) production approval issued to a manufacturer of an aircraft, aircraft engine, or propeller being manufactured under a type certificate only.
- Assigned Engineer* – An FAA engineer to whom the Aircraft Certification Office manager has assigned responsibility relating to ACSEP evaluations at a particular design approval facility.
- Certification Related Noncompliance* – an occurrence of FAA-approved data not in compliance to the Code of Federal Regulations (CFR).
- Compliance* – for the purposes of this report, compliance refers to a facility's business practices being consistent with published procedures and/or policies. These procedures/policies include: internal procedures/policies not requiring FAA approval, FAA-approved data, and the CFR.
- Criteria* – the basic element of an ACSEP evaluation. Criteria are used to plan the depth of the evaluation and to document the results of the evaluation in a standardized manner. The criteria are grouped into systems and system elements.
- Delegated Facility* – a facility undertaking DOA, DAS, or SFAR-36 activity.
- Delegation Option Authorization (DOA)* – an organization or facility authorized by the FAA to accomplish type, production, and airworthiness certification of certain products as specified in CFR § 21.231(a).
- Designated Alteration Station (DAS)* – an organization or facility authorized by the FAA to issue supplemental type certifications, experimental certificates, and amended standard airworthiness certificates in accordance with its FAA-approved procedures manual.
- Established Industry Practice* – a widely followed method of operating that achieves consistent performance of specific functions (i.e., calibration recall system, internal audit system, and statistical process control).
- Facility* – for this report, any production approval holder, delegation, or priority part supplier.
- Federal Aviation Regulations (FAR)* – regulations listed in Title 14 (Aeronautics and Space) of the CFR.
- Isolated Noncompliance* – A noncompliance to the CFR, FAA-approved data, the facility's internal procedures, or purchase order requirements that is not safety-related and is of an

isolated or nonsystemic nature, i.e., is not pervasive or repeatable, and does not represent a breakdown in the quality control or inspection system.

Manufacturer's Maintenance Facility (MMF) – defined by CFR § 145.1(c) as a repair station certificate with a limited rating issued to a manufacturer based upon the production approval it holds from the FAA.

Noncompliance – for the purposes of this report, noncompliance refers to a facility's business practices being inconsistent with published procedures and policies at the time of the ACSEP evaluation. These procedures and/or policies include: internal procedures/policies not requiring FAA approval, FAA-approved data, and the CFR.

Noncompliance Rate – the proportion of facilities where at least one business practice was inconsistent with published procedures or policies, or any portion thereof, at the time of the ACSEP evaluation. These procedures and/or policies include: internal procedures not requiring FAA approval, FAA-approved data, and the CFR.

Nonobservance – a failure to comply with self-imposed procedures that are related to, but not required by, the applicable production approval, delegated facility approval, or quality requirements from a parent manufacturing maintenance facility.

Parts Manufacturer Approval (PMA) – an FAA production and design approval issued to manufacturers who produce replacement or modification parts, equipment, components, materials, part processes (replacement and modification, and appliances).

Principal Inspector (PI) – an FAA aviation safety inspector who has been assigned certificate management and/or surveillance responsibility for a PAH, associate facility, or priority part supplier.

Production Approval Holder (PAH) – the holder of a PC, APIS, PMA, or TSO authorization, who controls the design and quality of a product or part thereof.

Production Certificate (PC) – an FAA production approval issued to a manufacturer of aircraft, aircraft engines, or propellers that has had its Quality Control system examined and approved by the FAA, and that holds one or more of the following: a current type certificate, rights to the benefits of a type certificate under a licensing agreement, or a supplemental type certificate.

Production Certificate Extension (PCEX) – an FAA-approved extension of a specific manufacturer's PC to another facility.

Safety Related Noncompliance – A safety-related noncompliance to the CFR, FAA-approved data, the facility's internal procedures, or purchase order requirements that compromises immediate continued operational safety and requires immediate corrective action.

Special Federal Aviation Regulation No. 36 (SFAR-36) – an organization or facility authorized by the FAA to approve major repairs on a product or article in accordance with its FAA-approved procedures manual.

System – the highest level of grouping for the ACSEP criteria. Systems comprise the individual disciplines under which the criteria fall. There are six systems: Management, Engineering, Manufacturing, Quality, Service/Product Support, and Communication with the FAA.

System element – a logical grouping of several criteria into functional areas. There are 7 system elements for production approval holders and 10 system elements for delegated facilities.

Systemic Noncompliance – A noncompliance with an applicable CFR, FAA-approved data, the facility's internal procedures or purchase order requirements that is not safety-related and is systemic in nature, i.e., is pervasive, repeatable, and represents a breakdown in the quality control or inspection system.

Technical Standard Order (TSO) authorization– an FAA design and production approval issued to a manufacturer for an article which has been found to meet a specific FAA Technical Standard Order.

FY 1998 ACSEP Report Feedback Information

In a constant effort to improve the Aircraft Certification System Evaluation Program (ACSEP), you are asked to provide any relevant feedback to the attached report. This feedback could include views for additional areas of analysis; clarification of subject matter, data, and/or analysis; or general comments or remarks. We appreciate your input.

Feedback:

Check as appropriate

Additional pages attached. Number of pages. _____ I would like to discuss the above. Please contact me.

Submitted by: _____ Date: _____

Organization: _____

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Street/P.O. Box City State Zip Code

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