Federal Aviation Administration
Aviation Rulemaking Advisory Committee

Air Carrier/General Aviation Maintenance Issue Area
Part 145 Repair Station Supplemental Rule Working Group

Task 1 – System of Rating – Classes and Quality Assurance Program

Task Assignment

[Federal Register: October 19, 2001 (Volume 66, Number 203)]
[Notices]
[Page 53281-53282]
From the Federal Register Online via GPO Access [wais.access.gpo.gov]
[DOCID:fr19oc01-151]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

Aviation Rulemaking Advisory Committee; Air Carrier and General Aviation Maintenance Issues--New Tasks

AGENCY: Federal Aviation Administration (**FAA**), DOT.

ACTION: Notice of new tasks assigned to the Aviation Rulemaking Advisory Committee (ARAC).

SUMMARY: The **FAA** has assigned two new tasks to the Aviation Rulemaking Advisory Committee. The tasks are related to aeronautical repair station regulations. The first task involves evaluating the current system of ratings and classes for aeronautical repair stations and, if appropriate, recommending a new system. The second task involves evaluating the current requirements for quality assurance programs for aeronautical repair stations and recommending whether the **FAA** should include such systems in the regulations. The Committee has elected to work these tasks itself rather than establish working groups to develop recommendations.

FOR FURTHER INFORMATION CONTACT: James J. Ballough, Manager, Continuous Airworthiness Maintenance Division, Flight Standards Service, Federal Aviation Administration, 800 Independence Avenue, SW., Washington, DC 20591, (202) 267-3546.

SUPPLEMENTARY INFORMATION:

Background

The **FAA** established the Aviation Rulemaking Advisory Committee to provide advice and recommendations to the **FAA** Administrator on the **FAA**'s rulemaking activities with respect to aviation-related issues. The Committee addresses a wide range of aviation issues. The committee will address these tasks under Air Carrier and General Aviation Maintenance Issues.

On July 30, 2001, the **FAA** issued a final rule that revised part 145 of Title 14 of the Code of Federal Regulations (66 FR 41088). In Notice of Proposed Rulemaking No. 99-09 (64 FR 33142; June 21, 1999), the **FAA** proposed a new system of rating and classes and solicited comments on requirements for a quality assurance program for aeronautical repair stations. Commenters overwhelmingly objected to these proposals. The **FAA** is seeking advice and recommendations from the Committee before promulgating additional rulemaking on these topics.

Task 1--Repair Station Ratings System Recommendations

Task Summary

Recommend a system to rate aeronautical repair stations that mitigates problems associated with the existing system of ratings and accommodate the growth of the aviation industry.

Committee Activity

Review the existing system of ratings and classes contained in the current part 145 and any other documents issued by the **FAA** pertaining to aeronautical repair stations.

Review comments submitted to **FAA** in response to the public meetings held in 1989 and the system of ratings proposed in June 1999 in Notice No. 99-09.

Review challenges reported by Aviation Safety Inspectors (ASIs) under the existing system of ratings.

Identify the challenges that aeronautical repair stations encounter under the existing system of rating and classes, including those pertaining to:

Current business practices that are not regulated that may require some form of control;

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Provisions in the current regulation that prevent repair stations from performing desired business practices; and

Enforcement problems associated with the current regulations.

Draft a Technical Report that--

Presents a review of the existing system of ratings and classes;

Identifies various options for rating systems;

Identifies the advantages and disadvantages of each option;

Provides economic information for each of the alternative rating systems; and

Recommends a preferred system of ratings.

Task 2--Repair Station Quality Assurance Program Recommendations

Task Summary

Recommend a quality assurance program that reflects the industry requirements of aeronautical repair stations and accounts for the varying scope of repair station operations.

Committee Activity

Review the discussion about quality assurance in the June 1999 Notice of Proposed Rulemaking (Notice No. 99-09).

Review comments relating to quality assurance submitted to **FAA** in response to the public meetings held in 1989 and the quality assurance program requirements proposed in Notice No. 99-09.

Review current industry practices relating to quality

assurance issues to--

Identify quality assurance systems currently used by some repair stations, and

Analyze the elements of the systems used by the aviation industry.

Develop a Technical Report that--

Presents a review of regulatory requirements that comprise a quality assurance program;

Identifies various options for regulating quality assurance programs;

Identifies the advantages and disadvantages of each option;

Provides information on the economic impacts of applying a quality assurance system to various segments of the repair station industry; and

Recommends a preferred quality assurance program/system.

Delivery Date: The Committee must complete this task by February 28, 2002.

ARAC Acceptance of Task

The Committee has accepted these tasks and elected not to establish working groups to assist in analyzing these tasks because the tasks are time critical.

The new tasks and a plan for accomplishing these tasks will be discussed at the next meeting on Air Carrier and General Aviation Maintenance Issues. The Committee may be required to meet every 4 to 6 weeks to accomplish the tasks within the scheduled completion date. Meeting attendance is open to the interested public but space may be limited. The **FAA** will arrange teleconference capability for individuals wishing to participate in meetings if we receive notification within the time specified in each notice of meeting.

The Secretary of Transportation determined that the information and use of the ARAC is necessary and in the public interest in connection with the performance of duties imposed on the **FAA** by law.

Issued in Washington DC, on October 15, 2001.

James Ballough,

Assistant Executive Director, Air Carrier and General Aviation Maintenance Issues, Aviation Rulemaking Advisory Committee.

[FR Doc. 01-26460 Filed 10-18-01; 8:45 am]
BILLING CODE 4910-13-M

Recommendation Letter

Action - ARM
Copy - Nick + Reg

August 13, 2002

BY E-MAIL (nick.sabatini@faa.gov)

ORIGINAL HAND DELIVERED

Nicholas A. Sabatini
Associate Administrator for
Regulation and Certification
Federal Aviation Administration
800 Independence Avenue, S.W.
Room 1000W
Washington, D.C. 20591-0004

Dear Nick:

At long last, please find attached the recommendations from the Aviation Rulemaking Advisory Committee (ARAC) for General Aviation and Air Carrier Maintenance issues regarding the tasks assigned on October 19, 2001.

The tasks were to –

- Recommend a system to rate aeronautical repair stations that mitigates problems associated with the existing system of ratings and accommodate the growth of the aviation industry; and,

- Recommend a quality assurance program that reflects the industry requirements of aeronautical repair stations and accounts for the varying scope of repair station operations.

The documents attached reflect the Committee's best efforts to accomplish the tasks assigned.

We thank the Federal Aviation Administration (FAA) for the opportunity to provide recommendations on these issues and its support in accomplishing our objective.

If you have any questions, please do not hesitate to contact me.

Sincerely,

Sarah MacLeod
Assistant Chair for ARAC

Enclosures:

Final Technical Report – Ratings.doc
Appendix A – Rating System Survey.doc
Appendix B – AECMA Rating System Survey.doc
Appendix C – Boeing Rating System Survey. doc
Appendix D – NATA Rating System Survey.doc

Final Technical Report – QA.doc
Appendix A – Quality System Elements.doc
Appendix B—Aeronautical Repair Station Association's quality assurance survey
Appendix C—Aerospace Industries Association's quality assurance survey
Appendix D—Aircraft Electronics Association's quality assurance survey
Appendix E—Air Transport Association's quality assurance survey
Appendix F—National Air Disaster Alliance's quality assurance survey
Appendix G—National Air Transportation Association's quality assurance survey
Appendix H—Transport Canada's quality assurance survey

Acknowledgement Letter

U.S. Department
of Transportation
**Federal Aviation
Administration**

800 Independence Ave., S.W.
Washington, D.C. 20591

SEP 9 2002

Ms. Sarah MacLeod
Aeronautical Repair Station Association
121 North Henry Street
Alexandria, VA 22314

Dear Ms. MacLeod:

Thank you for forwarding the Aviation Rulemaking Advisory Committee's (ARAC) Repair Station Ratings and Classification System Technical Report and Repair Station Quality Assurance Technical Report. The Federal Aviation Administration appreciates the effort put forth by the ARAC for General Aviation and Air Carrier Maintenance Issues in recommending a system to rate aeronautical repair stations and recommending a quality assurance program for aeronautical repair stations. We have posted the reports and their appendices on the ARAC web site (www.faa.gov/avr/arm/arac).

We have formed a rulemaking team to review the reports, consider the ARAC recommendations, and develop a notice of proposed rulemaking that addresses ratings and quality assurance programs for aeronautical repair stations. We consider this acknowledgment and status report as completion of your tasks, therefore, we have closed these tasks. I would like to thank the aviation community for its commitment to the ARAC process. Specifically, I would like to thank the ARAC for General Aviation and Air Carrier Maintenance Issues for the time and resources it devoted to these tasks.

Sincerely,

Nicholas A. Sabatini
Associate Administrator for Regulation
and Certification

Recommendation

AVIATION RULEMAKING ADVISORY COMMITTEE FOR AIR CARRIER AND GENERAL AVIATION MAINTENANCE

Repair Station Ratings and Classification System Technical Report

A REPORT ON PROPOSED RULE CHANGES TO §§ 145.31 AND 145.33 OF TITLE 14, CODE OF FEDERAL REGULATIONS

MAY 2002

INTRODUCTION

The Federal Aviation Administration (FAA) issued notice No. 99–09, Part 145 Review: Repair Stations; Notice of Proposed Rulemaking (NPRM) (64 FR 33141, June 21, 1999), proposing changes to part 145 of Title 14, Code of Federal Regulations (FARs). These proposed changes included the addition of two new ratings and new classifications within the existing system of repair station ratings. The FAA proposed the revised rating system to better reflect the demands of modern aircraft technology. However, the FAA received numerous comments to the NPRM opposing the proposed ratings and classification system.

Several commenters believed that the proposed system was more restrictive and more complicated than the existing system of ratings. Many commenters contended that neither the existing nor the proposed rating systems reflect modern aircraft technology. That objective, they believed, could only be achieved by revamping the entire rating system. Based on these comments, FAA did not adopt the proposed ratings as part of amendment No. 145–27, Final Rule With Request for Comment and Direct Final Rule With Request for Comment; Final Rule (66 FR 41087, August 6, 2001), which included changes to many other sections of part 145.

The FAA assigned the Aviation Rulemaking Advisory Committee for Air Carrier and General Aviation Maintenance issues (the committee) a new task to produce a technical report that reviewed the current system of repair station ratings and, if appropriate, recommend a system to rate aeronautical repair stations that mitigates identified problems associated with the existing system and accommodates the growth of the aviation industry (66 FR 53281, October 19, 2001).

The task established the following committee activities:

- Review the existing system of ratings and classes contained in the current part 145 and any other documents issued by the FAA pertaining to aeronautical repair stations.
- Review comments submitted to FAA in response to the public meetings held in 1989 and the system of ratings proposed in June 1999 in Notice No. 99-09.
- Review the challenges reported by Aviation Safety Inspectors (ASIs) under the existing system of ratings.
- Identify the challenges that aeronautical repair stations encounter under the existing system of ratings and classes, including those pertaining to
    - Current business practices that are not regulated that may require some form of control;
    - Provisions in the current regulation that prevent repair stations from performing desired business practices; and
    - Enforcement problems associated with the current regulations.
- Draft a Technical Report that—
    - Presents a review of the existing system of ratings and classes;
    - Identifies various options for rating systems;

- Identifies the advantages and disadvantages of each option;
- Provides economic information for each of the alternative rating systems; and
- Recommends a preferred system of ratings.

The committee met on January 31, March 11-12 and April 18, 2002 to discuss the issues associated with the current repair station rating system and to determine whether a new system would address the issues related to its task. The committee's report is based upon the extensive discussions associated with its task. It was assisted by a survey of repair stations, FAA inspectors, original equipment manufacturers, and customers. A copy of the survey and several of the committee's completed surveys are attached as appendices to this report. As a result of survey responses and its discussions, the committee determined that advances in aviation technologies and modern business practices made it advisable for FAA to institute a new system of repair station ratings and classifications.

REVIEW OF THE CURRENT RATINGS AND CLASSIFICATION SYSTEM

The current system of repair station ratings and classifications was established in 1962 to help FAA better manage the issuance and oversight of repair station certificates. The rating and classification system generally groups together similar technologies (that existed prior to 1960) based on relative degree of complexity (type of construction or principle of operation) within each rating and class. In addition, the rating and classification system attempted to distinguish between aircraft that operate in commercial air carrier service from those that operate in general aviation based upon size-related criteria.

Nearly every aspect of aviation technology has changed since the repair station rating and classification system was established. Airframes and aircraft skins have benefited from advances in metallurgy and the development of advanced composite material. Transport-category aircraft rely almost exclusively on turbine-engine power, while the reciprocating engine remains prevalent in smaller aircraft. There have been dramatic changes in the national airspace system with significant advancements in integrated navigation, communication, electronic and avionics equipment.

It has become increasingly difficult to categorize today's aviation products into a repair station rating system that was based on past technology. As a result, FAA inspectors and the aviation industry have made widely-varying and sometimes conflicting interpretations to apply these distinctions to current applications. The following section reviews the FARs relating to the existing repair station rating and classification system and discusses practical interpretation and application based on survey results.

CURRENT REPAIR STATION RATINGS AND CLASSES

Currently, part 145 provides for two general categories of repair station ratings: (1) ratings under § 145.31 (class ratings) and (2) limited ratings under § 145.33. Each general rating is broken into classes or specific type of equipment.

CLASS RATINGS

The six general ratings available under § 145.31 are—

(1) Airframe,

(2) Powerplant,

(3) Propeller,

(4) Radio,

(5) Instrument, and

(6) Accessory.

Table 1 sets forth each rating category along with the classes associated with each of the categories.

Table 1—Current Ratings and Classifications Under § 145.31

Rating	Class	Definitions and Notes
Airframe	*Class 1*: Composite construction of small aircraft	May perform maintenance and alterations of airframes. Airframe – fuselage, booms, nacelles, cowlings, fairings, airfoil surfaces (including rotors but excluding propellers and rotating airfoils of engines) and landing gear of an aircraft and their accessories and controls. Large Aircraft: Gross takeoff weight of more than 12,500 pounds. Small Aircraft: Gross takeoff weight of 12,500 pounds or less.
	Class 2: Composite construction of large aircraft	
	Class 3: All-metal construction of small aircraft	
	Class 4: All-metal construction of large aircraft	
Powerplant	*Class 1*: Reciprocating engine of 400 horsepower or less	May perform maintenance and alterations of powerplants.
	Class 2: Reciprocating engines of more than 400 horsepower	
	Class 3: Turbine engines	
Propeller	*Class 1*: All fixed pitch and ground adjustable propellers of wood, metal, or composite construction	
	Class 2: All other propellers, by make	
Radio	*Class 1*: Communication equipment	Radio transmitting and/or receiving equipment used in an aircraft to send or receive communications in flight, including auxiliary and related aircraft interphone systems, electrical or electronic intercrew signaling devices, and similar equipment. Does not include equipment for navigating or aiding navigation of aircraft.
	Class 2: Navigational equipment	A radio system used in an aircraft for en route or approach navigation. This does not include equipment operated on pulsed radio frequency principals, or equipment used for measuring altitude or terrain clearance.
	Class 3: Radar equipment	An aircraft electronic system operated on radar or pulsed radio frequency principles.
Instrument	*Class 1*: Mechanical	A diaphragm, bourdon tube, aneroid, optical, or mechanically driven centrifugal instrument used on aircraft to operate aircraft, including tachometers, airspeed indicators, pressure gauges drift sights, magnetic compasses, altimeters, or similar mechanical instruments.
	Class 2: Electrical	Self-synchronous and electrical indicating instruments and systems, including remote indicating instruments, cylinder head temperature gauges, or similar electrical instruments.
	Class 3: Gyroscopic	An instrument or system using gyroscopic principles and motivated by air pressure or electrical energy, including automatic pilot control units, turn and bank indicators, directional gyros, and their parts and flux gate and gyrosyn compasses.

	Class 4: Electronic	An instrument whose operation depends on electron tubes, transistors, or similar devices, including capacitance type quantity gauges, system amplifiers, and engine analyzers.
Accessory	*Class 1*: Mechanical	An accessory that depends on friction, hydraulics, mechanical linkage, or pneumatic pressure for operation, including aircraft wheel brakes, mechanically driven pumps, carburetors, aircraft wheel assemblies, shock absorber struts, and hydraulic servo units.
	Class 2: Electrical	An accessory that depends on electrical energy for its operation, and a generator, including starters, voltage regulators, electric motors, electrically driven fuel pumps, magnetos, or similar accessories.
	Class 3: Electronic	An accessory that depends on the use of an electron tube transistor or similar device, including supercharger, temperature, air conditioning controls, or similar electronic controls.

The committee reviewed each of the categories and classes to determine the meaning, challenges and usefulness of the current system.

AIRFRAME

Currently, airframe ratings are based on the type of airframe construction ("composite" and "all-metal") and the weight of the aircraft (small being 12, 500 pounds and less while large are more than that weight).

In 1962, the types of composite material available for airframe construction were generally limited to dope, fabric, and wood products. "Composite" was commonly used to define a combination of substances, as an aircraft with components made from a variety of wood, fabric and metal materials. A more appropriate description of the term "composite" may have been "not-all metal." Today the term "composite material" first brings to mind carbon-carbon compounds and advanced polymers. Additionally, the term continues to be associated with aircraft constructed of a variety of materials. Furthermore, FAA inspectors and the aviation industry are confused over how much of an aircraft must be of composite or metal construction for various class ratings within the airframe category. Modern aircraft are not constructed solely with composite materials or metal.

Thus, it is unclear which definition of "composite" is considered appropriate under the current part 145. Therefore, these classes no longer seem to fit within the current airframe class rating system. Furthermore, the committee found that a repair station rating based solely on the type or variety of material in aircraft construction is unduly restrictive. These factors no longer determine the appropriate scope of work repair stations perform under the airframe category. Repair stations are capable of performing work on aircraft that does not depend the materials used in its construction.

The committee also finds that the weight classification division is no longer appropriate. In 1962, a distinction was made between small and large aircraft to separate those airplanes used in commercial air carrier service. At that time, commercial operations normally used aircraft over 12,500 pounds while small aircraft were typically operated in

general aviation. This distinction also generally reflected the relative level of complexity. Today however, aircraft weight does not reflect the complexity or intended use of an aircraft.

POWERPLANT

The powerplant rating is divided into three classes representing large and small reciprocating engines and turbine engines. In 1962, nearly all large aircraft were powered by reciprocating radial engines that produced more than 400 horsepower. These engines differed substantially from the horizontally opposed reciprocating engines with less than 400 horsepower typically used in small general aviation aircraft. Due to this variety of reciprocating engines, it was useful to distinguish the classes based on horsepower. Today however, it is possible for a small horizontally opposed reciprocating engine to produce over 400 horsepower. In addition, all modern transport airplanes are turbine-powered and high-horsepower radial engines are no longer manufactured. Therefore, the committee determined that two classes for reciprocating engines were no longer useful.

The powerplant classification for turbine engines includes turbojet, turbofan and turboprop engines. Many commenters to the NPRM stated that it is not necessary to further divide this class based on type or relative size since these factors do not significantly affect the complexity or skills necessary to maintain turbine engines. In fact, some FAA inspectors require repair stations maintaining Auxiliary Power Units (APU) to obtain a turbine class rating as opposed to an accessory rating. These inspectors believed that the powerplant rating more closely reflected the type of housing, facilities, equipment and personnel needed to perform the work.

PROPELLER

The propeller rating is divided into two classes—fixed pitch and variable pitch. This distinction was based on the different levels of complexity between a propeller with no moving parts and one with a mechanical system that controls the pitch of the propeller while operating. It also related to the reciprocating engine classes as variable pitch propellers were primarily used with the high-horsepower radial engines, while the fixed pitched propellers were used with the small reciprocating engines.

Although the differing levels of complexity remain, current repair station business practice no longer supports two class ratings within this category. Propeller repair stations generally hold both ratings in order to sustain a continuous flow of business. Airplanes with variable pitch propellers undergo frequent maintenance because they are typically operated in commercial service or in business aviation. Fixed pitch propellers continue to be primarily used by privately owned airplanes. Since the housing, facilities, equipment and skills needed to maintain variable pitch propellers generally encompasses the requirements for maintenance of fixed-pitch propellers, repair stations typically obtain both class ratings.

RADIO

The radio rating is divided into communication, navigation and radar classes. These classes are based upon the technology available to the industry in the past. The first two classes, communication and navigation, are based on their intended function in the airplane whereas the radar class is based on a specific technology or mode of operation.

This method of categorizing equipment has generated a great deal of controversy since the advent of modern avionics. First, modern avionics equipment typically integrate communications and navigation functions into a single appliance. Second, radar equipment or a radio that operates using pulse technology also serves communication and/or navigation functions. This requires repair stations to obtain all three ratings. Additional confusion exists for avionics that integrate radio and instrument functions into a single appliance. For example, a modern flight management system (FMS) can be considered both a radio and an instrument. Under the existing rating system, a repair station that intends to work on an FMS must maintain both an instrument rating and a radio rating. As a result, there is inconsistency in the application of ratings and classes to repair stations that work on integrated communication, navigation, radar and radio equipment.

INSTRUMENT

The instrument rating is divided into four classes; mechanical, electrical, gyroscopic, and electronic; based on the article's general principles of operation. Again, these category and class distinctions were based upon the technology available when the rule was promulgated. However, today most instruments operate using a combination of these principles. Additional confusion exists relating to the appropriate ratings and classes for repair stations that maintain avionics that integrate instruments into navigation and communication systems. In fact, integrated modular avionics systems are combining radio and instrument functions into a single structure, which is displayed through the aircraft's "glass cockpit." As a result, there is inconsistency as to the appropriate ratings and classes a repair station should hold in order to work on modern integrated avionics equipment.

ACCESSORY

Similar to the instrument rating, the accessory rating is divided into mechanical, electrical and electronic classes based on the articles' principle of operation. Today's accessories rely on a combination of principles for their operation. The same problems experienced in the radio and instrument ratings and classes exist regarding hybrid accessories. As a result, there is a great level of inconsistency in the application of accessory ratings and classes to repair stations that work on integrated components.

The accessory category is particularly inconsistent because it and the limited airframe, powerplant, propeller, radio and instrument ratings are used interchangeably. Since the term accessory is not defined, except by the examples set forth within each class, it is open to individual interpretation by FAA inspectors and repair stations. Consequently,

there is significant overlap between the use of accessory, either class or limited, and limited airframe, powerplant, propeller, radio and instrument ratings to allow work on component parts. Two repair stations will have essentially the same housing, facilities, equipment, trained personnel and technical data, yet receive two different ratings.

LIMITED RATINGS AND SPECIALIZED SERVICE

§ 145.33(a) states that a limited rating can be issued to a repair station that maintains only a particular type of airframe, powerplant, propeller, radio, instrument, or accessory, or parts thereof. Such a rating may be limited to a specific model aircraft, engine, or constituent part, or to any number of parts made by a particular manufacturer. That section goes on to state that the rating may also be issued if the repair station performs only specialized maintenance requiring equipment and skills not ordinarily found in regular repair stations.

The most common problem that results in inconsistent use of limited ratings is the overlap between the specific items listed in § 145.33(b) and accessory ratings. As discussed above, either of these ratings could be issued to repair stations performing the same or similar work. For example, a repair station that works on landing gear could as easily hold a limited airframe or accessory rating depending upon the FAA inspector's interpretation. Another problem, identified by the survey, related to the level of detail necessary for any kind of limited rating. Limitations by make and model are the most common. However, a limited rating for component parts varies significantly in the level of detail expected by the FAA. For example, a limited rating to work on landing gear ranges from make/model of the aircraft, make/model of the landing gear, to specific part number of the landing gear or component parts depending on the FAA inspectors' interpretation.

§ 145.33(a) also states that a limited rating can be issued to a repair station that performs only specialized maintenance requiring equipment and skills not ordinarily found in regular repair stations. It further states that the operations specifications of the repair station shall contain the specification used in performing that specialized service and that it can be a military-, civil-, or an applicant- developed specification approved by the FAA.

The specialized service rating is particularly confusing because it is limited to "equipment and skills not ordinarily found in regular repair stations," a very subjective standard. However, repair stations are required to have all the "equipment and skills" necessary to maintain the products for which they are rated. The committee believes that most, if not all, repair stations perform some form of "specialized service." Therefore, there are very few repair stations offering specialized maintenance functions "not ordinarily found in regular repair stations."

The confusion is compounded because some FAA inspectors have required repair stations to obtain specialized service ratings for a broad range of internal maintenance functions. For example, a class rated repair station may be required to obtain several specialized service ratings to perform routine internal maintenance functions, such as a

heat treat, hardening, coating, plating, or NDI processes, on parts that will be incorporated into an overhauled engine. Some inspectors require these additional ratings for "special processes regardless of where the part will end up, whereas other inspectors only require specialized service ratings if the process is being applied to parts as a separate service for customers or are the only service being offered by the repair station.

Therefore, the existing system of limited and specialized service ratings is applied inconsistently.

CONCLUSIONS ABOUT THE CURRENT SYSTEM OF REPAIR STATION RATINGS AND CLASSES

After a review of the current system of repair station ratings and classes, the committee identified three general concerns that need to be addressed:

- It does not reflect the technology and practices of the modern aviation industry.
- It is not dynamic and therefore cannot adapt as new technologies are introduced.
- It is not clearly defined and therefore is open to widely varying interpretation, inconsistent application, and may even unnecessarily limit repair station privileges.

The existing system of repair station ratings and classifications is confusing to FAA inspectors, repair stations and end customers. The inconsistent application of ratings and classes causes problems when a repair station in one region is scrutinized by an inspector in another region who does not believe that the repair station holds the appropriate rating to accomplish particular work. This problem is compounded when customers expect certain ratings to properly accomplish their work. It appears highly questionable to customers when two repair stations approve for return to service similar components under two completely different ratings. Furthermore, inconsistent application of a rating may unnecessarily limit a repair station's scope of work because it does not accurately reflect its capabilities (that is, its housing, facilities, equipment, tools, trained personnel, and technical data).

The committee believes that the existing system of repair station ratings and classes should be modernized to align with the continually evolving technologies and business practices. Furthermore, the rate of technological advances in aviation requires a flexible and dynamic rating and classification system.

OPTIONS FOR A NEW RATING AND CLASSIFICATION SYSTEM

After determining that modernization of the existing system of repair station ratings was desirable, the ARAC committee discussed the fundamental purpose of a rating system. Due to the inconsistencies of the current system, repair stations cannot rely on ratings or classes to determine their scope of work. Ultimately, the FARs do not allow a repair station to perform any work for which it does not have the appropriate capabilities (i.e. housing, facilities, equipment, tools, training, personnel and data) regardless of its rating. It seems repair station ratings are primarily used by:

- The FAA to manage the issuance and oversight of repair station certificates;
- The customers to identify suitably capable repair stations; and
- The repair station to meet the regulatory requirements to operate as a certificated repair station and for marketing purposes.

Therefore, the committee determined that any repair station rating and classification system should serve three basic purposes:

- Indicate to the FAA the general kind of work the repair station intends to perform;
- Provide customers an understanding of the general capabilities of the repair station; and,
- Allow the flexibility to adapt to rapidly changing technology and business environments

After discussion, it was determined that developing a completely new rating system was neither required nor practical. The committee believes that a new rating system should not be unnecessarily disruptive to the FAA or industry. It also recognized that any system of classifying and rating repair stations will have inconsistencies, however, these could be minimized by a clear explanation of the requirements and limitations of each element of the system. Due to its short time allotment, the committee focused on adaptations of the existing repair station rating system, which would address most of the problems identified in the review.

During its brainstorming sessions and general discussions the committee evaluated the following options:

- Limited Rating System
- Progressive Rating System
- General Rating System
- Ratings and Classes Based on Capabilities

LIMITED RATING SYSTEM

The first option evaluated by the committee is a system comprised completely of limited ratings. This would eliminate the class ratings because ratings would only be issued by make and model of the aircraft, powerplant, propeller, or component part.

Advantages: FAA inspectors and some manufacturers surveyed consider this the most appropriate option because it could be used to clearly identify the specific products or components or parts or special process authorized for the repair station. It would remove most inconsistencies regarding the application of class ratings by eliminating the need to develop clear definitions for each class. This system provides FAA inspectors a greater level of structure that more clearly defines a repair station's capabilities, which would simplify initial oversight responsibilities.

The supporters of this option believed that considering the breadth of aviation products, length of service, range of operations, rate of technological change and special tooling requirements; it would be extremely difficult for a general class rated repair station to maintain all of the capabilities (facilities, equipment, tools, trained personnel and data) required for the rating. While it is true that the FARs only require that the capability be present when the work is actually being performed, some manufacturers currently require factory authorized service centers to hold a limited repair station rating. They believe that this provides customers with a greater level of assurance of a repair stations' capabilities with respect to original equipment manufacturer instructions for continued airworthiness and product recommendations for specific models.

Disadvantages: Removing all class ratings would significantly affect repair station business operations and overburden FAA resources. This option limits a repair station's ability to respond, in a timely manner, to customer demands, technological advances and future industry needs due to the time to prepare and process the request for an additional limited rating. This system would also be a significant burden for both FAA and industry personnel to convert all repair stations to a system of limited ratings and to maintain continuous rating changes as repair stations take in new work or discontinue work. In addition, customers (especially air carriers) prefer class rated repair stations because there are fewer limits on their capabilities ensuring that they can address any additional items identified during the performance of the work in a timely manner.

Discussion: Existing regulations require that a repair station have the appropriate capabilities (i.e., housing, facilities, equipment, tools, trained personnel and data) for any work performed regardless of its rating. The committee believed that a repair station should be able to determine its ability to perform any requested maintenance, preventive maintenance, or alteration based on whether it has, or can promptly acquire, the capabilities to approve the article for return to service under the scope of work requested. Furthermore, the committee believed that removing ratings and classifications would not necessarily ensure that FAA inspectors and repair stations would agree on what kinds of work repair stations have the capability to perform. The committee did not believe that a system of only limited repair station ratings could be

applied to rigidly and therefore would not provide the flexibility necessary to support the growth of the aviation industry.

PROGRESSIVE RATING SYSTEM

The committee evaluated a progressive system of ratings whereby a repair station could work on any component part up to the highest level of intended work identified by its rating. For example, the current system requires a repair station to hold both a Class 3 and Class 4 airframe rating to work on small and large airplanes. Under a progressive system, a Class 4 rated airframe facility would be allowed to work on all aircraft, including those under 12,500 pounds.

Advantages: A progressive rating system eliminates the need for Airframe and Powerplant repair stations to obtain multiple class ratings. It also identifies the highest level of work intended by the repair station.

Disadvantages: Airframe and Powerplant class ratings are somewhat progressive, however, this option does not lend itself to the other ratings or the interaction among those ratings. In addition, this option would be a significant departure from the existing system. Additionally, the hierarchy associated with a progressive rating system would be difficult to determine and implement.

Discussion: The committee determined that while this option appears to increase flexibility in the airframe and powerplant rating, it does not resolve any of the problems associated with the other ratings. The committee believes that issues with determining what work may be performed under a given class rating may be resolved just as effectively by more clearly defining each classification and the prerequisites for holding that rating.

GENERAL RATING SYSTEM

The third option evaluated by the committee is a general rating system based solely on general classes (*i.e.*, airframe, powerplant, propeller).

Advantages: This option would practically eliminate any inconsistency regarding the interpretation and application of the rating system. It would provide repair stations with a much greater degree of flexibility to respond to customer demands and changes in technology. It would be very easy to transition from the existing rating and class system to a general rating system.

Disadvantages: General ratings by product category (airframe, powerplant, etc) are far too broad to provide FAA inspectors and the public with an understanding of the scope of work for which the repair station intends to do business or of its general capabilities.

Discussion: This option is supported by the existing requirement that a repair station can only perform work for which it has the appropriate capabilities (*i.e.*, housing,

facilities, equipment, tools, trained personnel and data) regardless of its rating. It would be relatively easy to develop a clear definition of each rating under a general rating system, however the details would be difficult to administer.

RATINGS AND CLASSES BASED ON CAPABILITIES

This rating system would be based on a repair stations capabilities, taking advantage of the on-going regulatory requirement that regardless of its rating a repair station must have the appropriate capabilities, *i.e.*, housing, facilities, equipment, tools, trained personnel and data, before commencing any work.[1]

Classes would be combined or eliminated where appropriate to provide for greater flexibility through the use of more "general ratings." This rating system would then rely on a repair station's operations specification to specify any limitations and a capabilities list to identify the nature and scope of work.

The operations specifications would identify by general category, the products or component parts or specialized service(s) that represented the repair station's core business. The repair station would have a capabilities list and have a procedure in its manual to evaluate its capabilities within its general rating prior to adding an item or process to its capabilities list and commencing work. This evaluation procedure will allow repair stations the flexibility necessary to provide a timely response to customer demands and changes in technology.[2] Additionally, it provides the FAA with the tools necessary for uniform interpretation, policy and enforcement of the requirements.

This option would allow a repair station to work on all components and parts thereof for which it is appropriately rated. For example, a JT8D powerplant repair station can work on and approve for return to service any part of a JT8D (*i.e.*, blades, disks, pumps) without obtaining any additional ratings. This incorporates the streamlined benefits associated with a "progressive rating system."

Advantages: As discussed above, a hybrid system of ratings and classes based on a repair station's capability achieves nearly all of the advantages identified by each of the previous options evaluated by the committee. Through a combination of a general rating and operations specifications, this system provides a better understanding of a repair station's scope of work than is currently available. Under the current system, a repair station's rating limits its capabilities whereas under this option, a repair station's capabilities defines its rating. Shifting from a rigid system of exclusive ratings and classifications to a flexible system of inclusive ratings allows a repair station to perform a wide variety of maintenance, preventive maintenance, and alterations as long as it has the capabilities (*i.e.*, housing, facilities, equipment, tools, trained personnel and data).

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[1] See, §§ 145.53 and 145.201(b).
[2] See, § 145.215.

Disadvantages: By combining the advantages of the other options most of the disadvantages have been nullified. However, the committee recognizes that this option is a basic shift. A successful transition and consistent interpretation and application will require the development of clear guidance material and require continuous training.

Discussion: This option incorporates all of the guiding principles. First, it indicates to the FAA the scope of work the repair station intends to perform. Second, it provides customers with an understanding of the general capabilities of the repair station. Finally, it provides the flexibility necessary to adapt to rapidly changing technology and business environments. This option focuses on a repair station's capabilities both at the time of original certification and on a continuing basis. Therefore, a repair station's housing, facilities, equipment, tools, trained personnel, and data determine how the repair station is rated and the type and extent of work it can perform and approve for return to service. The committee believed that a system of ratings and classes based on a repair stations capabilities more accurately represents current and future industry practices and needs.

RECOMMENDED RATING SYSTEM

As a result of discussions, the committee developed a hybrid rating system that combines the benefits of the options discussed and would be the least disruptive to the industry. The committee recommends that FAA adopt a modified system of ratings and classes based on a repair station's capabilities. This system is a hybrid approach shifting the philosophy from a system of exclusive ratings to a system of inclusive ratings. This rating system is based on a repair stations capabilities, taking advantage of the on-going regulatory requirement that regardless of its rating a repair station must have the appropriate capabilities, *i.e.*, the housing, facilities, equipment, trained personnel and data necessary to accomplish the work and approve that work for return to service. The committee believes class ratings should broadly define a broad scope of work, providing the general parameters of the repair station's capabilities. The committee also believed that this system establishes a greater correlation between the work a repair station performs and the class rating assigned.

As discussed, the repair station's operations specifications would include the general class rating that identified its core business. The operations specifications would also be used to list any limitations that may be associated with the general rating. It would also be used to list the FAA-approved process specifications for specialized service repair stations. In addition, the repair station would establish a capabilities list and have a repair manual procedure to evaluate its housing, facilities, equipment, tools, trained personnel and data before commencing work on articles that would be added that list.

This option requires a modification of the current rating system to address the problems identified in the committee's review and the development of clear definitions or interpretations for each rating and class.

MODIFIED RATINGS AND CLASSES

Based on survey results and a review of the current system of ratings and classes, the committee discussed several options to modify the rating system in terms of nomenclature, privileges and limitations. The committee recommends that the following six general ratings be established:

(1) Aircraft (formerly airframe)

(2) Powerplant

(3) Propeller

(4) Avionics (formerly radio and instrument)

(5) Component (formerly accessory)

(6) Specialized service (formerly limited)

Privileges: The holder of each general rating may perform maintenance, preventative maintenance and alterations and approve for return to service any product or

component or part or perform any specialized service for which it has "capability." This rating system focuses on the highest level article that is being approved for return to service. After extensive discussion, the committee decided that an appropriately rated repair station might also work on and approve for return to service any internal components or parts thereof (including associated specialized services) if the repair station has the "in-house" capabilities. For example, a Powerplant-rated repair station would be allowed to approve for return to service any component part (*i.e.*, modules, cases, blades, compressors) or perform any specialized service (*i.e.*, heat treat, welding, NDI) without obtaining additional ratings, provided the work was performed at the repair station's location. Additionally, the repair station may remove and install any article as needed to gain access to the article for which they are performing maintenance.

Limitations: A repair station may only perform maintenance and approve for return to service those articles listed in their operations specification and/or capabilities list. Through a written procedure, a repair station may add any additional make or model or part or special process within their rating to the capabilities list by "auditing" their housing, facilities, equipment, tools, training, personnel and data. Any limitations whereby a repair station only intends to perform a specific workscope would also be identified on their operations specifications.

The following sections discuss each rating in detail, including its privileges and limitations.

AIRCRAFT

The committee determined that "aircraft," which would include the definition of airframe found in 14 CFR part 1.1, more appropriately reflected the fact that a repair station actually worked on complete aircraft as opposed to the current "airframe" rating. Under an aircraft rating a repair station would be allowed to perform maintenance, preventive maintenance, or alterations on the complete aircraft except those articles that are within a powerplant, propeller, or avionics rating. However, as long as the repair station had the capabilities, it would be allowed to remove, replace, install, and functional test any powerplant, propeller or avionics equipment in order to perform its rated work on the complete aircraft and approve it for return to service. Additionally, the repair station would be allowed to perform maintenance, preventive maintenance, or alterations on the accessories and to do specialized services associated with the aircraft for which it was rated.

If a repair station intended to perform only specific, limited work on a complete aircraft, such as interior configurations or painting, the committee recommended that these limitations be reflected in a repair station's operations specifications.

Under the current system, some repair stations are allowed to work on aircraft components under an airframe rating, while other repair stations must have multiple ratings to perform the same work. The committee believed that by clearly defining the

extent of work permitted under an aircraft rating, the recommended system would eliminate this problem.

The committee recognized that repair stations that intended to work on powerplants, propellers and avionics equipment would have to obtain multiple ratings to demonstrate that they have the necessary housing, facilities, equipment, tools, trained personnel, and data to do such work.

At the time of application, an aircraft repair station would be required to list the make, model or series of aircraft for which the repair station intends to perform maintenance on its operations specifications or its capability list. This would provide the customer and the FAA with a general idea of the repair stations' capabilities. The repair station would be required to demonstrate that it has on its premises and under its control the requisite housing, facilities, equipment, tools, trained personnel, and data to perform the maintenance, preventive maintenance, and alterations on the aircraft listed.

After the FAA certified the repair station, the repair station may add to its operations specifications or capabilities list on an as-needed basis. The repair station would be allowed to change its capabilities list based upon an internal audit that is part of the repair station's system. This internal review would ensure that the FAA can audit the work being performed under the rating and confirm that a repair station has the capabilities to perform the specified maintenance, preventive maintenance, or alterations. For example, if an aircraft that is not on the repair station's capabilities list needed a tire change - the repair station would perform the internal audit to ensure it had the housing, facilities, equipment, tools, trained personnel, and data to perform the this particular work. These temporary changes would not require a change to the capabilities list or operations specifications, rather the internal audit would be kept as part of the repair station's records. Additionally, timely notification to the FAA would allow the agency to verify the repair station had the capability to perform the "as needed" work. If the repair station wished to add a capability to its repair station rating on a permanent basis, the appropriate changes would be incorporated into the repair station's required quality procedures and the make or model would be added in accordance with the recorded system.

The committee determined that it is not necessary to divide this rating into classes. The operations specifications or capabilities list would provide a clear indication of the type of aircraft or work scope the repair station is capable of performing. For example:

Example 1:
Rating: Aircraft
Operations Specification OR capabilities list:
Boeing 737 series
Boeing 747 series
Rating: Powerplant (The repair station would need this rating to work other than removal, replacement, installation and functional testing on aircraft engines or APUs

and it would be limited to the powerplants listed on the operations specifications (or capabilities list) and might exclude overhaul.)

Example 2:
Rating: Aircraft
Operations Specification OR capabilities list:
Boeing 737 series
Boeing 747 series
Operations Specifications Limitation: Limited to internal configuration changes only

Again, the committee noted that the aircraft rating addresses the tendency of repair stations to repair whole aircraft and alleviates the need to get a separate rating for each component installed on the aircraft. By expanding the current airframe rating to include all aircraft articles, except those under the propeller, powerplant, or avionics rating, the recommended rating system becomes inclusive and more accurately reflects the way repair stations maintain aircraft.

POWERPLANT

The powerplant rating would cover all maintenance, preventive maintenance, and alterations performed on the powerplant, and all components necessary for the powerplant to work properly. The powerplant rating would include aircraft engines (as defined in part 1.1) and auxiliary power units (APUs). The committee believed that APUs fit in the powerplant category based upon the technology employed and the capabilities needed to perform maintenance, preventive maintenance and alterations on these articles. This rating, like the aircraft rating, would permit the removal and replacement of propellers and components, as needed, to perform powerplant maintenance. Nacelles and fairings also may be removed and replaced because most engine work cannot be performed unless these items are detached. The rating also includes removal, replacement, installation, and installed functional tests of the engine and the propellers on the aircraft. This rating does not allow for maintenance, preventive maintenance, or alterations to be performed on the aircraft or propeller except as stated above.

The committee discussed dividing this category into three classes: turbine, reciprocating and APUs. Although no conclusion was reached, it was believed that delineating classes under this category would be acceptable and would allow the FAA and the customer to better determine the capabilities of the repair station.

Application for the rating and class must also include a list of make, model, or series to be included on the operations specifications or capabilities list. As discussed previously, the operations specifications or capabilities list can be used to add additional make or model engines as set forth in the repair station's quality system. A powerplant repair station that also intended to repair propellers would hold the following ratings:

Rating: Powerplant
Turbine

Reciprocating
APU

Operations Specification OR capabilities list:
Pratt & Whitney (all series) *(Turbine)*
General Electric CF700 *(Turbine)*
PW R-2800 *(Reciprocating)*
PW-901A *(APU)*

Rating: Propeller (The repair station would need this rating only if it intended to perform work on the propellers other than the removal, replacement, installation or testing needed to work on the powerplant.)

PROPELLER

A propeller rating would allow a repair station to perform maintenance on propellers as that term is defined in part 1.1. Therefore, a propeller rating includes the ability to perform maintenance, preventive maintenance, or alterations on articles within the propeller. This rating would not include the main and auxiliary rotors (airframe articles) or rotating airfoils of aircraft engines (powerplant articles). In addition, as with the aircraft and powerplant ratings, a repair station with a propeller rating would be allowed to remove and install components that are included in other ratings, as needed, to gain access to the propeller. This rating would also allow a repair station to remove and replace components attached to the propeller and to remove the propeller from the aircraft. Finally, the rating would include removal, replacement, installation, and installed functional tests of the propeller, except installations that would constitute a major alteration to the aircraft or aircraft engine.

Application for a propeller rating would also require a list of make, model, or series to be included on the operations specifications or capabilities list. As discussed previously, these lists would be used to add additional makes or models of propellers as set forth in the repair station's quality system. Although a propeller repair station may remove and install the propeller on an aircraft engine, it may not perform any alterations to the aircraft engine, airframe or aircraft. Therefore, a repair station that intended to work on propellers and install a propeller of a different make and model through the use of a supplemental type certificate (STC), would need:

Rating: Propeller
Operations Specifications OR capabilities list:
Hartzell (all series)
Hamilton Sundstrand (all series)
Rating: Aircraft
Operations Specification Limitation: The repair station may alter aircraft associated with the propellers listed on [its capabilities list][the operations specifications] for installations listed on the aircraft STCs.

AVIONICS

The review of the current radio and instrument ratings and classes identified many problems associated with integrated modular avionics systems. Therefore, the

committee proposed a new rating that would combine radio and instrument into a single avionics rating. This rating would include all articles used for aircraft communication, navigation and operation defined in the current system. The committee's purpose in creating this new consolidated rating is to group together those items that operate electrically or electronically or perform similar functions and that require a unique set of skills not associated with other ratings.

An avionics rated repair station would also be allowed to perform maintenance, preventive maintenance, or alterations on in-flight entertainment units or other electronic units. Under the current ratings and classification system, no radio or instrument rating clearly includes in-flight entertainment electronics. Even though these devices typically are not thought of as avionics, the committee included them with other electronic devices that require similar skills.

This rating would permit a repair station, with the requisite capabilities, to remove and replace other components of the aircraft, powerplant, or propeller, as needed, to work on avionics or instruments. For example, a repair station would be allowed to remove or replace parts of the aircraft to gain access to the avionics or instruments. The repair station would be allowed to perform the removal, replacement, installation and functional testing of the avionics equipment on the aircraft, provided the repair station did not alter the aircraft. To perform a major or minor alteration to the aircraft, powerplant or propeller, a repair station would have to obtain the appropriate additional rating.

As with the aircraft, powerplant, and propeller ratings, a repair station would need to identify a list of articles on its operations specifications or capabilities list. Unlike the other ratings however, this list would not necessarily identify make or model and series, rather it would be able to provide broad categories, such as communication, navigation, pulsed (radar), mechanical, electric, gyroscopic, and electronic and the manufacturer.

The committee discussed the difficulty of differentiating between the aircraft and avionics ratings. With respect to the cross over issues, generally, the aircraft rating will allow the repair station to work on the aircraft electrical distribution system, external to the avionics unit. The avionics rating would allow the repair station to work on the electrical distribution system feeding into the avionics unit. This provides some overlap where both ratings allow the repair station to work on the wiring and/or electrical distribution system associated with the avionics equipment.

Similar to the other ratings discussed above, an avionics rated repair station that also intended to install new articles or systems in an aircraft through the use of an STC would need to obtain the appropriate avionics and aircraft ratings. For example:

Rating: Avionics
Operations Specifications OR capabiliites list:
    Collins – Radios
    Goodrich – Multi-functional displays

Rating: Aircraft
Operations Specifications Limitation: The repair station may alter the fuselage of the aircraft associated with installations of the avionics on its [operations specifications][capabilities list].

COMPONENT

As previously discussed, the recommended rating system focuses on the highest level article that the repair station intends to approve for return to service. The component rating would allow a repair station to perform maintenance, preventive maintenance and alterations on individual component parts that are installed on or in aircraft, powerplant, propeller, or avionics equipment. However, a repair station with an aircraft, powerplant, propeller, or avionics rating would not need a component rating to work on items associated with its respective rating and capabilities. For example, an aircraft or powerplant rated repair station would not need a component rating to perform maintenance on an airfoil surface or engine case or other parts of the aircraft or powerplant.

The component rating would include any item that is not a complete aircraft, powerplant, propeller, or avionics equipment. The operations specifications or capabilities list for this rating would need to be detailed enough to ensure that a repair station has the appropriate housing, facilities, equipment, tools, training, personnel, and data at certification and when the work was being performed.

Although at least one member of the committee believed that this rating should be broken into three general classes—aircraft, powerplant and propeller—the committee did not further delineate this rating. The committee believed that, in most cases, a repair station only need list the general part nomenclature of the item on its operations specifications or capabilities list. The committee did not believe that the operations specifications or capabilities list should be part-number-specific.

For example, under a component rating, the repair station would list the part family or general part nomenclature (vacuum pump), the manufacturer (Vickers), or the model or series or part number. Ultimately, a repair station would be required to list sufficient information to identify the articles for which it had capabilities.

SPECIALIZED SERVICE

The committee intended that the specialized service rating only be used for a repair station that performs specific processes associated with the maintenance, preventive maintenance, or alterations of an aviation item. This rating would be substantially the same as the existing specialized service rating.

A specialized service rating would allow a repair station to perform and approve for return to service specific processes associated with the maintenance, preventative maintenance or alteration of articles. The repair station's operations specification would

continue to contain the specification used in performing that specialized service and that specification could be a military-, civil-, or applicant- developed specification that was approved by the FAA. Specialized services would include but not be limited to non-destructive testing or inspection, welding, heat treating, plating, and plasma spraying.

This rating would only be needed in two situations. First, if the only work that the repair station performed was the specific process. Second, if the repair station has in-house capabilities to perform the specific process but the work being requested was not within the articles covered by its rating. For example, if an aircraft rated repair station was requested to perform plating on a propeller part, it would need a specialized service rating to perform the operation on the propeller item. However, if a powerplant-rated repair station has the in-house capability to perform x-ray inspections, it would not need to have a specialized service rating to perform that same work for another repair station on the powerplant articles for which it is already rated.

The specialized service rating would require a repair station to have the housing, facilities, equipment, tools, trained personnel, and data to perform the process on an aviation article. The process specification on the operations specifications would set forth the minimum standards for performing the generic process (specialized service). For example, the process specification would include an explanation of the housing, facilities, equipment, tools, trained personnel, and data necessary for the overall process. The applicable manufacturer's maintenance manual, air carrier manual, or other data acceptable to or approved by the FAA would define the specific parameters associated with performing the process on the particular aviation article.

The committee wanted the FAA to recognize that some types of specialized services can be performed with mobile housing and facilities. The FAA would control these operations by specifically acknowledging the repair station's ability to work at a non-fixed location through the operations specifications. Additionally, the repair station's quality system would have to address the procedures for ensuring that the appropriate housing, facilities, equipment, tools, personnel and data are available when the work is being performed.

GUIDANCE MATERIALS

The committee strongly believed that any new ratings and classification system needed clear definitions and guidance. Over the forty (40) years that the current rating system has been in existence, technology and repair station operations have grown and changed. The committee and the commenters to notice No. 99–09 expressed a great deal of concern about the lack of definitions and parameters within the current system that have resulted in inconsistent application and enforcement.

The FAA and the aviation industry agreed that the biggest hurdle for the preferred ratings and classification system would be educating FAA inspectors, repair station operators, and the aviation industry in general about the new regulatory scheme.

Without an understanding of the system's purpose, the transition would be difficult and would not allow the preferred system to meet its goals.

The preferred ratings and classification system must require a repair station to have the basic housing, facilities, equipment, tools, trained personnel, and data necessary to do work in accordance with the regulations. The FAA must evaluate this basic requirement and ensure that the capabilities list submitted by a repair station is realistic. The FAA also must ensure that a repair station has an adequate procedure in its repair station quality system to change its capabilities list and to maintain its records in accordance with the manual's procedure. If appropriately administered, the committee believed that the preferred system would be flexible enough to allow a repair station to work to its full capabilities and, at the same time, allow the FAA to verify that the repair station had the required capabilities when the work is performed.

The committee recognizes that some work may overlap for the new avionics rating and the new component rating. Unless the preferred system identifies every conceivable item or task under a rating, more than one rating may be appropriate for a particular scope of work. However, by clearly defining the preferred system's objective for the FAA and the aviation industry, the committee feels that more standardization will be possible.

FINANCIAL CONSIDERATIONS

Although the committee could not ask the aviation industry about the financial impact of its preferred ratings and classification system, the committee believed that the preferred system would result in the least cost to the aviation industry and the FAA. The committee's preferred system would not change the current system dramatically but would more clearly define a repair station's capabilities. Because it would expand rather than limit the rating system, the preferred system would have a minimal effect on repair stations.

Under the preferred ratings and classification system, the cost to create and maintain an appropriate capabilities list is minimized because a repair station is required only to provide the aircraft, powerplant, or propeller by make, model, or series. In addition, the capabilities lists for avionics and components are limited to the manufacturer, make, model, series, or information needed to determine whether the repair station has the appropriate capabilities. Many repair stations currently maintain such lists, and if the FAA applies this requirement broadly and does not require capabilities lists by part number, the financial impact on the aviation industry should be minimal.

APPENDICES

Appendix A—Rating Survey
Appendix B—AECMA Survey
Appendix C—Boeing Survey
Appendix D—NATA Survey

AVIATION RULEMAKING ADVISORY COMMITTEE FOR AIR CARRIER AND GENERAL AVIATION MAINTENANCE

Repair Station Ratings Technical Report

Appendix A

Rating system survey

FAR 145 Repair Station Rating System Review Survey

PURPOSE: The Aviation Rulemaking Advisory Committee (ARAC) was tasked by FAA to recommend a system to rate aeronautical repair stations that mitigates problems associated with the existing system of ratings and accommodates the growth of the aviation industry. The purpose of this survey is to collect information regarding **YOUR** understanding and ideas on the current Part 145 ratings.

INSTRUCTIONS: The current Part 145 rating system is outlined in the table below. Please provide **your** perspective on the scope, usefulness, and issues associated with each rating. Only complete those sections with which you have experience or familiarity. Do not submit more than one survey.

Aviation Affiliation (*e.g.*, FAA, Repair Station, Maintenance Technician, Customer): _____

Name and Contact Information (optional): _____

Rating	Scope What do you think are the privileges and limitations of this rating?	Usefulness Is this rating necessary? (Yes/No) Please explain.	Issues State any issues that you have experienced with the rating.
AIRFRAME			
Airframe Class 1: Composite Construction Small Aircraft			
Airframe Class 2: Composite Construction Large Aircraft			
Airframe Class 3: All-metal Construction Small Aircraft			
Airframe Class 4: All-metal Construction			
Limited: Airframes of a particular make and model			
POWERPLANT			
Powerplant Class 1: Reciprocating engines of 400 HP or less			
Powerplant Class 2: Reciprocating engines of more than 400 HP			
Powerplant Class 3: Turbine Engines			
Limited: Engines of a particular make and model			
PROPELLER			
Propeller Class 1: All fixed pitch& ground adjustable			

Return by January 18, 2002

FAR 145 Repair Station Rating System Review Survey

Rating	Scope What do you think are the privileges and limitations of this rating?	Usefulness Is this rating necessary? (Yes/No) Please explain.	Issues State any issues that you have experienced with the rating.
propellers of wood, metal, or composite construction			
Propeller Class 2: All other propellers, by make			
Limited: Propellers of a particular make and model			
RADIO			
Radio Class 1: Communication Equipment			
Radio Class 2: Navigational equipment			
Radio Class 3: Radar equipment			
Limited: Radio equipment of a particular make and model			
INSTRUMENT			
Instrument Class 1: Mechanical			
Instrument Class 2: Electrical			
Instrument Class 3: Gyroscopic			
Instrument Class 4: Electronic			
Limited: Instruments of a particular make and model			
ACCESSORY			
Accessory Class 1: Mechanical			
Accessory Class 2: Electrical			
Accessory Class 3: Electronic			
Limited: Accessories of a particular make and model			
LIMITED	**(other than those listed above)**		
Limited Landing Gear Components			

Return by January 18, 2002

FAR 145 Repair Station Rating System Review Survey

Rating	Scope What do you think are the privileges and limitations of this rating?	Usefulness Is this rating necessary? (Yes/No) Please explain.	Issues State any issues that you have experienced with the rating.
Limited Floats, by make			
Limited Nondestructive inspection, testing and processing			
Limited Emergency Equipment			
Limited Rotor blades, by make and model			
Limited Aircraft fabric work			
Limited: Any other purpose as determined by the Administrator			
Limited specialized service			

Return by January 18, 2002

AVIATION RULEMAKING ADVISORY COMMITTEE FOR AIR CARRIER AND GENERAL AVIATION MAINTENANCE

Repair Station Ratings Technical Report

Appendix B

AECMA's response to the committee's ratings survey.

FAR 145 Repair Station Rating System Review Survey

INSTRUCTIONS: The current Part 145 rating system is outlined in the table below. Please provide your perspective on the scope, usefulness, and issues associated with each rating. Only complete those sections with which you have experience or familiarity. Do not submit more than one survey.

Aviation Affiliation (*e.g.*, FAA, Repair Station, Maintenance Technician, Customer): AECMA (EUROPEAN ASSOCIATION OF AEROSPACE INDUSTRIES)

Name and Contact Information (optional): DR. MARVIN T. CURTISS – CHAIRMAN AECMA MAINTENANCE WORKING GROUP
E MAIL ADDRESS: maureen.sturgess@aerohamble.co.uk

Rating	Scope What do you think are the privileges and limitations of this rating?	Usefulness Is this rating necessary? (Yes/No) Please explain.	Issues State any issues that you have experienced with the rating.
AIRFRAME			
Airframe Class 1: Composite Construction Small Aircraft	Return to service any make and model of composite construction small aircraft after performing maintenance, preventive maintenance and alterations	This class rating is confusing and complicated. Apparently there are no limitations	None
Airframe Class 2: Composite Construction Large Aircraft	As above for composite construction large aircraft	As above	None
Airframe Class 3: All-metal Construction Small Aircraft	As above for all metal construction small aircraft	As above	None
Airframe Class 4: All-metal Construction	As above for all metal construction large aircraft	As above	None
Limited: Airframes of a particular make and model	Return to Service only the particular make and model of aircraft listed on the operations specifications after performing maintenance, preventive maintenance and alteration	Yes – but limitations in terms of work scope should be clearer	None
POWERPLANT			
Powerplant Class 1: Reciprocating engines of 400 HP or less	Return to service any make and model of reciprocating engine of 400 hp or less after performing maintenance, preventive maintenance and alteration	W.O the particular make and model of the engine should be specified	None
Powerplant Class 2: Reciprocating engines of more than 400 HP	As above for reciprocating engines of more than 400 hp	As above	None
Powerplant Class 3: Turbine Engines	As above for Turbine Engines	As above	None
Limited: Engines of a particular make and model		Yes, otherwise engine on wing maintenance would not be permitted	Which privileges are associated with this rating
PROPELLER			
Propeller Class 1: All fixed pitch& ground adjustable propellers of wood, metal, or composite construction	Return to service any make and model of all fixed pitch and ground adjustable propellers of wood, metal or composite construction after performing maintenance, preventive maintenance and alteration	No, it seems to be an unlimited rating	None

FAR 145 Repair Station Rating System Review Survey

Rating	Scope What do you think are the privileges and limitations of this rating?	Usefulness Is this rating necessary? (Yes/No) Please explain.	Issues State any issues that you have experienced with the rating.
Propeller Class 2: All other propellers, by make	Return to service propeller not falling into Class 1 identified by make after performing maintenance, preventive maintenance and alteration	No to avoid confusion should be combined with the limited propeller rating	None
Limited: Propellers of a particular make and model	RTS a propeller of a particular make and model after performing maintenance and preventive maintenance and alteration	Yes – see above	None
RADIO			
Radio Class 1: Communication Equipment	Return to service any communication equipment after performing maintenance, preventive maintenance and alteration	No, the limited radio rating should be sufficient	None
Radio Class 2: Navigational equipment	As above for navigational equipment	As above	None
Radio Class 3: Radar equipment	As above for radar equipment	As above	None
Limited: Radio equipment of a particular make and model	Return to service a radio equipment of a particular make and model after performing maintenance, preventive maintenance and alteration	Yes – see above	Consider this rating unnecessary
INSTRUMENT	**INSTRUMENT**		
Instrument Class 1: Mechanical	Return to service any mechanical instrument after performing maintenance, preventive maintenance and alteration	No, the limited instrument rating should be sufficient	None
Instrument Class 2: Electrical	As above for electrical instruments	As above	None
Instrument Class 3: Gyroscopic	As above for gyroscopic instruments	As above	None
Instrument Class 4: Electronic	As above for electronic instruments	As above	None
Limited: Instruments of a particular make and model	Return to service an instrument of a particular make and model after performing maintenance preventive maintenance and alteration	Yes – see above	None
ACCESSORY			
Accessory Class 1: Mechanical	Return to service any mechanical equipment after performing maintenance, preventive maintenance and alteration	No, the limited accessory rating should be sufficient	None
Accessory Class 2: Electrical	As above for electrical accessories	Ads above	None
Accessory Class 3: Electronic	As above for electronic accessories	As above	None
Limited: Accessories of a particular make and model	Return to service an accessory of a particular make and model after performing maintenance preventive maintenance and alteration .	Yes – see above	None
LIMITED	**(other than those listed above)**		
Limited Landing Gear Components	Return to service a landing gear component of a particular make and model after performing maintenance, preventive maintenance and alteration	Yes, no other ratings apply to this kind of components	None

FAR 145 Repair Station Rating System Review Survey

Rating	Scope What do you think are the privileges and limitations of this rating?	Usefulness Is this rating necessary? (Yes/No) Please explain.	Issues State any issues that you have experienced with the rating.
Limited Floats, by make	As above for floats	No – see limited emergency equipment	None
Limited Nondestructive inspection, testing and processing	To return to service work consisting in non-destructive testing and processing only	No, in case such work may be returned to service under another rating the repair station holds	None
Limited Emergency Equipment	To return to service an emergency equipment of a particular make and model after performing a maintenance and preventive maintenance and alteration .	Yes – to include all kind of emergency equipment	None
Limited Rotor blades, by make and model	To return to service rotor blades of a particular make and model after performing maintenance preventive maintenance and alteration	No, it might be part of a propeller rating	None
Limited Aircraft fabric work	No clear privileges associated with this rating)	No, should be covered by the airframe rating	None
Limited: Any other purpose as determined by the Administrator	No clear privileges associated with this rating)	No	None
Limited specialized service	The same for the limited non destructive inspection testing and process	No – see the limited, NDT, inspection testing and processing rating	None

AVIATION RULEMAKING ADVISORY COMMITTEE FOR AIR CARRIER AND GENERAL AVIATION MAINTENANCE

Repair Station Ratings Technical Report

Appendix C

Boeing's response to the committee's ratings survey.

Rating System Review Survey

The purpose of this document is to collect information regarding **YOUR** understanding and ideas on the current Part 145 ratings. Please complete only those sections with which you have experience or familiarity. **Do not submit more than one survey.**

Aviation Affiliation (e.g., FAA, Repair Station, Repair Station Customer, Maintenance Technician): Boeing repair stations

Name and Contact Information (optional): Rose Scoones, rosita.m.scoones@boeing.com

Rating	Perspective What do you think are the privileges and limitations of this rating?	Usefulness Is this rating necessary? (Yes/No) Why or why not?	Issues State any issues that you have experienced with the rating.
Airframe Class 1: Composite Construction Small Aircraft	Privileges: May perform maintenance and alterations of airframes [airframe – fuselage, booms, nacelles, cowlings, fairings, airfoil surfaces (including rotors but excluding propellers and rotating airfoils of engines) and landing gear of an aircraft and their accessories and controls.] 12,500 Lbs (maximum certificated takeoff weight, MTOW) or less that are primarily constructed of composite materials. Approve for return to service any article for which it is rated after it has been maintained or altered. Perform 100-hour, annual or progressive inspections, and return the aircraft to service. Maintain or alter any article for which it is rated at a place other than the repair station in accordance with FAR 145.51 (d), (1) (2) (3). **Limitations All Ratings:** May not maintain or alter any article for which it is rated if it requires special technical data, equipment, or facilities that are not available to it. May not approve for return to service any aircraft, airframe after major repair or major alteration unless the work was done in accordance with technical data approved by the Administrator.	No. The requirement for a Repair Station is to have the tools, equipment, facilities, data, and personnel available to perform the task. If you are not set up for Composite Repair then you could not perform the task anyway.	Not sure what composite is or isn't. What portion of airplane content has to be composite before it is considered a composite airplane? All commercial aircraft produced are a combination of composite and metal materials. One rating for aircraft is sufficient. We do not agree with the rating breakdown at 12500 Lbs. Example: a DC-3 is classed as a large aircraft, but is not anywhere nearly as complicated a design (structures or systems) as a Learjet. Differentiation might be for Rotorcraft / Fixed Wing as they are entirely different in concept and requirements. Summary: The rating systems should be based on capabilities not weight or construction.
Airframe Class 2: Composite Construction Large Aircraft	Privilege: May perform maintenance and alterations of airframes, over 12,500 Lbs (MTOW) that are primarily constructed of composite materials. Approve for return to service any article for which it is rated after it has been maintained or altered. Perform 100-hour, annual or progressive inspections, and return the aircraft to service. Maintain or alter any article for which it is rated at a place other than the repair station in accordance with FAR 145.51 (d), (1) (2) (3).	Same comment as for Class 1 above.	Same comment as for Class 1 above.

Rating	Perspective What do you think are the privileges and limitations of this rating?	Usefulness Is this rating necessary? (Yes/No) Why or why not?	Issues State any issues that you have experienced with the rating.
Airframe Class 3: All-metal Construction Small Aircraft	Privilege: May perform maintenance and alteration of all-metal construction of small airframes 12,500 Lbs or less, MTOW. Approve for return to service any article for which it is rated after it has been maintained or altered. Perform 100-hour, annual or progressive inspections, and return the aircraft to service. Maintain or alter any article for which it is rated at a place other than the repair station in accordance with FAR 145.51 (d), (1) (2) (3).	Same comment as for Class 1 above.	Same basic comments as for Class 1.
Airframe Class 4: All-metal Construction	Privilege: May perform maintenance and alteration of All-metal construction of large airframes over 12,500 Lbs, MTOW. Approve for return to service any article for which it is rated after it has been maintained or altered. Perform 100-hour, annual or progressive inspections, and return the aircraft to service. Maintain or alter any article for which it is rated at a place other than the repair station in accordance with FAR 145.51 (d), (1) (2) (3).	Same comment as for Class 1 above.	Same basic comments as for Class 1. In addition, an Airframe rating includes maintenance and alteration of airframes as described above for Class 1, yet in accordance with current regulatory interpretation a repair station must hold an additional rating, i.e., Accessory to perform that same work on accessories/landing gear etc., if the work comes into the repair station independent of the aircraft. Furthermore, for like work, i.e., battery maintenance, that would fall under a class 4 airframe rating, if the work were to be performed on a part (battery) from an aircraft rated as class 3, again an additional rating would be required.
Limited Airframe	Privilege: May maintain or alter particular makes and models of airframe. Limitation: Airframes by make and model	Yes, allows a repair station to be rated even for a single airplane/airframe rather than the "class" of airplanes.	

Rating	Perspective What do you think are the privileges and limitations of this rating?	Usefulness Is this rating necessary? (Yes/No) Why or why not?	Issues State any issues that you have experienced with the rating.
Powerplant Class 1: Reciprocating engines of 400 HP or less	Privilege: May perform Maintenance and Alteration of Reciprocating engines of 400 HP or less.	No, the horsepower rating is a moot point. Piston Engine Overhaul is Piston Engine Overhaul. There should be a Turbine Engine and a Piston Engine Rating.	
Powerplant Class 2: Reciprocating engines of more than 400 HP	Privilege: Same as Class 1 except for Reciprocating engines over 400 HP	See above comment.	
Powerplant Class 3: Turbine Engines	Privilege: Maintenance and Alteration of Turbojet, Turboprop, or Turbofan Engines	Yes, Turbine Engines are entirely different with much different requirements that Piston Engines.	
Limited Powerplant	Privilege: May perform Maintenance and Alteration of engines of a particular make and model.	Yes, allows a repair station to be rated for a prescribed amount of work rather than the "class" of Powerplant work.	
Propeller Class 1: All fixed pitch& ground adjustable propellers of wood, metal, or composite construction	Privilege: May perform Maintenance and Alteration Fixed Pitch or Ground Adjustable Propellers (Used primarily on smaller aircraft)	Yes. The difference between a Macauley fixed pitch and a Ham Standard Full Feathering Prop is large. The requirements for the more complex propellers are much more and a separate rating is advisable.	
Propeller Class 2: All other propellers, by make	Privilege: May perform Maintenance and Alteration of all other Propellers not addressed by Propeller Class 1	See above comment.	
Limited Propeller	Privilege: May perform Maintenance and Alteration of a specific make and model of Propellers	Yes, useful for Specialized Shops.	
Radio Class 1: Communication Equipment	Privilege: May perform Maintenance and Alteration of Communication Equipment: any radio transmitting or receiving equipment used to send or receive communications in flight including auxiliary and related aircraft interphone systems, amplifier systems, electrical or electronic inter-crew signaling devices, and similar equipment.	No. The type of facility, training and equipment required to perform maintenance of this type of equipment is very similar. Therefore what reason is there to have the different ratings? If a station wants to just maintain Radar Equipment, for example, let them use the limited class.	
Radio Class 2: Navigational equipment	Privilege: May perform maintenance and alteration of Navigational Equipment: Any radio system used in aircraft for en route or approach navigation, except equipment operated on radar or pulsed radio frequency principles, but not including equipment for measuring altitude or terrain clearance or other distance equipment operated on radar or pulsed radio frequency principles	See above	

Rating	Perspective What do you think are the privileges and limitations of this rating?	Usefulness Is this rating necessary? (Yes/No) Why or why not?	Issues State any issues that you have experienced with the rating.
Radio Class 3: Radar equipment	Privilege: May perform maintenance, preventive maintenance and alteration Radar equipment: Any aircraft electronic system operated on radar or pulsed radio frequency principles (Applicable equipment defined in FAR 145.31.)	See above	
Limited Radio	Privilege: May perform maintenance and alterations of Radio Equipment of a particular make and model.	Yes, see above useful for Specialized Shops	
Instrument Class 1: Mechanical	Privilege: May perform maintenance and alteration of Mechanical Instruments: Any diaphragm, bourdon tube, aneroid, optical, or mechanically driven centrifugal instrument that is used on aircraft or to operate aircraft, including tachometers, airspeed indicators, pressure gauges drift sights, magnetic compasses, altimeters, or similar mechanical instruments.	No. The type of facility, training and equipment required to perform maintenance of this type of equipment is very similar. Therefore what reason is there to have the different ratings? If a station wants to just maintain Gyro's for example, let them use the limited class.	
Instrument Class 2: Electrical	Privilege: May perform maintenance and alteration of Electrical instruments: Any self-synchronous and electrical indicating instruments and systems, including remote indicating instruments, cylinder head temperature gauges, or similar electrical instruments.	See above	
Instrument Class 3: Gyroscopic	Privilege: May perform maintenance and alteration of Gyroscopic Instruments: Any instrument or system using gyroscopic principles and motivated by air pressure or electrical energy, including automatic pilot control units, turn and bank indicators, directional gyros, and their parts, and flux gate and gyrosyn compasses.	See above	
Instrument Class 4: Electronic	Privilege: May perform maintenance and alteration of Electronic Instruments: Any instruments whose operation depends on electron tubes, transistors, or similar devices including capacitance type quantity gauges, system amplifiers, and engine analyzers.	See above	
Limited Instrument	Privilege: May perform maintenance, preventive maintenance, and alteration of a particular make and model Instrument.	Yes, useful for Specialized Shops	
Accessory Class 1: Mechanical	Privilege: May perform maintenance and alteration of Mechanical accessories: Mechanical accessories that depend on friction, hydraulics, mechanical linkage, or pneumatic pressure for operation, including aircraft wheel brakes, mechanically driven pumps, carburetors, aircraft wheel assemblies, shock absorber struts and hydraulic servo units.		

Rating	Perspective What do you think are the privileges and limitations of this rating?	Usefulness Is this rating necessary? (Yes/No) Why or why not?	Issues State any issues that you have experienced with the rating.
Accessory Class 2: Electrical	Privilege: May perform maintenance and alterations of Electrical Accessories that depend on electrical energy for their operation, and generators, including starters, voltage regulators, electric motors, electrically driven fuel pumps magnetos, or similar electrical accessories.		Class 2 and 3 Accessory ratings cover similar types of equipment, could be combined into One Class. Example: We test/repair a lot of wiring panels made up of lamps and wiring which are rated as Class 2 Accessories. We also have several wiring panels that have components installed such as resistors, diodes, transistors, etc. these could these fall under Class 2 or Class 3.
Accessory Class 3: Electronic	Privilege: May perform maintenance and alterations of Electronic Accessories: Accessories that depend on the use of an electron tube transistor, or similar device, including supercharger, temperature, air conditioning controls, or similar electronic controls.		
Limited Accessory	Privilege: May perform maintenance and alterations of particular makes and models of Accessories.	Yes, useful for Specialized Shops.	
Limited Landing Gear			
Limited Floats, by make			
Limited Nondestructive inspection, testing and processing	Privilege: May perform Nondestructive inspection, testing and processing as defined on Air Agency Operations Specifications.	Yes, allows us to maintain separate rated personnel for specialized inspections.	NDI can be performed under an Airframe rating, interpretation varies as to if a repair station must also have limited rating to perform this.
Limited Emergency Equipment	Privilege: May only perform maintenance, preventive maintenance, and alterations of particular makes and models Emergency Equipment.	Disagree, if you have the Personnel, Facilities, equipment and documentation to maintain one type of Escape Slide, Life Raft or Life Vest. You will have the system in place to maintain them all! The Repair Stations should not be levied to a particular make or model. But a general class rating like exists today.	
Limited Rotor blades, by make and model			
Limited Aircraft fabric work			
Limited: Any other purpose			

Rating	Perspective What do you think are the privileges and limitations of this rating?	Usefulness Is this rating necessary? (Yes/No) Why or why not?	Issues State any issues that you have experienced with the rating.
Limited specialized service	Privilege: May perform a special maintenance requiring equipment and/or skills not ordinarily found in a regular repair station Limitation: The repair station's operations specifications must contain the specification, either civil or military used by industry and approved by the Administrator or one developed by the repair station and approved by the Administrator, used in performing the specialized service.	Yes, useful for Specialized Shops.	

General comment: I'm sure that there are many pieces of hardware that could fall into any one of these ratings. I think you have to keep it general. There are many units that function in several systems. To try and isolate it down to a specific system would be very difficult and be open for interpretation.

AVIATION RULEMAKING ADVISORY COMMITTEE FOR AIR CARRIER AND GENERAL AVIATION MAINTENANCE

Repair Station Ratings Technical Report

Appendix D

National Air Transportation Association's response to the committee's ratings survey.

FAR 145 Repair Station Rating System Review Survey

PURPOSE: The Aviation Rulemaking Advisory Committee (ARAC) was tasked by FAA to recommend a system to rate aeronautical repair stations that mitigates problems associated with the existing system of ratings and accommodates the growth of the aviation industry. The purpose of this survey is to collect information regarding **YOUR** understanding and ideas on the current Part 145 ratings.

INSTRUCTIONS: The current Part 145 rating system is outlined in the table below. Please provide **your** perspective on the scope, usefulness, and issues associated with each rating. Only complete those sections with which you have experience or familiarity. Do not submit more than one survey.

Aviation Affiliation (*e.g.*, FAA, Repair Station, Maintenance Technician, Customer): NATA Repair Stations

Name and Contact Information (optional): Dave Smith 201-462-4023 david_smith@jetaviation.com

Rating	Scope What do you think are the privileges and limitations of this rating?	Usefulness Is this rating necessary? (Yes/No) Please explain.	Issues State any issues that you have experienced with the rating.
AIRFRAME			
Airframe Class 1: Composite Construction Small Aircraft	Repair, alter, and/or inspect any aircraft 12500 pds or less, that is of composite construction. Also repair, alter, and/or inspect any parts thereof installed or to be installed on the aircraft to be released as part of the aircraft. (release aircraft, not individual part).	No, no one has all requirements for all airframes. We therefore have always been required to ensure we have the housing, equip, personnel, etc. to perform any work. Since this is our responsibility and the limitation as to our qualification is determined by us, the rating is meaningless.	No aircraft is all composite construction and we have never been able to get a clear determination as to what constitutes "composite construction". We can repair a component (example: wheel assy.) and install it and release the aircraft, but cannot release the wheel assy as a component. This serves no purpose and we must sub out component work or get additional ratings for work we are otherwise qualified to perform.
Airframe Class 2: Composite Construction Large Aircraft	Repair, alter, and/or inspect any aircraft over 12500 pds, that is of composite construction. Also repair, alter, and/or inspect any parts thereof installed or to be installed on the aircraft to be released as part of the aircraft. (release aircraft, not individual part).	Same as above	Same as above
Airframe Class 3: All-metal Construction Small Aircraft	Repair, alter, and/or inspect any aircraft 12500 pds or less, that is of all metal construction. Also repair, alter, and/or inspect any parts thereof installed or to be installed on the aircraft to be released as part of the aircraft. (release aircraft, not individual part).	Same as above	Many aircraft are not "all metal construction", yet are accepted under this rating. This will get more complicated with newer aircraft that are made up of composite structures and other structures of metal construction. Clear definition is required if the rating system is to be continued. We can repair a component (example:

FAR 145 Repair Station Rating System Review Survey

Rating	Scope What do you think are the privileges and limitations of this rating?	Usefulness Is this rating necessary? (Yes/No) Please explain.	Issues State any issues that you have experienced with the rating.
			wheel assy.) and install it and release the aircraft, but cannot release the wheel assy as a component. This serves no purpose and we must sub out component work or get additional rateings for work we are otherwise qualified to perform.
Airframe Class 4: All-metal Construction	Repair, alter, and/or inspect any aircraft over 12500 pds, that is of all metal construction. Also repair, alter, and/or inspect any parts thereof installed or to be installed on the aircraft to be released as part of the aircraft. (release aircraft, not individual part).	Same as above	Many aircraft are not "all metal construction", yet are accepted under this rating. This will get more complicated with newer aircraft that are made up of composite structures and other structures of metal construction. Clear definition is required if the rating system is to be continued. We can repair a component (example: wheel assy.) and install it and release the aircraft, but cannot release the wheel assy as a component. This serves no purpose and we must sub out component work or get additional ratings for work we are otherwise qualified to perform.
Limited: Airframes of a particular make and model	Repair, alter, and/or inspect any aircraft over 12500 pds, that is listed on the R/S OPS Specs. Also repair, alter, and/or inspect any parts thereof installed or to be installed on the aircraft to be released as part of the aircraft. (release aircraft, not individual part).	Although the aircraft for which we are rated our now defined, we must still ensure that we have the housing, equip, personnel, etc. to perform any work. Since this is our responsibility and the limitation as to our qualification is determined by us, the rating is meaningless.	We can repair a component (example: wheel assy.) and install it and release the aircraft, but cannot release the wheel assy as a component. This serves no purpose and we must sub out component work or get additional ratings for work we are otherwise qualified to perform.
POWERPLANT			
Powerplant Class 1: Reciprocating engines of 400 HP or less	Repair, alter, inspect and/or overhaul all engines and any part thereof including components/accessories supplied with the engine (recip 400 HP or less), installed or to be installed on the engine to be released as part of the engine. (release engine, not individual part).	No, no one has all requirements for all engines. We therefore have always been required to ensure we have the housing, equip, personnel, etc. to perform any work. Since this is our responsibility and the limitation as to our qualification is determined by us, the rating is meaningless.	We can repair a component (example: magneto.) and install it and release the engine, but cannot release the magneto as a component. This serves no purpose and we must sub out component work or get additional ratings for work we are otherwise qualified to perform.
Powerplant Class 2: Reciprocating engines of	Repair, alter, inspect and/or overhaul all engines and any part thereof including components/accessories supplied with the	Same as above	Same as above

FAR 145 Repair Station Rating System Review Survey

Rating	Scope What do you think are the privileges and limitations of this rating?	Usefulness Is this rating necessary? (Yes/No) Please explain.	Issues State any issues that you have experienced with the rating.
more than 400 HP	engine (recip 400 HP or less), installed or to be installed on the engine to be released as part of the engine. (release engine, not individual part).		
Powerplant Class 3: Turbine Engines	Repair, alter, inspect and/or overhaul turbine engines and any part thereof including components/accessories supplied with the engine, installed or to be installed on the engine to be released as part of the engine. (release engine, not individual part).	Same as above	Same as above
Limited: Engines of a particular make and model	Repair, alter, inspect and/or overhaul engines as listed on OPS Specs, and any part thereof including components/accessories supplied with the engine, installed or to be installed on the engine to be released as part of the engine. (release engine, not individual part).	Although the engine for which we are rated our now defined, we must still ensure that we have the housing, equip, personnel, etc. to perform any work. Since this is our responsibility and the limitation as to our qualification is determined by us, the rating is meaningless.	Same as above
PROPELLER			
Propeller Class 1: All fixed pitch& ground adjustable propellers of wood, metal, or composite construction			
Propeller Class 2: All other propellers, by make			
Limited: Propellers of a particular make and model			
RADIO			
Radio Class 1: Communication Equipment	Repair, alter, inspect and/or overhaul components as listed by regulation (not clear, see issues), and any part thereof and release components as rated.	No, no one has all requirements for all class 1 radio. We therefore have always been required to ensure we have the housing, equip, personnel, etc. to perform any work. Since this is our responsibility and the limitation as to our qualification is determined by us, the rating is meaningless.	Many components are multi functional (nav/com, etc.) and therefore require more than one rating. Although FAR 145 Appendix A lists that the rating allows for many inspections/checks etc. of the airframe system that the equipment is installed in, many FSDOs require the aircraft to be listed in the OPS Specs, or at least a statement that the component can be installed and tested. I agree that Appendix A should be eliminated, but additional confusion will be created if the rating is not clearly defined.
Radio Class 2: Navigational equipment	Same as above	Same as above	Same as above
Radio Class 3: Radar	Same as above	Same as above	Same as above

FAR 145 Repair Station Rating System Review Survey

Rating	Scope What do you think are the privileges and limitations of this rating?	Usefulness Is this rating necessary? (Yes/No) Please explain.	Issues State any issues that you have experienced with the rating.
equipment			
Limited: Radio equipment of a particular make and model	Same as above	Same as above	Same as above
INSTRUMENT			
Instrument Class 1: Mechanical			
Instrument Class 2: Electrical			
Instrument Class 3: Gyroscopic			
Instrument Class 4: Electronic			
Limited: Instruments of a particular make and model			
ACCESSORY			
Accessory Class 1: Mechanical			
Accessory Class 2: Electrical			
Accessory Class 3: Electronic			
Limited: Accessories of a particular make and model			
LIMITED	**(other than those listed above)**		
Limited Landing Gear Components			This applies to all limited ratings below. There is considerable variation in the way components are listed from FSDO to FSDO. Some by description, i.e., landing gear strut. Some by make and model. Some by finite part number including dash number. This makes it hard to compete with, audit, etc.
Limited Floats, by make			
Limited Nondestructive inspection, testing and processing			
Limited Emergency Equipment			
Limited Rotor blades, by make and model			

Return by January 18, 2002

FAR 145 Repair Station Rating System Review Survey

Rating	Scope What do you think are the privileges and limitations of this rating?	Usefulness Is this rating necessary? (Yes/No) Please explain.	Issues State any issues that you have experienced with the rating.
Limited Aircraft fabric work			
Limited: Any other purpose as determined by the Administrator			
Limited specialized service			Some FSDOs believe that a R/S with this rating cannot approve a component for which it is rated to perform a specific task on, for return to service. They should be able to approve it for return to service for the work performed. If they are not rated to release the article then there is no reason for a rating.

Return by January 18, 2002

AVIATION RULEMAKING ADVISORY COMMITTEE FOR AIR CARRIER AND GENERAL AVIATION MAINTENANCE

Repair Station Quality Assurance Technical Report

A REPORT ON REQUIRING A QUALITY ASSURANCE SYSTEM IN PART 145 OF TITLE 14, CODE OF FEDERAL REGULATIONS

MAY 2002

INTRODUCTION

The Federal Aviation Administration (FAA) issued notice No. 99–09, Part 145 Review: Repair Stations; Notice of Proposed Rulemaking (NPRM) (64 FR 33142, June 21, 1999), to update and revise part 145 of Title 14, Code of Federal Regulations. In that document the FAA proposed that each repair station establish a quality assurance system acceptable to the Administrator. The FAA stated that guidance on establishing an effective quality assurance system would be included in advisory material published concurrently with the final rule if adopted. The FAA noted that an acceptable quality assurance system would be based on the repair station's size and type of operations.

However, commenters generally opposed adding a quality assurance requirement to part 145, citing various concerns, some of which are addressed in this report. In amendment No. 145–27, Repair Stations; Final Rule With Request for Comments and Direct Final Rule With Request for Comments (66 FR 41088, August 6, 2001), the FAA did not include a quality assurance requirement and stated that it intended to address this issue in a future rulemaking. Subsequently, the FAA assigned the Aviation Rulemaking Advisory Committee for Air Carrier and General Aviation Maintenance issues (the committee) the task of producing a technical report that reviews current regulatory requirements for a quality assurance system and recommends a preferred quality assurance system (66 FR 53281, October 19, 2001).

The task established the following committee activities:

- Review the discussion about quality assurance in the June 1999 Notice of Proposed Rulemaking (Notice No. 99-09).
- Review comments relating to quality assurance submitted to FAA in response to the public meetings held in 1989 and the quality assurance program requirements proposed in Notice 99-09.
- Review current industry practices relating to quality assurance issues to—
    - Identify quality assurance systems currently used by some repair stations, and
    - Analyze the elements of the systems used by the aviation industry.
- Develop a Technical Report that—
    - Presents a review of regulatory requirements that comprise a quality assurance program;
    - Identifies various options for regulating quality assurance programs;
    - Identifies the advantages and disadvantages of each option;
    - Provides information on the economic impacts of applying a quality assurance system to various segments of the repair station industry; and
    - Recommends a preferred quality assurance program/system.

The committee met on January 9, February 21-22 and April 17, 2002 to discuss quality assurance issues. During these meetings it discussed the task, reviewed material provided by the FAA and collected further information from questionnaires it developed.

This technical report sets forth the issues identified by the committee in accordance with the task statement.

QUALITY ASSURANCE PROGRAMS

The committee had extensive discussions regarding the types of quality systems currently used by the aviation industry. The committee noted that terms such as "quality control" and "quality assurance" are becoming obsolete in systems that adopt the "total quality" approach and the adoption of rigid terminology could deter development of new approaches to quality management.

The committee reviewed the general requirements of several established systems (those instituted by Boeing and Pratt & Whitney, AS9100, ISO 9001, prEN.9111 questionnaire, FAA's Best Practice Internal Quality Audit Program, and AC 00-58). Additionally, the committee asked the FAA for its definition of "quality assurance." While the FAA was unable to define the term for the committee, it did identify the three purposes or objectives:

1. To ensure that repair stations are following their manual,
2. To ensure that the repair stations are meeting the standards of Part 43 of Title 14 Code of Federal Regulations, and
3. To prevent inferior/defective products from getting out.

It is important to note that it took the committee almost a day and a half to settle on using AS9100 as the standard for identifying the elements common to "quality systems." The committee continued to discuss the problems with defining terms and concepts up to the final meeting.

However, the committee agreed that in order to proceed with the task, the term "quality control" would encompass the actual mechanisms a repair station uses to ensure the quality of delivered workscope. These mechanisms include training procedures, inspections, and procedures manuals. Quality control relies on inspection and in-process controls to ensure that the product is correct; while a quality assurance system monitors the quality control mechanisms to verify they are being used properly and are effective.

Therefore, for the purposes of this technical report, the term "quality assurance system" refers to a system that audits compliance with the appropriate standard, analyzes the findings for root-cause determination, implements corrective actions (if necessary), and follows up with appropriate management review.

The committee specifically reviewed the regulations associated with repair station operations and defined those regulations within a quality program. As stated, the basic elements of a quality program were taken from AS9100, Aerospace Quality Standard. The committee developed a matrix that is attached as Appendix A to provide a general overview of the quality system elements and the corresponding regulatory requirements.

Additionally, the committee compared the FAA's stated purpose for a quality assurance system against the regulations and found clear references for objectives 2 and 3. The committee also discussed the fact that external audits are conducted on a continual basis to establish the first objective although internal audits are not specifically defined or required under the current regulations. The FAA specifically objected to using its oversight inspections to meet the quality system requirements for an external audit.

The committee observed that while the internal audit function is not specifically defined by the regulation; some type of continual internal review of process and procedures is implied by other requirements. For example, under the new Part 145, there is a requirement for an Accountable Manager. That person is responsible for ensuring compliance with the standards established by the regulations. The new rule will also require a procedure for ensuring correction of deficiencies.

After consideration of the elements associated with a quality system and the regulations, the committee agreed that the focus of this Technical Report would be on the four elements that are not specifically defined within the regulations.

- Internal audit
- Root cause analysis
- Corrective action and follow-up
- Management review

CONCERNS WITH REGULATING QUALITY ASSURANCE

The committee is generally concerned that the concepts of "quality control" and "quality assurance" have been superseded in industrial parlance with "total quality systems." The committee had extensive discussions trying to define the terms for purposes of this report. The committee observed that if it had so much trouble defining these terms and concepts, it would be difficult to implement and enforce an effective regulatory scheme. If the FAA adopts regulation, it must ensure that proper guidance material and training, for both the inspector workforce and industry, is provided. Additionally, the FAA must ensure that any enforcement policy or actions are consistent with encouraging continual development of quality management programs and systems.

All committee members agreed that total quality is important and that many repair stations have quality assurance programs, formal or informal, due to business, contract or foreign regulatory requirements. However, some committee members believed that implementing additional FAA regulatory quality assurance controls on repair stations fundamentally alters the nature of quality management programs. These members believed strongly that quality assurance, in the repair station world, is generally driven by an inherent industrial motivation to compete effectively in the marketplace. Additionally, there are elements of a quality system that are not associated with aviation safety. By implementing additional regulatory quality assurance elements, these members believed that the line between FAA regulatory control and repair station business practice would become blurred. Without disputing the necessity of FAA safety regulations, they argued that for quality systems to work efficiently, the programs must exist outside the limits of what can be regulated effectively and uniformly.

These members believed that such a requirement would not achieve greater industry safety or quality because:

- FAA has not shown sufficient need for a mandatory quality assurance system. (Many other industry representatives also express this view in comments to the Notice of Proposed Rulemaking.) Although committee members requested information from the FAA, it was shown no data that established whether quality assurance increases safety.
- It would place a heavy time burden on small repair stations that would further dilute available resources and create a severe economic impact on this segment of the marketplace. Additionally, for large repair stations that do not have a formal program the economic burden must be considered. Even for repair stations that currently have formal programs, regulatory compliance will add economic burden. It would also increase the competitive burden if not uniformly enforced. (Many adverse comments about subjective enforcement were made during the committee meetings.)
- Audit findings could result in FAA enforcement actions and audit findings in the possession of the government would become available under the Freedom of

Information Act (FOIA). Additionally, the audit findings will become more readily available in civil litigation.

Other committee members regard requiring the quality assurance elements as beneficial to repair stations that lack formal programs. They maintained that as complexity of aviation products increases, the practicality of ensuring quality by the current quality control requirements alone diminishes, making process oriented quality assurance essential. Implementing the quality assurance controls will only serve to improve repair station quality. These members believed that the additional elements would improve safety. Although the committee did not obtain data to establish that these elements will enhance safety, these members believe it to be the case. Because quality control systems are already required, the incremental effort to add the elements agreed to by the committee will be minimal. The facilities without formal quality assurance programs may be those that would benefit the most.

These committee members also believed safety should not be measured by economic values. Additionally, since some facilities already have formal programs in place, and the committee agreed that they are beneficial, these facilities could experience an economic disadvantage compared to facilities that do not have a formal program. These committee members asserted that while quality is a market differentiator, many stations would not independently implement the quality assurance elements. Finally, they did not believe that mandating quality assurance elements would impact the relationship between the FAA and the repair stations.

NEED FOR MANDATORY QUALITY ASSURANCE

Many committee members questioned whether the FAA has demonstrated sufficient need for mandating additional quality elements. They stated that the minimum standard of safety is achieved under the current regulatory system—the article worked on by the repair station must be airworthy with respect to the work performed. The current requirements include much of the quality assurance elements and establish an acceptable level of safety under the Federal Aviation Act.

These committee members argued that the United States' safety record demonstrates that the U.S. aviation industry adequately addresses quality issues without further FAA regulatory involvement. They stated that the competitive nature of the aviation industry has made quality assurance essentially a necessity for most repair stations. For example, a repair station that wishes to compete seriously against a repair station that has a quality assurance program must implement its own program to give potential customers a sense of comfort that its work is of comparable quality.

Other members felt that while the safety record of the U.S. aviation industry is excellent, mandating a higher standard and more importantly increasing the focus on quality assurance would only improve the service delivered to the flying public. These programs become more critical as aircraft become more complex in their design and thus more sophisticated in maintenance requirements. These members believed that

the additional quality elements should not be a marketing tool that repair stations can opt in or out of based upon economic conditions. Further, if repair stations need to have quality assurance to be competitive, there will be little or no economic impact if the quality assurance elements are mandated. When a passenger flies on any aircraft, quality assurance should be a given, not an option.

Most of the committee noted that it is unclear how effective a mandatory quality assurance system would be; noting that merely having a quality assurance program does not ensure quality. The other members indicated that regulating the quality assurance elements would ensure that repair stations find process issues earlier and institute more thorough corrective actions once a discrepancy is found.

REGULATORY BURDEN ON SMALL REPAIR STATIONS

Many committee members believed that the burden a mandatory system could place on small repair stations counsels against regulating quality assurance. (Other industry representatives echoed this concern in comments to the FAA.) They feared that requiring a small repair station to conduct a formal internal audit would force that repair station to incur additional costs. Most industry quality assurance programs require separating those who conduct the audit from those subject to the audit. This could require small repair stations with just a few employees to hire an independent auditor.

According to several committee members, most small repair stations engage in some form of quality assurance, even if it only consists of a manager informally observing the performance of his employees as they go about their jobs. It bears repeating that all committee members regard quality assurance as valuable for repair stations. The concern of some members lies with the possible requirements that the FAA might impose under a mandatory system.

In addition, several committee members expressed concern about the time burden that would be placed on a small repair station. For example, a repair station with only one employee might not be able to commit to an audit that lasts for an extended period. Reserving even a few days for an audit would effectively eliminate a small repair station's ability to take in and continue to perform work during that same time, having serious consequences on that repair station's income. Management of a small repair station may be performing the work of the repair station, the audit and the management review. There is concern that the additional quality assurance elements will place small repair stations at an economic disadvantage to repair stations that have the human resources to perform audits.

Several committee members and the FAA suggested that repair station size be a factor in the FAA's requirements for a quality assurance program. Having different requirements for large and small repair stations would help alleviate some of the concerns about overburdening small repair stations. However, there is concern that attempts to level the economic impact may result in subjective enforcement and unintended consequences. These committee members noted that placing more-

extensive requirements on large repair stations might afford small repair stations a competitive advantage. Some on the committee believed that too much flexibility in addressing the concerns of small versus large could result in a regulated program that had little value.

Some members were of the opinion that if the repair station already has a quality program, as currently required, the incremental costs would be minimal and might even be offset by the cost benefit of a more comprehensive quality system. Additionally, it was suggested that the issue of small repairs stations conducting "independent" audits could be addressed by allowing self-assessments in delineated circumstances, an approach used successfully in other industries.

DISCLOSURE AND ENFORCEMENT ISSUES

All committee members and industry commenters agree that the purpose of a quality assurance system is to objectively validate compliance to procedures and regulations and also to encourage a repair station to examine its policies and procedures periodically to make them better and safer.

Most committee members, however, expressed strong concerns about requiring a repair station to reveal the results of internal audits to the FAA. These members contended that when an audit revealed deficiencies, the FAA would use this information in enforcement actions. These members expressed the concern that mandating quality assurance would defeat the purpose of quality assurance and possibly cause a repair station to be less rigorous in its audit for fear of revealing inadequacies that could result in enforcement action.

These members also recognized that audits, no matter how thorough, would not find everything, despite the best efforts of the repair station. Additionally, internal auditing will not necessarily reduce the audits performed by the FAA or other entities. Deficiencies found during those audits may be considered a deficiency in the repair station's quality assurance program, creating more opportunities for enforcement action.

Other members believed that if a failure to comply with an established regulation is found, the FAA should be able to take enforcement action. These committee members strongly believed that if the deficiencies found during an internal audit are safety critical in nature, the repair station should be required to report them to the FAA.

Most committee members are extremely concerned that audit findings would become available under the Freedom of Information Act (FOIA) if they were in the possession of the government. Additionally, the audit findings will become more readily available in civil litigation. Current public policy supports the proposition that if a company engages in a voluntary quality assurance program, internal audit findings will not be made available in civil litigation.

Other committee members believed that liability and litigation concerns should never overshadow quality or safety issues.

Some committee members suggested that the FAA might address these concerns by mandating a quality assurance program in which the repair station is not required to reveal details that might result in enforcement action. For example, a repair station would be required to reveal only the aggregate data collected from internal audits sufficient to confirm it follows its quality assurance program. The FAA adopted this approach in the Flight Operations Quality Assurance Program (FOQA).

Another solution might be for the FAA to classify deficiencies uncovered during a quality assurance audit as "safety-related" or "non-safety related." A repair station would have to reveal safety related deficiencies uncovered during an audit and engage in immediate corrective action or be subject to enforcement action. A safety related deficiency would pose an immediate threat to the airworthiness of articles being maintained by the repair station. In either case, the audit findings would become part of the public record subject to FOIA if enforcement action were taken.

Regardless of how the FAA addresses the issue, the committee believed that if audit findings can systematically result in enforcement action it would not improve quality in the industry. Further, such a system might even serve as a disincentive to uncover problems, a concern that was recognized by the FAA in its deliberations on the FOQA regulations.

MANDATING QUALITY ASSURANCE

The committee believed the FAA must address the issues identified in this report before any effective quality assurance program can be required of repair stations under part 145. All committee members agreed that a mandatory quality assurance system would not achieve the results the FAA intends unless repair stations understood precisely what was required. Therefore, the committee believed that the formulation of any rule, guidance material and FAA inspector training would be essential to the program. All members emphasized the importance of training both industry and the government in the proper application of the regulatory requirements vis-à-vis business practices.

There are committee members that opposed the FAA regulating quality assurance system regardless. There are other committee members that would not oppose requiring the additional elements for repair stations performing work for air carriers or commercial operators. Finally, there are committee members that would mandate quality assurance for all repair stations.

Several committee members recommend the FAA implement a voluntary quality assurance program. Under such a program, repair stations that complied with the approved standard would enjoy protection of their data and possibly even reduced FAA inspections. The committee urged the FAA to look at its own FOQA program and similar programs in other agencies such as OSHA and EPA. Other committee members felt that the repair stations that need a quality assurance program the most would ignore a voluntary program. These members felt that compliance to quality assurance standards will never be attained without regulation. At the same time, most who see the need for a mandatory program condition that support on an acceptable disclosure and enforcement policy.

Irrespective of not being able to reach a consensus on regulating quality assurance programs, the committee did agree on the general requirements associated with each element of quality assurance and it did evaluate the advantages and disadvantages of three options.

- Mandating the quality assurance elements on all repair stations;
- Mandating the elements on repair stations working for air carriers and commercial operators; and,
- Instituting a voluntary program similar to FOQA.

THE ADDITIONAL ELEMENTS

After extensive discussion, the committee agreed to the following general descriptions of the four quality assurance elements.

INTERNAL AUDIT

Under a possible mandatory quality assurance system, a repair station would conduct internal audits of its operations to ensure that its manual complies with FAA regulations and that its operations conform to the requirements of its manual. The system of internal audits would include at least the following requirements.

First, a repair station would conduct internal audits on a periodic basis. The repair station could divide the audit into sections, provided the entire operation is audited within an applicable interval. For example, if the quality assurance system requires that a repair station audit its operations once every year, the repair station could audit different divisions of its operations separately, provided it audits its entire operations within the 1-year timeframe.

Second, a repair station would designate in its manual who can conduct audits. The committee believed that it might be necessary for some repair stations, especially smaller repair stations, to use third parties or self-assessments. The committee did not reach a consensus on what third party audits would meet the requirements of a quality assurance system. The committee agreed that when an audit is performed internally, as most often will be the case, the selected auditor should avoid auditing the task for which he or she is responsible. In any event, for small repair stations the use of independent auditors would not be mandatory.

Third, a repair station should prepare an internal audit checklist prior to reviewing the repair station's operations. The checklist should address regulatory requirements (including guidance and policy) and the requirements of the repair station manual. During the audit, the individual(s) designated by the repair station's manual would use the checklist to gather data, inspect the repair station's products, procedures, processes and materials, and interview employees to confirm that the repair station's actual operations comply with the regulations and its manual.

Fourth, the repair station would prepare a record of the audit. This record would document the audit process and note what aspects of the repair station's operations were audited. This documentation also would note the manner in which the auditor gathered the information, whether by examining the repair station's documents, by observing repair station employees' performance, or by interviewing repair station employees. If the auditor finds non-compliance, the auditor would document these findings and include objective evidence in the audit record.

ROOT CAUSE ANALYSIS

After a repair station discovers non-compliance, it conducts a root-cause analysis. Root-cause analysis is a finding of a fundamental breakdown or failure within a system that, when resolved, eliminates and prevents a recurrence of the discrepancy. This analysis would include a requirement that the repair station then determine whether other products or systems in the repair station are or have been impacted by the non-compliance.

Corrective Action and Follow-up

After a repair station discovers and documents non-compliance and identifies its root cause, the repair station prepares a plan to eliminate and prevent recurrence of the root cause. The repair station may need to establish immediate, short-term, and long-term actions with implementation dates and the identity of the responsible personnel. After the repair station implements a corrective action plan, the repair station must validate, by follow-up, that the action was effective and eliminated the root cause. In addition, a repair station must take corrective action in a timely fashion.

Management Review

It is essential to the quality assurance process that the repair station maintains a feedback loop. Managers might not directly inspect or observe the performance of employees. By maintaining an effective system of feedback and review, the manager uses resources to stay abreast of the repair station's performance and to keep apprised of any trends that may emerge and demand a reassessment of that repair station's policies procedures, and priorities.

The Accountable Manager would be responsible for compliance with the FARs. Therefore, this person would be overseeing the audit process and reviewing audit documentation. The repair station management may be required to conduct a trend analysis of past audit results to identify systemic problems with the repair station's procedures. The repair station management must confirm that the repair station took corrective action that has eliminated and prevented recurrence of the root cause.

OPTIONS FOR MANDATING QUALITY ASSURANCE

Even though the committee did not reach consensus on mandating quality assurance through an amendment to part 145, it did discuss three options. Based on the exhaustive discussions of the committee, the synthesized version of the advantages and disadvantages are contained in this report.

Option 1: Applicable to all repair stations

Advantages: All repair stations would be subject to the same requirements.

Disadvantages: Difficult to regulate due to subjective nature of terms and concepts. Would need to address the economic hardship that would be imposed upon smaller entities. Enforcement and liability issues could overshadow safety benefit.

Option 2: Applicable to repair stations working for air carriers and commercial operators

Advantages: Addresses the concerns regarding the safety of the flying public. Most repair stations working for air carriers and commercial operators already have some form of quality assurance so cost is incremental. Addresses some of the issues relative to small versus large repair stations.

Disadvantages: Difficult to enact and enforce, since parts are transferred between part 91 and parts 121 and 135 operations. Would still have to address all the issues relative to regulating all repair stations, including the economic burden on small repair stations.

OPTION 3: VOLUNTARY QUALITY ASSURANCE PROGRAM

Advantages: Removes concerns about enforcement and FOIA. Removes concerns about disparate treatment and economic burdens. Allows repair stations that wish to meet a higher standard than that required by the Federal Aviation Act to be rewarded by the potential of fewer inspections and reduced enforcement actions.

Disadvantages: It is not mandatory, it cannot be enforced and therefore the repair stations that are in most need of the system may not follow it.

COST-BENEFIT ANALYSIS

The committee developed a questionnaire to collect information on the advantages and disadvantages and the cost of the three options discussed above. Each member of the committee polled its constituency and the cumulative information collected is attached as Appendices.

It should also be noted that the comments section of the survey contains the committee member's specific concerns regarding the application of a quality assurance system on part 145 repair stations. Committee members had strong feelings about many of the issues discussed in this report and this mechanism allowed each member to record its specific concerns. Please refer to the following attachments:

Appendix B—Aeronautical Repair Station Association's quality assurance survey
Appendix C—Aerospace Industries Association's quality assurance survey
Appendix D—Aircraft Electronics Association's quality assurance survey
Appendix E—Air Transport Association's quality assurance survey
Appendix F—National Air Disaster Alliance's quality assurance survey
Appendix G—National Air Transportation Association's quality assurance survey
Appendix H—Transport Canada's quality assurance survey

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Appendix A

The committee's comparative analysis between the AS9100, Aerospace Quality Standard and Part 145 of the Code of Federal Regulations, both current and future.

	QA System Elements and 145	
Elements of a Basic Quality System for Regulatory Compliance (ISO Production requirements used for reference)	**Element Addressed By**	**Comments/Explanation**
Standard: Generally based upon AS9100, Aerospace Quality Standard	Part 145 and in turn Parts 43, 121, 125 and 135 Also SFAR 36	
System For complying to the standards (often not always written up in a manual that addresses each of the elements of the standard)	145.51 145.105 145.209 145.211	145.51 – Initial compliance and at addition of authorities (OPS Specs) 145.105 – Changes of location, housing, or facilities 145.209 – System for continued compliance of day to day operations defined by required manual 145.211 – System for continued compliance of quality control policy as defined by required manual
Quality policy The supplier's (R/S) management with executive responsibility shall define and document its policy for quality, including objectives for quality and its commitment to quality. The quality policy shall be relevant to the supplier's (R/S) organizational goals and the expectations and needs of its customers.	145.207 (a)(b) 145.209 145.211	Quality policy should be 1) Defined-may be missing 2) Objectives-to comply with regulations 3) Commitment-management signing OPS Specs 4) Commitment, define, document-145.207 (a)(b) prepare and follow the R/S manual and QC manual 5) Define and document-145.209 and references to regulations included therein and 145.211, written definition and documentation of quality policy
Organization The responsibility, authority and the interrelation of personnel who manage, perform and verify work affecting quality shall be defined and documented.	145.151 145.153 145.155 145.157 145.161 145.205 145.209(a)(b)[(d)(2)] 145.215(c)	145.151, 145.53, 145.155, 145.157, 145.161provide for organizational outline and personnel requirements. 145.205 addresses working to the operator's requirements. 145.209 Requires an Org. chart and a description of the duties and responsibilities of management be included in the repair station's manual. Accountable manager is responsible for ensuring the repair station complies with the regulations.
Management review The supplier's (R/S) management with executive responsibility shall review the quality system at defined intervals sufficient to ensure its continuing suitability and effectiveness in satisfying the requirements of this document and the supplier's (R/S) stated quality policy and objectives.	145.151(a) 145.161 145.207 145.209 145.211 145.215 145.219	145.151(a) defines who 145.161, 145.207, 145.209, 145.211, 145.215 and 145.219 provide for documents that may be reviewed, 145.209 and 145.211 define procedures developed, allowing for review of operational compliance to procedures Review intervals and definition of scope may be missing.

	QA System Elements and 145	
Elements of a Basic Quality System for Regulatory Compliance (ISO Production requirements used for reference)	**Element Addressed By**	**Comments/Explanation**
General The supplier (R/S) shall establish, document and maintain a quality system as a means of ensuring that product conforms to specified requirements. The supplier shall prepare a quality manual covering the requirements of this document. The quality manual shall include or make reference to the quality system procedures and outline the structure of the documentation used in the quality system.	145.51(a)(b) 145.207(b) 145.209 145.211 145.219	145.51(a)(b) Establish a system 145.207(b) and 145.211(c) requires that the manuals (system) be maintained 145.209 and the referenced made therein defines the system of day-to-day operation. 145.211 defines the QC system 145.209, 145.211(c)(2)(3) define structure of documentation
Quality system procedures The supplier (R/S) shall: a) Prepare documented procedures consistent with the requirements of this document and the supplier's stated quality policy; b) Effectively implement the quality system and its documented procedures; *c*) Ensure that quality system procedures are readily accessible to personnel who are responsible for performing work in conformance to requirements, and to customer and/or regulatory authorities representatives.	145.51 145.205 145.207 145.209 145.211 145.223(a)	145.51(a)(1)(2) Requires preparation of manuals 145.205 requires R/S to follow operators FAA approved (documented) procedures 145.207 Also requires the R/S prepare and follow R/S manual 145.211 (a)(b) Requires that a QC manual is prepared and followed 145.207(c)(d) Requires the R/S manual to be accessible to personnel and FAA 145.211 (b) Requires personnel follow QC manual-Implies it must be available to them 145.211(c)(4) (d) requires that QC manual be available to the FAA 145.207(a)(b)(c) Requires availability and usage of operators manuals (FAA approved) 145.223(a) FAA insp would also include manuals
Quality planning The supplier (R/S) shall define and document how the requirements for quality will be met. Quality planning shall be consistent with all other requirements of a supplier's quality system and shall be documented in a format to suit the supplier's (R/S) method of operation.	145.51 145.151(b)(c)	145.51 Requires defining/documenting initial quality planning including facility, equipment, organization/personnel, data, R/S and QC manuals (includes training), subcontracting requirements 145.209 and 145.211 and other regs referenced therein, document methods for continued quality planning on all issues
Contract review The supplier (R/S) shall establish and maintain documented procedures for contract review and for the coordination of these activities.	145.209(h)(1)(2) 145.217 145.223(b)(c)	145.209(h)(1)(2) Requires documented procedures for contract review and references 145.217 as required by 145.217 145.223 (b)(c) further document contract requirements. Some forms of contract review may be missing. (All R/S work is contract driven.)

	QA System Elements and 145	
Elements of a Basic Quality System for Regulatory Compliance (ISO Production requirements used for reference)	**Element Addressed By**	**Comments/Explanation**
Design control The supplier (R/S) shall establish and maintain documented procedures to control and verify the design of the product in order to ensure that the specified requirements are met. Compliance with this section is applicable only to suppliers (R/S) involved with the activities listed hereafter: - Design of major modifications applicable to aircraft, engine, component - Development of maintenance program - Development of repair scheme not included yet in approved technical data.	SFAR-36 43.13 (b) 145.201 (c)(2) 145.209 (g) 145.205 (a)(b)(c)	SFAR-36 section 6 requires manual that would control as required 43.13 (b) Requires that we ensure that the article we maintain or alter continues to meet its Type Design or properly altered condition. That requires the use of Approved Data for major repairs/alterations. 145.201 (c)(2) Requires working to applicable technical data. 145.209 (g) Requires documented procedures for performing maintenance/alterations under 145.205. 145.205 (a)(b) & (c) Require that we perform maintenance/alterations IAW the Operator's maintenance manual, which would include additional control procedures.
Document and data control The supplier (R/S) shall establish and maintain documented procedures to control all documents and data that relate to the requirements of this document including, to the extent applicable, documents of external origin such as standards and customer drawings.	145.51 145.109(d) 145.211(c)(1)(v) 145.219	145.51(a)(1)(2) Initial requirement for R/S and QC manuals. 145.51(b) Initial requirement that the data be in place. 145.109(d) Further defines data required and that they must be maintained in a current condition 145.211(c)(1)(v) Requires QC manual to document procedures for ensuring data is kept current. 145.219 Requires control of records of work performed
Purchasing The supplier (R/S) shall establish and maintain documented procedures to ensure that purchased product conforms to specified requirements.	145.211	145.211(c)(1)(i) Required QC manual requires documented procedures for incoming inspection of raw materials. May be missing requirement to inspect all incoming parts/components.
Control of customer-supplied product The supplier (R/S) shall establish and maintain documented procedures for the control of verification, storage and maintenance of customer-supplied product provided for incorporation into the supplies or for related activities. Any such product that is lost damaged or is otherwise unsuitable for use shall be recorded and reported to the customer.	145.51 145.103(a)(2)(i-iii) 145.205 145.209	145.51 Initial requirement including requirements of 145.103(a)(2)(i-iv) listed below. 145.103(a)(2)(i-iv) requires segregation, suitable racks, etc., and space for suitable protection and segregation of articles that would include CSPs. 145.205 Requires maintenance IAW operator's FAA approved manuals, which typically include control of parts. 145.209(c) Requires a description of requirements listed above. 145.211(c)(1)(i) Receiving Insp would apply to CSPs as well.

	QA System Elements and 145	
Elements of a Basic Quality System for Regulatory Compliance (ISO Production requirements used for reference)	**Element Addressed By**	**Comments/Explanation**
Product identification and traceability Where appropriate, the supplier (R/S) shall establish and maintain documented procedures for identifying the product by suitable means from receipt and during all stages of maintenance, delivery and installation.	145.109(c) 145.211(c)(3)	145.211 provides for a Quality Control system that ensures the airworthiness of the articles the repair station maintains. 145.211 (c) requires a quality control manual, 145.211(c) (3) addresses forms, this includes tags and instructions for completing them. 145.109 (c) provides for materials being those recommended by the Manufacturer, etc.
Process control The supplier (R/S) shall identify and plan the production, installation and servicing processes which directly affect quality and shall ensure that these processes are carried out under controlled conditions	43.13(a) 145.109(d) 145.209 145.211	43.13 Requires applicable work to be performed in accordance with the current CMM or ICA. 145.109(d) provides data requirements for performance of applicable work. 145.211 provides for a Quality Control system that ensures the airworthiness of the articles the repair station maintains. 145.209 Requires a repair station manual that includes procedures covering work performed under 145.205.
Inspection and test status The inspection and test status of product shall be identified by suitable means, which indicate the conformance or nonconformance of product with regard to inspection and tests performed.	43.9 43.11 145.211(c)(1)(i-iv) and (d) 145.213	43.9 and 43.11 provide for maintenance record entry requirements. 145.213 Provides inspection system requirements. 145.211 (c) (1) requires a description of quality control procedures 145.211(c)(3) addresses forms/instructions, this includes tags (i.e., defective part tag).
Control of nonconforming product The supplier (R/S) shall establish and maintain documented procedures to ensure that product that does not conform to specified requirements is prevented from unintended use or installation. This control shall provide for identification, documentation, evaluation, segregation (when practical), disposition of nonconforming product, and for notification to the functions concerned.	145.103(a)(2)(iv) 145.211 145.213	145.103 address providing space for segregation of nonconforming product. 145.213 provides inspection system requirement. 145.211 provides for a Quality Control system that ensures the airworthiness of the articles the repair station maintains. 145.211 (c) (3); Addresses forms, this includes tags (i.e., defective part tag) and instructions for completing them.

	QA System Elements and 145	
Elements of a Basic Quality System for Regulatory Compliance (ISO Production requirements used for reference)	**Element Addressed By**	**Comments/Explanation**
Handling, storage, packaging, delivery The supplier (R/S) shall establish and maintain documented procedures for handling, storage, packaging, preservation and delivery of product.	145.101 145.103 145.107 145.209 145.211	145.101 Provides the general requirement for housing, facility, equipment, and materials. 145.103 Addresses facilities for proper performance of work, including sufficient workspace for proper segregation and protection of articles. 145.107 Requires satellite repair stations meet the applicable requirements for ratings held. 145.209 (and the references made therein) define the system of day-to-day operation. 145.211 Defines the QC system.
Control of quality records The supplier (R/S) shall establish and maintain documented procedures for identification, collection, indexing, access, filing, storage, maintenance and disposition of quality records. Quality records shall be maintained to demonstrate conformance to specified requirements and the effective operation of the quality system. Pertinent quality records from the subcontractor shall be an element of these data.	145.211(c)(3) 145.219 145.209	145.219 Describes record-keeping requirements for repair stations. 145.211(c)(3) provides a requirement for forms/form instructions to be included in the QC manual. 145.209(h) requires procedures for maintaining, revising contract maintenance information.
Training The supplier (R/S) shall establish and maintain documented procedures for identifying training needs and provide for the training of all personnel performing activities affecting quality.	145.163 145.205 145.209	145.63 require the submittal for approval of a training program that covers initial and recurrent training. 145.205 addresses complying with operator requirements. 145.209 Requires a procedure for documenting and revising the training program.
Servicing Where servicing is a specified requirement, the supplier (R/S) shall establish and maintain documented procedures for performing, verifying and reporting that the servicing meets the specified requirements.	145.5 43.13(a) 145.109(d) 145.209 145.211	145.5 Describes certificate requirements. 145.109 provides for equipment, materials, and data 43.13 - performance rules for the performance of maintenance, preventive maintenance and alteration. 43.9 and 43.11 requirement the recording work performed. 145.209 and the referenced made therein defines the system of day-to-day operation. 145.211 Defines the QC system.

	QA System Elements and 145	
Elements of a Basic Quality System for Regulatory Compliance (ISO Production requirements used for reference)	**Element Addressed By**	**Comments/Explanation**
Statistical techniques The supplier (R/S) shall identify the need for statistical techniques required for establishing, controlling and verifying process capability and product characteristics. The supplier (R/S) shall establish and maintain documented procedures to implement and control the application of the statistical techniques.	43.13(b) 145.109(b) 145.209 145.211	145.109 require a repair station to ensure all test equipment and tools ....are calibrated....(Industry practice includes the use of statistical techniques) 43.13 (b) Each person maintaining or altering, or performing preventive maintenance, shall do that work in such a manner .... (Industry practice includes the use of statistical techniques) 145.209 and the referenced made therein defines the system of day-to-day operation. 145.211 Defines the QC system. 145.211(c)(1)(i) Required QC manual requires documented procedures for incoming inspection of raw materials. (Industry practice includes the use of statistical techniques)
Audits to assure that the system meets desired standards (compliance with the standard—audit checklist should be developed from the standard) Internal quality audits	145.215(c) FAA surveillance 121.373 audits	145.215(c) One condition for inclusion on the "Capability List" is that a self-evaluation must be conducted. 121.373 - requires the air carrier to perform continuous analysis and surveillance to ensure that their maintenance program is efficient and effective. This incudes audits of repair station vendors to ensure compliance with the air carrier's program. It also includes a review of whether the repair station is in compliance with Part 145.
Review of the audit results (identify failures and inadequacies)	FAA usually orally briefs repair station following audit; a written exposition of deficiencies is provided. Accountable manager is responsible for ensuring the R/S complies with the FARs. This includes ensuring corrective action on deficiencies is taken in accordance with the QC manual.	
Identification and implementation of improvements Corrective and preventative action	145.211(c)(1)(ix) 145.221(b)(7) Civil penalty system penalizes those who are found deficient; those who correct deficiencies may be eligible for administrative action	145.211(c) (1) (ix) Quality Control system includes a requirement for taking corrective action on deficiencies 145.221(b) (7) Requires reporting failures, malfunction, or defects and includes other pertinent information i.e., corrective action.

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Appendix B

Aeronautical Repair Station Association's response to the committee's quality assurance survey.

Indicate whether respondent is a repair station □; air carrier □; or "Part 91" entity □; or specify: ARSA COMPILED RESULTS.

Indicate maintenance shop population, if applicable 11 through 4500.

Do you currently have a system that substantially meets or includes the Quality Elements described above for other reasons, such as JAA or other regulatory agency requirement, industry requirement or as a best practice? Yes □ 10 No □ 0

Option 1	**Preferred Method** (1=Most 3=Least)	**Pro**	**Con**	**Economic Impact.** Include both initial cost for implementation and annual cost. If you currently have a similar system, use that for your cost basis. **Costs** in manhours plus any fixed costs
Require all repair stations to include the 4 QA elements in their quality systems under Part 145	Since most respondents already had the system in place, they listed this option as "1." However, the Association does not support regulating quality assurance.	**Audit of Quality System**: Will systematically find errors and allow the process to be improved **Root Cause Analysis of Findings**: Will ensure base line identification of breakdown in the system. **Corrective Action/Follow-up**: Will ensure continuous improvement to the entire system. **Management Review**: Ensures the proper coordination within the company and also ensures that resources are committed to the appropriate corrective action and follow up.	**Audit of Quality System**: To be truly effective, the audit must go beyond regulatory requirements and include many business aspects. It will be nearly impossible to separate the audit results. **Root Cause Analysis of Findings**: The analysis may identify the root cause as being beyond the control of the repair station. Root cause may also not be a regulatory issue. **Corrective Action/Follow-up:** Some corrective actions will go beyond the repair station, if the system is required by regulation, there will be no ability to ensure corrective follow-up if the standard needs to be changed to institute the correct action and follow-up **Management Review**: With respect to issues raised that are beyond the control of the repair station, there is no required management review with the FAA. Corrective actions within the repair station's control will be instituted, but changes to the standard will continue to plague the industry.	Costs varied because of the size of the repair stations reporting— Initial costs: 300 manhours was the lowest 3 .5 persons for a year was the highest Management: 45 hours at $100 highest 5 hours at $65 lowest Supervisory: 3.5 persons for a year at $65 highest 40 hours at $40 lowest Hourly: 24 hours at $45 highest 100 hours at $7.50 lowest Material/System Costs $60,000 highest $0 lowest (already had system in place) Recurring: 100 manhours was the lowest 3 persons for a year was the highest Management: 25 hours at $100 highest 10 hours at $65 lowest Supervisory:

Indicate whether respondent is a repair station □; air carrier □; or "Part 91" entity □; or specify: ARSA COMPILED RESULTS.

Indicate maintenance shop population, if applicable 11 through 4500.

Do you currently have a system that substantially meets or includes the Quality Elements described above for other reasons, such as JAA or other regulatory agency requirement, industry requirement or as a best practice? Yes □ 10 No □ 0

Option 1	**Preferred Method** (1=Most 3=Least)	**Pro**	**Con**	**Economic Impact.** Include both initial cost for implementation and annual cost. If you currently have a similar system, use that for your cost basis. **Costs** in manhours plus any fixed costs
				3 persons for a year at $65 highest 30 hours at $40 lowest Hourly: 24 hours at $45 highest 50 hours at $7.50 lowest Material/System Costs $5,000 highest $0 lowest (already had system in place)

Savings: Please quantify, in so far as possible, those cost savings that would directly result from the imposition of a regulatory requirement for the Quality Assurance elements included above. Do not include costs that would shift from one entity to another. Further, only include savings that specifically result from regulatory activity, not from prudent business practices.

Impossible to measure, particularly since quality "assurance," does not necessarily improve safety. It is designed to improve the business and the internal procedures of a company. Quality control establishes the regulatory compliance standard. Correction of deficiencies in the quality system is not solely within the control of the repair station.

The Aeronautical Repair Station Association (ARSA) does not support regulating quality assurance in repair stations for the following reasons:

1. The Federal Aviation Administration does not require quality assurance for any other certificate holder. The claim that 14 CFR § 121.373 is a quality assurance requirement is incorrect. That section of the regulations requires the air carrier to ensure its maintenance program, not its entire quality system, is efficient and effective. When the requirements for the program are reviewed (14 CFR §121.367), it is clear that ensuring that persons performing maintenance, preventive maintenance and alterations for the carrier are doing so in accordance with its program is but a small portion of the quality system reviewed by the ARAC. There is no requirement that the air carrier ensure the maintenance provider is complying with the Federal Aviation Regulations, rather, only that it is complying with the air carrier's program. Further, each program can and is different and determining whether it is efficient and effective depends upon the operations of the carrier and many other factors, all within the power of the air carrier.

2. The data gathered during the quality audit cannot be protected. Whenever information is required to be gathered by a regulation, the data is subject to a Freedom of Information Act (FOIA) request if it comes into the possession of the government. Additionally, information gathered under a regulation can be used against the certificate holder. The Flight Operational Quality Assurance Program regulation is a perfect example of how the FAA attempted to require quality assurance in the aviation industry. Ultimately, it became a "voluntary" program with convoluted procedures to ensure the information collected would not be used against pilots unless absolutely necessary. The FAA explains in the final rule that they cannot waive their right to take enforcement action. The FAA must initially and continually "approve" the FOQA programs. Finally, that rule was required by Congressional mandate and it was only "voluntary."
3. By regulating quality assurance (if the FAA could adequately define exactly what that means), would ultimately dilute true "total" quality systems. These systems look at numerous aspects of a company's business. Trying to separate what is regulated and what is not would be detrimental to the development of business models that encompass more than the quality control aspects associated with regulated activities. For example, purchasing goes well beyond buying articles for installation in type certificated products. The quality control aspects of purchasing however are not unique to buying "airworthy" articles. In companies where the purchasing is responsible for everything from light bulbs to engine disks, findings that affect the non-regulated purchases would have to be separated from the regulated purchases. This would not provide management with a true overview of their "total quality system."
4. The cost to smaller operations that do not currently have any quality assurance systems cannot be justified by an increase in safety. As has been pointed out during the ARAC discussions, there is not indication that the quality control system is unsatisfactory. Rather, the drive seems to be to make it "better" because quality assurance is available in commercial settings. The FAA is required and allowed to establish minimum standards of safety. That standard is quality control of civil aviation products from design and production, through operations and maintenance. The standard for air carriers and commercial operations must be the "highest" standard. Until that standard requires quality assurance, ARSA does not believe the FAA can demand it of repair stations.

AVIATION RULEMAKING ADVISORY COMMITTEE FOR AIR CARRIER AND GENERAL AVIATION MAINTENANCE

Repair Station Ratings and Classification System Technical Report

A REPORT ON PROPOSED RULE CHANGES TO §§ 145.31 AND 145.33 OF TITLE 14, CODE OF FEDERAL REGULATIONS

MAY 2002

INTRODUCTION

The Federal Aviation Administration (FAA) issued notice No. 99–09, Part 145 Review: Repair Stations; Notice of Proposed Rulemaking (NPRM) (64 FR 33141, June 21, 1999), proposing changes to part 145 of Title 14, Code of Federal Regulations (FARs). These proposed changes included the addition of two new ratings and new classifications within the existing system of repair station ratings. The FAA proposed the revised rating system to better reflect the demands of modern aircraft technology. However, the FAA received numerous comments to the NPRM opposing the proposed ratings and classification system.

Several commenters believed that the proposed system was more restrictive and more complicated than the existing system of ratings. Many commenters contended that neither the existing nor the proposed rating systems reflect modern aircraft technology. That objective, they believed, could only be achieved by revamping the entire rating system. Based on these comments, FAA did not adopt the proposed ratings as part of amendment No. 145–27, Final Rule With Request for Comment and Direct Final Rule With Request for Comment; Final Rule (66 FR 41087, August 6, 2001), which included changes to many other sections of part 145.

The FAA assigned the Aviation Rulemaking Advisory Committee for Air Carrier and General Aviation Maintenance issues (the committee) a new task to produce a technical report that reviewed the current system of repair station ratings and, if appropriate, recommend a system to rate aeronautical repair stations that mitigates identified problems associated with the existing system and accommodates the growth of the aviation industry (66 FR 53281, October 19, 2001).

The task established the following committee activities:

- Review the existing system of ratings and classes contained in the current part 145 and any other documents issued by the FAA pertaining to aeronautical repair stations.
- Review comments submitted to FAA in response to the public meetings held in 1989 and the system of ratings proposed in June 1999 in Notice No. 99-09.
- Review the challenges reported by Aviation Safety Inspectors (ASIs) under the existing system of ratings.
- Identify the challenges that aeronautical repair stations encounter under the existing system of ratings and classes, including those pertaining to
    - Current business practices that are not regulated that may require some form of control;
    - Provisions in the current regulation that prevent repair stations from performing desired business practices; and
    - Enforcement problems associated with the current regulations.
- Draft a Technical Report that—
    - Presents a review of the existing system of ratings and classes;
    - Identifies various options for rating systems;

- Identifies the advantages and disadvantages of each option;
- Provides economic information for each of the alternative rating systems; and
- Recommends a preferred system of ratings.

The committee met on January 31, March 11-12 and April 18, 2002 to discuss the issues associated with the current repair station rating system and to determine whether a new system would address the issues related to its task. The committee's report is based upon the extensive discussions associated with its task. It was assisted by a survey of repair stations, FAA inspectors, original equipment manufacturers, and customers. A copy of the survey and several of the committee's completed surveys are attached as appendices to this report. As a result of survey responses and its discussions, the committee determined that advances in aviation technologies and modern business practices made it advisable for FAA to institute a new system of repair station ratings and classifications.

REVIEW OF THE CURRENT RATINGS AND CLASSIFICATION SYSTEM

The current system of repair station ratings and classifications was established in 1962 to help FAA better manage the issuance and oversight of repair station certificates. The rating and classification system generally groups together similar technologies (that existed prior to 1960) based on relative degree of complexity (type of construction or principle of operation) within each rating and class. In addition, the rating and classification system attempted to distinguish between aircraft that operate in commercial air carrier service from those that operate in general aviation based upon size-related criteria.

Nearly every aspect of aviation technology has changed since the repair station rating and classification system was established. Airframes and aircraft skins have benefited from advances in metallurgy and the development of advanced composite material. Transport-category aircraft rely almost exclusively on turbine-engine power, while the reciprocating engine remains prevalent in smaller aircraft. There have been dramatic changes in the national airspace system with significant advancements in integrated navigation, communication, electronic and avionics equipment.

It has become increasingly difficult to categorize today's aviation products into a repair station rating system that was based on past technology. As a result, FAA inspectors and the aviation industry have made widely-varying and sometimes conflicting interpretations to apply these distinctions to current applications. The following section reviews the FARs relating to the existing repair station rating and classification system and discusses practical interpretation and application based on survey results.

CURRENT REPAIR STATION RATINGS AND CLASSES

Currently, part 145 provides for two general categories of repair station ratings: (1) ratings under § 145.31 (class ratings) and (2) limited ratings under § 145.33. Each general rating is broken into classes or specific type of equipment.

CLASS RATINGS

The six general ratings available under § 145.31 are—

(1) Airframe,

(2) Powerplant,

(3) Propeller,

(4) Radio,

(5) Instrument, and

(6) Accessory.

Table 1 sets forth each rating category along with the classes associated with each of the categories.

Table 1—Current Ratings and Classifications Under § 145.31

Rating	Class	Definitions and Notes
Airframe	*Class 1*: Composite construction of small aircraft	May perform maintenance and alterations of airframes. Airframe – fuselage, booms, nacelles, cowlings, fairings, airfoil surfaces (including rotors but excluding propellers and rotating airfoils of engines) and landing gear of an aircraft and their accessories and controls. Large Aircraft: Gross takeoff weight of more than 12,500 pounds. Small Aircraft: Gross takeoff weight of 12,500 pounds or less.
	Class 2: Composite construction of large aircraft	
	Class 3: All-metal construction of small aircraft	
	Class 4: All-metal construction of large aircraft	
Powerplant	*Class 1*: Reciprocating engine of 400 horsepower or less	May perform maintenance and alterations of powerplants.
	Class 2: Reciprocating engines of more than 400 horsepower	
	Class 3: Turbine engines	
Propeller	*Class 1*: All fixed pitch and ground adjustable propellers of wood, metal, or composite construction	
	Class 2: All other propellers, by make	
Radio	*Class 1*: Communication equipment	Radio transmitting and/or receiving equipment used in an aircraft to send or receive communications in flight, including auxiliary and related aircraft interphone systems, electrical or electronic intercrew signaling devices, and similar equipment. Does not include equipment for navigating or aiding navigation of aircraft.
	Class 2: Navigational equipment	A radio system used in an aircraft for en route or approach navigation. This does not include equipment operated on pulsed radio frequency principals, or equipment used for measuring altitude or terrain clearance.
	Class 3: Radar equipment	An aircraft electronic system operated on radar or pulsed radio frequency principles.
Instrument	*Class 1*: Mechanical	A diaphragm, bourdon tube, aneroid, optical, or mechanically driven centrifugal instrument used on aircraft to operate aircraft, including tachometers, airspeed indicators, pressure gauges drift sights, magnetic compasses, altimeters, or similar mechanical instruments.
	Class 2: Electrical	Self-synchronous and electrical indicating instruments and systems, including remote indicating instruments, cylinder head temperature gauges, or similar electrical instruments.
	Class 3: Gyroscopic	An instrument or system using gyroscopic principles and motivated by air pressure or electrical energy, including automatic pilot control units, turn and bank indicators, directional gyros, and their parts and flux gate and gyrosyn compasses.

	Class 4: Electronic	An instrument whose operation depends on electron tubes, transistors, or similar devices, including capacitance type quantity gauges, system amplifiers, and engine analyzers.
Accessory	*Class 1*: Mechanical	An accessory that depends on friction, hydraulics, mechanical linkage, or pneumatic pressure for operation, including aircraft wheel brakes, mechanically driven pumps, carburetors, aircraft wheel assemblies, shock absorber struts, and hydraulic servo units.
	Class 2: Electrical	An accessory that depends on electrical energy for its operation, and a generator, including starters, voltage regulators, electric motors, electrically driven fuel pumps, magnetos, or similar accessories.
	Class 3: Electronic	An accessory that depends on the use of an electron tube transistor or similar device, including supercharger, temperature, air conditioning controls, or similar electronic controls.

The committee reviewed each of the categories and classes to determine the meaning, challenges and usefulness of the current system.

AIRFRAME

Currently, airframe ratings are based on the type of airframe construction ("composite" and "all-metal") and the weight of the aircraft (small being 12, 500 pounds and less while large are more than that weight).

In 1962, the types of composite material available for airframe construction were generally limited to dope, fabric, and wood products. "Composite" was commonly used to define a combination of substances, as an aircraft with components made from a variety of wood, fabric and metal materials. A more appropriate description of the term "composite" may have been "not-all metal." Today the term "composite material" first brings to mind carbon-carbon compounds and advanced polymers. Additionally, the term continues to be associated with aircraft constructed of a variety of materials. Furthermore, FAA inspectors and the aviation industry are confused over how much of an aircraft must be of composite or metal construction for various class ratings within the airframe category. Modern aircraft are not constructed solely with composite materials or metal.

Thus, it is unclear which definition of "composite" is considered appropriate under the current part 145. Therefore, these classes no longer seem to fit within the current airframe class rating system. Furthermore, the committee found that a repair station rating based solely on the type or variety of material in aircraft construction is unduly restrictive. These factors no longer determine the appropriate scope of work repair stations perform under the airframe category. Repair stations are capable of performing work on aircraft that does not depend the materials used in its construction.

The committee also finds that the weight classification division is no longer appropriate. In 1962, a distinction was made between small and large aircraft to separate those airplanes used in commercial air carrier service. At that time, commercial operations normally used aircraft over 12,500 pounds while small aircraft were typically operated in

general aviation. This distinction also generally reflected the relative level of complexity. Today however, aircraft weight does not reflect the complexity or intended use of an aircraft.

POWERPLANT

The powerplant rating is divided into three classes representing large and small reciprocating engines and turbine engines. In 1962, nearly all large aircraft were powered by reciprocating radial engines that produced more than 400 horsepower. These engines differed substantially from the horizontally opposed reciprocating engines with less than 400 horsepower typically used in small general aviation aircraft. Due to this variety of reciprocating engines, it was useful to distinguish the classes based on horsepower. Today however, it is possible for a small horizontally opposed reciprocating engine to produce over 400 horsepower. In addition, all modern transport airplanes are turbine-powered and high-horsepower radial engines are no longer manufactured. Therefore, the committee determined that two classes for reciprocating engines were no longer useful.

The powerplant classification for turbine engines includes turbojet, turbofan and turboprop engines. Many commenters to the NPRM stated that it is not necessary to further divide this class based on type or relative size since these factors do not significantly affect the complexity or skills necessary to maintain turbine engines. In fact, some FAA inspectors require repair stations maintaining Auxiliary Power Units (APU) to obtain a turbine class rating as opposed to an accessory rating. These inspectors believed that the powerplant rating more closely reflected the type of housing, facilities, equipment and personnel needed to perform the work.

PROPELLER

The propeller rating is divided into two classes—fixed pitch and variable pitch. This distinction was based on the different levels of complexity between a propeller with no moving parts and one with a mechanical system that controls the pitch of the propeller while operating. It also related to the reciprocating engine classes as variable pitch propellers were primarily used with the high-horsepower radial engines, while the fixed pitched propellers were used with the small reciprocating engines.

Although the differing levels of complexity remain, current repair station business practice no longer supports two class ratings within this category. Propeller repair stations generally hold both ratings in order to sustain a continuous flow of business. Airplanes with variable pitch propellers undergo frequent maintenance because they are typically operated in commercial service or in business aviation. Fixed pitch propellers continue to be primarily used by privately owned airplanes. Since the housing, facilities, equipment and skills needed to maintain variable pitch propellers generally encompasses the requirements for maintenance of fixed-pitch propellers, repair stations typically obtain both class ratings.

RADIO

The radio rating is divided into communication, navigation and radar classes. These classes are based upon the technology available to the industry in the past. The first two classes, communication and navigation, are based on their intended function in the airplane whereas the radar class is based on a specific technology or mode of operation.

This method of categorizing equipment has generated a great deal of controversy since the advent of modern avionics. First, modern avionics equipment typically integrate communications and navigation functions into a single appliance. Second, radar equipment or a radio that operates using pulse technology also serves communication and/or navigation functions. This requires repair stations to obtain all three ratings. Additional confusion exists for avionics that integrate radio and instrument functions into a single appliance. For example, a modern flight management system (FMS) can be considered both a radio and an instrument. Under the existing rating system, a repair station that intends to work on an FMS must maintain both an instrument rating and a radio rating. As a result, there is inconsistency in the application of ratings and classes to repair stations that work on integrated communication, navigation, radar and radio equipment.

INSTRUMENT

The instrument rating is divided into four classes; mechanical, electrical, gyroscopic, and electronic; based on the article's general principles of operation. Again, these category and class distinctions were based upon the technology available when the rule was promulgated. However, today most instruments operate using a combination of these principles. Additional confusion exists relating to the appropriate ratings and classes for repair stations that maintain avionics that integrate instruments into navigation and communication systems. In fact, integrated modular avionics systems are combining radio and instrument functions into a single structure, which is displayed through the aircraft's "glass cockpit." As a result, there is inconsistency as to the appropriate ratings and classes a repair station should hold in order to work on modern integrated avionics equipment.

ACCESSORY

Similar to the instrument rating, the accessory rating is divided into mechanical, electrical and electronic classes based on the articles' principle of operation. Today's accessories rely on a combination of principles for their operation. The same problems experienced in the radio and instrument ratings and classes exist regarding hybrid accessories. As a result, there is a great level of inconsistency in the application of accessory ratings and classes to repair stations that work on integrated components.

The accessory category is particularly inconsistent because it and the limited airframe, powerplant, propeller, radio and instrument ratings are used interchangeably. Since the term accessory is not defined, except by the examples set forth within each class, it is open to individual interpretation by FAA inspectors and repair stations. Consequently,

there is significant overlap between the use of accessory, either class or limited, and limited airframe, powerplant, propeller, radio and instrument ratings to allow work on component parts. Two repair stations will have essentially the same housing, facilities, equipment, trained personnel and technical data, yet receive two different ratings.

LIMITED RATINGS AND SPECIALIZED SERVICE

§ 145.33(a) states that a limited rating can be issued to a repair station that maintains only a particular type of airframe, powerplant, propeller, radio, instrument, or accessory, or parts thereof. Such a rating may be limited to a specific model aircraft, engine, or constituent part, or to any number of parts made by a particular manufacturer. That section goes on to state that the rating may also be issued if the repair station performs only specialized maintenance requiring equipment and skills not ordinarily found in regular repair stations.

The most common problem that results in inconsistent use of limited ratings is the overlap between the specific items listed in § 145.33(b) and accessory ratings. As discussed above, either of these ratings could be issued to repair stations performing the same or similar work. For example, a repair station that works on landing gear could as easily hold a limited airframe or accessory rating depending upon the FAA inspector's interpretation. Another problem, identified by the survey, related to the level of detail necessary for any kind of limited rating. Limitations by make and model are the most common. However, a limited rating for component parts varies significantly in the level of detail expected by the FAA. For example, a limited rating to work on landing gear ranges from make/model of the aircraft, make/model of the landing gear, to specific part number of the landing gear or component parts depending on the FAA inspectors' interpretation.

§ 145.33(a) also states that a limited rating can be issued to a repair station that performs only specialized maintenance requiring equipment and skills not ordinarily found in regular repair stations. It further states that the operations specifications of the repair station shall contain the specification used in performing that specialized service and that it can be a military-, civil-, or an applicant- developed specification approved by the FAA.

The specialized service rating is particularly confusing because it is limited to "equipment and skills not ordinarily found in regular repair stations," a very subjective standard. However, repair stations are required to have all the "equipment and skills" necessary to maintain the products for which they are rated. The committee believes that most, if not all, repair stations perform some form of "specialized service." Therefore, there are very few repair stations offering specialized maintenance functions "not ordinarily found in regular repair stations."

The confusion is compounded because some FAA inspectors have required repair stations to obtain specialized service ratings for a broad range of internal maintenance functions. For example, a class rated repair station may be required to obtain several specialized service ratings to perform routine internal maintenance functions, such as a

heat treat, hardening, coating, plating, or NDI processes, on parts that will be incorporated into an overhauled engine. Some inspectors require these additional ratings for "special processes regardless of where the part will end up, whereas other inspectors only require specialized service ratings if the process is being applied to parts as a separate service for customers or are the only service being offered by the repair station.

Therefore, the existing system of limited and specialized service ratings is applied inconsistently.

CONCLUSIONS ABOUT THE CURRENT SYSTEM OF REPAIR STATION RATINGS AND CLASSES

After a review of the current system of repair station ratings and classes, the committee identified three general concerns that need to be addressed:

- It does not reflect the technology and practices of the modern aviation industry.
- It is not dynamic and therefore cannot adapt as new technologies are introduced.
- It is not clearly defined and therefore is open to widely varying interpretation, inconsistent application, and may even unnecessarily limit repair station privileges.

The existing system of repair station ratings and classifications is confusing to FAA inspectors, repair stations and end customers. The inconsistent application of ratings and classes causes problems when a repair station in one region is scrutinized by an inspector in another region who does not believe that the repair station holds the appropriate rating to accomplish particular work. This problem is compounded when customers expect certain ratings to properly accomplish their work. It appears highly questionable to customers when two repair stations approve for return to service similar components under two completely different ratings. Furthermore, inconsistent application of a rating may unnecessarily limit a repair station's scope of work because it does not accurately reflect its capabilities (that is, its housing, facilities, equipment, tools, trained personnel, and technical data).

The committee believes that the existing system of repair station ratings and classes should be modernized to align with the continually evolving technologies and business practices. Furthermore, the rate of technological advances in aviation requires a flexible and dynamic rating and classification system.

OPTIONS FOR A NEW RATING AND CLASSIFICATION SYSTEM

After determining that modernization of the existing system of repair station ratings was desirable, the ARAC committee discussed the fundamental purpose of a rating system. Due to the inconsistencies of the current system, repair stations cannot rely on ratings or classes to determine their scope of work. Ultimately, the FARs do not allow a repair station to perform any work for which it does not have the appropriate capabilities (i.e. housing, facilities, equipment, tools, training, personnel and data) regardless of its rating. It seems repair station ratings are primarily used by:

- The FAA to manage the issuance and oversight of repair station certificates;
- The customers to identify suitably capable repair stations; and
- The repair station to meet the regulatory requirements to operate as a certificated repair station and for marketing purposes.

Therefore, the committee determined that any repair station rating and classification system should serve three basic purposes:

- Indicate to the FAA the general kind of work the repair station intends to perform;
- Provide customers an understanding of the general capabilities of the repair station; and,
- Allow the flexibility to adapt to rapidly changing technology and business environments

After discussion, it was determined that developing a completely new rating system was neither required nor practical. The committee believes that a new rating system should not be unnecessarily disruptive to the FAA or industry. It also recognized that any system of classifying and rating repair stations will have inconsistencies, however, these could be minimized by a clear explanation of the requirements and limitations of each element of the system. Due to its short time allotment, the committee focused on adaptations of the existing repair station rating system, which would address most of the problems identified in the review.

During its brainstorming sessions and general discussions the committee evaluated the following options:

- Limited Rating System
- Progressive Rating System
- General Rating System
- Ratings and Classes Based on Capabilities

LIMITED RATING SYSTEM

The first option evaluated by the committee is a system comprised completely of limited ratings. This would eliminate the class ratings because ratings would only be issued by make and model of the aircraft, powerplant, propeller, or component part.

Advantages: FAA inspectors and some manufacturers surveyed consider this the most appropriate option because it could be used to clearly identify the specific products or components or parts or special process authorized for the repair station. It would remove most inconsistencies regarding the application of class ratings by eliminating the need to develop clear definitions for each class. This system provides FAA inspectors a greater level of structure that more clearly defines a repair station's capabilities, which would simplify initial oversight responsibilities.

The supporters of this option believed that considering the breadth of aviation products, length of service, range of operations, rate of technological change and special tooling requirements; it would be extremely difficult for a general class rated repair station to maintain all of the capabilities (facilities, equipment, tools, trained personnel and data) required for the rating. While it is true that the FARs only require that the capability be present when the work is actually being performed, some manufacturers currently require factory authorized service centers to hold a limited repair station rating. They believe that this provides customers with a greater level of assurance of a repair stations' capabilities with respect to original equipment manufacturer instructions for continued airworthiness and product recommendations for specific models.

Disadvantages: Removing all class ratings would significantly affect repair station business operations and overburden FAA resources. This option limits a repair station's ability to respond, in a timely manner, to customer demands, technological advances and future industry needs due to the time to prepare and process the request for an additional limited rating. This system would also be a significant burden for both FAA and industry personnel to convert all repair stations to a system of limited ratings and to maintain continuous rating changes as repair stations take in new work or discontinue work. In addition, customers (especially air carriers) prefer class rated repair stations because there are fewer limits on their capabilities ensuring that they can address any additional items identified during the performance of the work in a timely manner.

Discussion: Existing regulations require that a repair station have the appropriate capabilities (i.e., housing, facilities, equipment, tools, trained personnel and data) for any work performed regardless of its rating. The committee believed that a repair station should be able to determine its ability to perform any requested maintenance, preventive maintenance, or alteration based on whether it has, or can promptly acquire, the capabilities to approve the article for return to service under the scope of work requested. Furthermore, the committee believed that removing ratings and classifications would not necessarily ensure that FAA inspectors and repair stations would agree on what kinds of work repair stations have the capability to perform. The committee did not believe that a system of only limited repair station ratings could be

applied to rigidly and therefore would not provide the flexibility necessary to support the growth of the aviation industry.

PROGRESSIVE RATING SYSTEM

The committee evaluated a progressive system of ratings whereby a repair station could work on any component part up to the highest level of intended work identified by its rating. For example, the current system requires a repair station to hold both a Class 3 and Class 4 airframe rating to work on small and large airplanes. Under a progressive system, a Class 4 rated airframe facility would be allowed to work on all aircraft, including those under 12,500 pounds.

Advantages: A progressive rating system eliminates the need for Airframe and Powerplant repair stations to obtain multiple class ratings. It also identifies the highest level of work intended by the repair station.

Disadvantages: Airframe and Powerplant class ratings are somewhat progressive, however, this option does not lend itself to the other ratings or the interaction among those ratings. In addition, this option would be a significant departure from the existing system. Additionally, the hierarchy associated with a progressive rating system would be difficult to determine and implement.

Discussion: The committee determined that while this option appears to increase flexibility in the airframe and powerplant rating, it does not resolve any of the problems associated with the other ratings. The committee believes that issues with determining what work may be performed under a given class rating may be resolved just as effectively by more clearly defining each classification and the prerequisites for holding that rating.

GENERAL RATING SYSTEM

The third option evaluated by the committee is a general rating system based solely on general classes (*i.e.*, airframe, powerplant, propeller).

Advantages: This option would practically eliminate any inconsistency regarding the interpretation and application of the rating system. It would provide repair stations with a much greater degree of flexibility to respond to customer demands and changes in technology. It would be very easy to transition from the existing rating and class system to a general rating system.

Disadvantages: General ratings by product category (airframe, powerplant, etc) are far too broad to provide FAA inspectors and the public with an understanding of the scope of work for which the repair station intends to do business or of its general capabilities.

Discussion: This option is supported by the existing requirement that a repair station can only perform work for which it has the appropriate capabilities (*i.e.*, housing,

facilities, equipment, tools, trained personnel and data) regardless of its rating. It would be relatively easy to develop a clear definition of each rating under a general rating system, however the details would be difficult to administer.

RATINGS AND CLASSES BASED ON CAPABILITIES

This rating system would be based on a repair stations capabilities, taking advantage of the on-going regulatory requirement that regardless of its rating a repair station must have the appropriate capabilities, *i.e.*, housing, facilities, equipment, tools, trained personnel and data, before commencing any work.[1]

Classes would be combined or eliminated where appropriate to provide for greater flexibility through the use of more "general ratings." This rating system would then rely on a repair station's operations specification to specify any limitations and a capabilities list to identify the nature and scope of work.

The operations specifications would identify by general category, the products or component parts or specialized service(s) that represented the repair station's core business. The repair station would have a capabilities list and have a procedure in its manual to evaluate its capabilities within its general rating prior to adding an item or process to its capabilities list and commencing work. This evaluation procedure will allow repair stations the flexibility necessary to provide a timely response to customer demands and changes in technology.[2] Additionally, it provides the FAA with the tools necessary for uniform interpretation, policy and enforcement of the requirements.

This option would allow a repair station to work on all components and parts thereof for which it is appropriately rated. For example, a JT8D powerplant repair station can work on and approve for return to service any part of a JT8D (*i.e.*, blades, disks, pumps) without obtaining any additional ratings. This incorporates the streamlined benefits associated with a "progressive rating system."

Advantages: As discussed above, a hybrid system of ratings and classes based on a repair station's capability achieves nearly all of the advantages identified by each of the previous options evaluated by the committee. Through a combination of a general rating and operations specifications, this system provides a better understanding of a repair station's scope of work than is currently available. Under the current system, a repair station's rating limits its capabilities whereas under this option, a repair station's capabilities defines its rating. Shifting from a rigid system of exclusive ratings and classifications to a flexible system of inclusive ratings allows a repair station to perform a wide variety of maintenance, preventive maintenance, and alterations as long as it has the capabilities (*i.e.*, housing, facilities, equipment, tools, trained personnel and data).

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[1] See, §§ 145.53 and 145.201(b).
[2] See, § 145.215.

Disadvantages: By combining the advantages of the other options most of the disadvantages have been nullified. However, the committee recognizes that this option is a basic shift. A successful transition and consistent interpretation and application will require the development of clear guidance material and require continuous training.

Discussion: This option incorporates all of the guiding principles. First, it indicates to the FAA the scope of work the repair station intends to perform. Second, it provides customers with an understanding of the general capabilities of the repair station. Finally, it provides the flexibility necessary to adapt to rapidly changing technology and business environments. This option focuses on a repair station's capabilities both at the time of original certification and on a continuing basis. Therefore, a repair station's housing, facilities, equipment, tools, trained personnel, and data determine how the repair station is rated and the type and extent of work it can perform and approve for return to service. The committee believed that a system of ratings and classes based on a repair stations capabilities more accurately represents current and future industry practices and needs.

RECOMMENDED RATING SYSTEM

As a result of discussions, the committee developed a hybrid rating system that combines the benefits of the options discussed and would be the least disruptive to the industry. The committee recommends that FAA adopt a modified system of ratings and classes based on a repair station's capabilities. This system is a hybrid approach shifting the philosophy from a system of exclusive ratings to a system of inclusive ratings. This rating system is based on a repair stations capabilities, taking advantage of the on-going regulatory requirement that regardless of its rating a repair station must have the appropriate capabilities, *i.e.*, the housing, facilities, equipment, trained personnel and data necessary to accomplish the work and approve that work for return to service. The committee believes class ratings should broadly define a broad scope of work, providing the general parameters of the repair station's capabilities. The committee also believed that this system establishes a greater correlation between the work a repair station performs and the class rating assigned.

As discussed, the repair station's operations specifications would include the general class rating that identified its core business. The operations specifications would also be used to list any limitations that may be associated with the general rating. It would also be used to list the FAA-approved process specifications for specialized service repair stations. In addition, the repair station would establish a capabilities list and have a repair manual procedure to evaluate its housing, facilities, equipment, tools, trained personnel and data before commencing work on articles that would be added that list.

This option requires a modification of the current rating system to address the problems identified in the committee's review and the development of clear definitions or interpretations for each rating and class.

MODIFIED RATINGS AND CLASSES

Based on survey results and a review of the current system of ratings and classes, the committee discussed several options to modify the rating system in terms of nomenclature, privileges and limitations. The committee recommends that the following six general ratings be established:

(1) Aircraft (formerly airframe)

(2) Powerplant

(3) Propeller

(4) Avionics (formerly radio and instrument)

(5) Component (formerly accessory)

(6) Specialized service (formerly limited)

Privileges: The holder of each general rating may perform maintenance, preventative maintenance and alterations and approve for return to service any product or

component or part or perform any specialized service for which it has "capability." This rating system focuses on the highest level article that is being approved for return to service. After extensive discussion, the committee decided that an appropriately rated repair station might also work on and approve for return to service any internal components or parts thereof (including associated specialized services) if the repair station has the "in-house" capabilities. For example, a Powerplant-rated repair station would be allowed to approve for return to service any component part (*i.e.*, modules, cases, blades, compressors) or perform any specialized service (*i.e.*, heat treat, welding, NDI) without obtaining additional ratings, provided the work was performed at the repair station's location. Additionally, the repair station may remove and install any article as needed to gain access to the article for which they are performing maintenance.

Limitations: A repair station may only perform maintenance and approve for return to service those articles listed in their operations specification and/or capabilities list. Through a written procedure, a repair station may add any additional make or model or part or special process within their rating to the capabilities list by "auditing" their housing, facilities, equipment, tools, training, personnel and data. Any limitations whereby a repair station only intends to perform a specific workscope would also be identified on their operations specifications.

The following sections discuss each rating in detail, including its privileges and limitations.

AIRCRAFT

The committee determined that "aircraft," which would include the definition of airframe found in 14 CFR part 1.1, more appropriately reflected the fact that a repair station actually worked on complete aircraft as opposed to the current "airframe" rating. Under an aircraft rating a repair station would be allowed to perform maintenance, preventive maintenance, or alterations on the complete aircraft except those articles that are within a powerplant, propeller, or avionics rating. However, as long as the repair station had the capabilities, it would be allowed to remove, replace, install, and functional test any powerplant, propeller or avionics equipment in order to perform its rated work on the complete aircraft and approve it for return to service. Additionally, the repair station would be allowed to perform maintenance, preventive maintenance, or alterations on the accessories and to do specialized services associated with the aircraft for which it was rated.

If a repair station intended to perform only specific, limited work on a complete aircraft, such as interior configurations or painting, the committee recommended that these limitations be reflected in a repair station's operations specifications.

Under the current system, some repair stations are allowed to work on aircraft components under an airframe rating, while other repair stations must have multiple ratings to perform the same work. The committee believed that by clearly defining the

extent of work permitted under an aircraft rating, the recommended system would eliminate this problem.

The committee recognized that repair stations that intended to work on powerplants, propellers and avionics equipment would have to obtain multiple ratings to demonstrate that they have the necessary housing, facilities, equipment, tools, trained personnel, and data to do such work.

At the time of application, an aircraft repair station would be required to list the make, model or series of aircraft for which the repair station intends to perform maintenance on its operations specifications or its capability list. This would provide the customer and the FAA with a general idea of the repair stations' capabilities. The repair station would be required to demonstrate that it has on its premises and under its control the requisite housing, facilities, equipment, tools, trained personnel, and data to perform the maintenance, preventive maintenance, and alterations on the aircraft listed.

After the FAA certified the repair station, the repair station may add to its operations specifications or capabilities list on an as-needed basis. The repair station would be allowed to change its capabilities list based upon an internal audit that is part of the repair station's system. This internal review would ensure that the FAA can audit the work being performed under the rating and confirm that a repair station has the capabilities to perform the specified maintenance, preventive maintenance, or alterations. For example, if an aircraft that is not on the repair station's capabilities list needed a tire change - the repair station would perform the internal audit to ensure it had the housing, facilities, equipment, tools, trained personnel, and data to perform the this particular work. These temporary changes would not require a change to the capabilities list or operations specifications, rather the internal audit would be kept as part of the repair station's records. Additionally, timely notification to the FAA would allow the agency to verify the repair station had the capability to perform the "as needed" work. If the repair station wished to add a capability to its repair station rating on a permanent basis, the appropriate changes would be incorporated into the repair station's required quality procedures and the make or model would be added in accordance with the recorded system.

The committee determined that it is not necessary to divide this rating into classes. The operations specifications or capabilities list would provide a clear indication of the type of aircraft or work scope the repair station is capable of performing. For example:

Example 1:
Rating: Aircraft
Operations Specification OR capabilities list:
    Boeing 737 series
    Boeing 747 series
Rating: Powerplant (The repair station would need this rating to work other than removal, replacement, installation and functional testing on aircraft engines or APUs

and it would be limited to the powerplants listed on the operations specifications (or capabilities list) and might exclude overhaul.)

Example 2:
Rating: Aircraft
Operations Specification OR capabilities list:
Boeing 737 series
Boeing 747 series
Operations Specifications Limitation: Limited to internal configuration changes only

Again, the committee noted that the aircraft rating addresses the tendency of repair stations to repair whole aircraft and alleviates the need to get a separate rating for each component installed on the aircraft. By expanding the current airframe rating to include all aircraft articles, except those under the propeller, powerplant, or avionics rating, the recommended rating system becomes inclusive and more accurately reflects the way repair stations maintain aircraft.

POWERPLANT

The powerplant rating would cover all maintenance, preventive maintenance, and alterations performed on the powerplant, and all components necessary for the powerplant to work properly. The powerplant rating would include aircraft engines (as defined in part 1.1) and auxiliary power units (APUs). The committee believed that APUs fit in the powerplant category based upon the technology employed and the capabilities needed to perform maintenance, preventive maintenance and alterations on these articles. This rating, like the aircraft rating, would permit the removal and replacement of propellers and components, as needed, to perform powerplant maintenance. Nacelles and fairings also may be removed and replaced because most engine work cannot be performed unless these items are detached. The rating also includes removal, replacement, installation, and installed functional tests of the engine and the propellers on the aircraft. This rating does not allow for maintenance, preventive maintenance, or alterations to be performed on the aircraft or propeller except as stated above.

The committee discussed dividing this category into three classes: turbine, reciprocating and APUs. Although no conclusion was reached, it was believed that delineating classes under this category would be acceptable and would allow the FAA and the customer to better determine the capabilities of the repair station.

Application for the rating and class must also include a list of make, model, or series to be included on the operations specifications or capabilities list. As discussed previously, the operations specifications or capabilities list can be used to add additional make or model engines as set forth in the repair station's quality system. A powerplant repair station that also intended to repair propellers would hold the following ratings:

Rating: Powerplant
Turbine

Reciprocating
APU

Operations Specification OR capabilities list:
Pratt & Whitney (all series) *(Turbine)*
General Electric CF700 *(Turbine)*
PW R-2800 *(Reciprocating)*
PW-901A *(APU)*

Rating: Propeller (The repair station would need this rating only if it intended to perform work on the propellers other than the removal, replacement, installation or testing needed to work on the powerplant.)

PROPELLER

A propeller rating would allow a repair station to perform maintenance on propellers as that term is defined in part 1.1. Therefore, a propeller rating includes the ability to perform maintenance, preventive maintenance, or alterations on articles within the propeller. This rating would not include the main and auxiliary rotors (airframe articles) or rotating airfoils of aircraft engines (powerplant articles). In addition, as with the aircraft and powerplant ratings, a repair station with a propeller rating would be allowed to remove and install components that are included in other ratings, as needed, to gain access to the propeller. This rating would also allow a repair station to remove and replace components attached to the propeller and to remove the propeller from the aircraft. Finally, the rating would include removal, replacement, installation, and installed functional tests of the propeller, except installations that would constitute a major alteration to the aircraft or aircraft engine.

Application for a propeller rating would also require a list of make, model, or series to be included on the operations specifications or capabilities list. As discussed previously, these lists would be used to add additional makes or models of propellers as set forth in the repair station's quality system. Although a propeller repair station may remove and install the propeller on an aircraft engine, it may not perform any alterations to the aircraft engine, airframe or aircraft. Therefore, a repair station that intended to work on propellers and install a propeller of a different make and model through the use of a supplemental type certificate (STC), would need:

Rating: Propeller
Operations Specifications OR capabilities list:
Hartzell (all series)
Hamilton Sundstrand (all series)
Rating: Aircraft
Operations Specification Limitation: The repair station may alter aircraft associated with the propellers listed on [its capabilities list][the operations specifications] for installations listed on the aircraft STCs.

AVIONICS

The review of the current radio and instrument ratings and classes identified many problems associated with integrated modular avionics systems. Therefore, the

committee proposed a new rating that would combine radio and instrument into a single avionics rating. This rating would include all articles used for aircraft communication, navigation and operation defined in the current system. The committee's purpose in creating this new consolidated rating is to group together those items that operate electrically or electronically or perform similar functions and that require a unique set of skills not associated with other ratings.

An avionics rated repair station would also be allowed to perform maintenance, preventive maintenance, or alterations on in-flight entertainment units or other electronic units. Under the current ratings and classification system, no radio or instrument rating clearly includes in-flight entertainment electronics. Even though these devices typically are not thought of as avionics, the committee included them with other electronic devices that require similar skills.

This rating would permit a repair station, with the requisite capabilities, to remove and replace other components of the aircraft, powerplant, or propeller, as needed, to work on avionics or instruments. For example, a repair station would be allowed to remove or replace parts of the aircraft to gain access to the avionics or instruments. The repair station would be allowed to perform the removal, replacement, installation and functional testing of the avionics equipment on the aircraft, provided the repair station did not alter the aircraft. To perform a major or minor alteration to the aircraft, powerplant or propeller, a repair station would have to obtain the appropriate additional rating.

As with the aircraft, powerplant, and propeller ratings, a repair station would need to identify a list of articles on its operations specifications or capabilities list. Unlike the other ratings however, this list would not necessarily identify make or model and series, rather it would be able to provide broad categories, such as communication, navigation, pulsed (radar), mechanical, electric, gyroscopic, and electronic and the manufacturer.

The committee discussed the difficulty of differentiating between the aircraft and avionics ratings. With respect to the cross over issues, generally, the aircraft rating will allow the repair station to work on the aircraft electrical distribution system, external to the avionics unit. The avionics rating would allow the repair station to work on the electrical distribution system feeding into the avionics unit. This provides some overlap where both ratings allow the repair station to work on the wiring and/or electrical distribution system associated with the avionics equipment.

Similar to the other ratings discussed above, an avionics rated repair station that also intended to install new articles or systems in an aircraft through the use of an STC would need to obtain the appropriate avionics and aircraft ratings. For example:

Rating: Avionics
Operations Specifications OR capabiliites list:
    Collins – Radios
    Goodrich – Multi-functional displays

Rating: Aircraft
Operations Specifications Limitation: The repair station may alter the fuselage of the aircraft associated with installations of the avionics on its [operations specifications][capabilities list].

COMPONENT

As previously discussed, the recommended rating system focuses on the highest level article that the repair station intends to approve for return to service. The component rating would allow a repair station to perform maintenance, preventive maintenance and alterations on individual component parts that are installed on or in aircraft, powerplant, propeller, or avionics equipment. However, a repair station with an aircraft, powerplant, propeller, or avionics rating would not need a component rating to work on items associated with its respective rating and capabilities. For example, an aircraft or powerplant rated repair station would not need a component rating to perform maintenance on an airfoil surface or engine case or other parts of the aircraft or powerplant.

The component rating would include any item that is not a complete aircraft, powerplant, propeller, or avionics equipment. The operations specifications or capabilities list for this rating would need to be detailed enough to ensure that a repair station has the appropriate housing, facilities, equipment, tools, training, personnel, and data at certification and when the work was being performed.

Although at least one member of the committee believed that this rating should be broken into three general classes—aircraft, powerplant and propeller—the committee did not further delineate this rating. The committee believed that, in most cases, a repair station only need list the general part nomenclature of the item on its operations specifications or capabilities list. The committee did not believe that the operations specifications or capabilities list should be part-number-specific.

For example, under a component rating, the repair station would list the part family or general part nomenclature (vacuum pump), the manufacturer (Vickers), or the model or series or part number. Ultimately, a repair station would be required to list sufficient information to identify the articles for which it had capabilities.

SPECIALIZED SERVICE

The committee intended that the specialized service rating only be used for a repair station that performs specific processes associated with the maintenance, preventive maintenance, or alterations of an aviation item. This rating would be substantially the same as the existing specialized service rating.

A specialized service rating would allow a repair station to perform and approve for return to service specific processes associated with the maintenance, preventative maintenance or alteration of articles. The repair station's operations specification would

continue to contain the specification used in performing that specialized service and that specification could be a military-, civil-, or applicant- developed specification that was approved by the FAA. Specialized services would include but not be limited to non-destructive testing or inspection, welding, heat treating, plating, and plasma spraying.

This rating would only be needed in two situations. First, if the only work that the repair station performed was the specific process. Second, if the repair station has in-house capabilities to perform the specific process but the work being requested was not within the articles covered by its rating. For example, if an aircraft rated repair station was requested to perform plating on a propeller part, it would need a specialized service rating to perform the operation on the propeller item. However, if a powerplant-rated repair station has the in-house capability to perform x-ray inspections, it would not need to have a specialized service rating to perform that same work for another repair station on the powerplant articles for which it is already rated.

The specialized service rating would require a repair station to have the housing, facilities, equipment, tools, trained personnel, and data to perform the process on an aviation article. The process specification on the operations specifications would set forth the minimum standards for performing the generic process (specialized service). For example, the process specification would include an explanation of the housing, facilities, equipment, tools, trained personnel, and data necessary for the overall process. The applicable manufacturer's maintenance manual, air carrier manual, or other data acceptable to or approved by the FAA would define the specific parameters associated with performing the process on the particular aviation article.

The committee wanted the FAA to recognize that some types of specialized services can be performed with mobile housing and facilities. The FAA would control these operations by specifically acknowledging the repair station's ability to work at a non-fixed location through the operations specifications. Additionally, the repair station's quality system would have to address the procedures for ensuring that the appropriate housing, facilities, equipment, tools, personnel and data are available when the work is being performed.

GUIDANCE MATERIALS

The committee strongly believed that any new ratings and classification system needed clear definitions and guidance. Over the forty (40) years that the current rating system has been in existence, technology and repair station operations have grown and changed. The committee and the commenters to notice No. 99–09 expressed a great deal of concern about the lack of definitions and parameters within the current system that have resulted in inconsistent application and enforcement.

The FAA and the aviation industry agreed that the biggest hurdle for the preferred ratings and classification system would be educating FAA inspectors, repair station operators, and the aviation industry in general about the new regulatory scheme.

Without an understanding of the system's purpose, the transition would be difficult and would not allow the preferred system to meet its goals.

The preferred ratings and classification system must require a repair station to have the basic housing, facilities, equipment, tools, trained personnel, and data necessary to do work in accordance with the regulations. The FAA must evaluate this basic requirement and ensure that the capabilities list submitted by a repair station is realistic. The FAA also must ensure that a repair station has an adequate procedure in its repair station quality system to change its capabilities list and to maintain its records in accordance with the manual's procedure. If appropriately administered, the committee believed that the preferred system would be flexible enough to allow a repair station to work to its full capabilities and, at the same time, allow the FAA to verify that the repair station had the required capabilities when the work is performed.

The committee recognizes that some work may overlap for the new avionics rating and the new component rating. Unless the preferred system identifies every conceivable item or task under a rating, more than one rating may be appropriate for a particular scope of work. However, by clearly defining the preferred system's objective for the FAA and the aviation industry, the committee feels that more standardization will be possible.

FINANCIAL CONSIDERATIONS

Although the committee could not ask the aviation industry about the financial impact of its preferred ratings and classification system, the committee believed that the preferred system would result in the least cost to the aviation industry and the FAA. The committee's preferred system would not change the current system dramatically but would more clearly define a repair station's capabilities. Because it would expand rather than limit the rating system, the preferred system would have a minimal effect on repair stations.

Under the preferred ratings and classification system, the cost to create and maintain an appropriate capabilities list is minimized because a repair station is required only to provide the aircraft, powerplant, or propeller by make, model, or series. In addition, the capabilities lists for avionics and components are limited to the manufacturer, make, model, series, or information needed to determine whether the repair station has the appropriate capabilities. Many repair stations currently maintain such lists, and if the FAA applies this requirement broadly and does not require capabilities lists by part number, the financial impact on the aviation industry should be minimal.

APPENDICES

Appendix A—Rating Survey
Appendix B—AECMA Survey
Appendix C—Boeing Survey
Appendix D—NATA Survey

AVIATION RULEMAKING ADVISORY COMMITTEE FOR AIR CARRIER AND GENERAL AVIATION MAINTENANCE

Repair Station Ratings Technical Report

Appendix A

Rating system survey

FAR 145 Repair Station Rating System Review Survey

PURPOSE: The Aviation Rulemaking Advisory Committee (ARAC) was tasked by FAA to recommend a system to rate aeronautical repair stations that mitigates problems associated with the existing system of ratings and accommodates the growth of the aviation industry. The purpose of this survey is to collect information regarding **YOUR** understanding and ideas on the current Part 145 ratings.

INSTRUCTIONS: The current Part 145 rating system is outlined in the table below. Please provide **your** perspective on the scope, usefulness, and issues associated with each rating. Only complete those sections with which you have experience or familiarity. Do not submit more than one survey.

Aviation Affiliation (*e.g.*, FAA, Repair Station, Maintenance Technician, Customer): _____

Name and Contact Information (optional): _____

Rating	Scope What do you think are the privileges and limitations of this rating?	Usefulness Is this rating necessary? (Yes/No) Please explain.	Issues State any issues that you have experienced with the rating.
AIRFRAME			
Airframe Class 1: Composite Construction Small Aircraft			
Airframe Class 2: Composite Construction Large Aircraft			
Airframe Class 3: All-metal Construction Small Aircraft			
Airframe Class 4: All-metal Construction			
Limited: Airframes of a particular make and model			
POWERPLANT			
Powerplant Class 1: Reciprocating engines of 400 HP or less			
Powerplant Class 2: Reciprocating engines of more than 400 HP			
Powerplant Class 3: Turbine Engines			
Limited: Engines of a particular make and model			
PROPELLER			
Propeller Class 1: All fixed pitch& ground adjustable			

Return by January 18, 2002

FAR 145 Repair Station Rating System Review Survey

Rating	Scope What do you think are the privileges and limitations of this rating?	Usefulness Is this rating necessary? (Yes/No) Please explain.	Issues State any issues that you have experienced with the rating.
propellers of wood, metal, or composite construction			
Propeller Class 2: All other propellers, by make			
Limited: Propellers of a particular make and model			
RADIO			
Radio Class 1: Communication Equipment			
Radio Class 2: Navigational equipment			
Radio Class 3: Radar equipment			
Limited: Radio equipment of a particular make and model			
INSTRUMENT			
Instrument Class 1: Mechanical			
Instrument Class 2: Electrical			
Instrument Class 3: Gyroscopic			
Instrument Class 4: Electronic			
Limited: Instruments of a particular make and model			
ACCESSORY			
Accessory Class 1: Mechanical			
Accessory Class 2: Electrical			
Accessory Class 3: Electronic			
Limited: Accessories of a particular make and model			
LIMITED	**(other than those listed above)**		
Limited Landing Gear Components			

Return by January 18, 2002

FAR 145 Repair Station Rating System Review Survey

Rating	Scope What do you think are the privileges and limitations of this rating?	Usefulness Is this rating necessary? (Yes/No) Please explain.	Issues State any issues that you have experienced with the rating.
Limited Floats, by make			
Limited Nondestructive inspection, testing and processing			
Limited Emergency Equipment			
Limited Rotor blades, by make and model			
Limited Aircraft fabric work			
Limited: Any other purpose as determined by the Administrator			
Limited specialized service			

Return by January 18, 2002

AVIATION RULEMAKING ADVISORY COMMITTEE FOR AIR CARRIER AND GENERAL AVIATION MAINTENANCE

Repair Station Ratings Technical Report

Appendix B

AECMA's response to the committee's ratings survey.

FAR 145 Repair Station Rating System Review Survey

INSTRUCTIONS: The current Part 145 rating system is outlined in the table below. Please provide your perspective on the scope, usefulness, and issues associated with each rating. Only complete those sections with which you have experience or familiarity. Do not submit more than one survey.

Aviation Affiliation (*e.g.*, FAA, Repair Station, Maintenance Technician, Customer): AECMA (EUROPEAN ASSOCIATION OF AEROSPACE INDUSTRIES)

Name and Contact Information (optional): DR. MARVIN T. CURTISS – CHAIRMAN AECMA MAINTENANCE WORKING GROUP
E MAIL ADDRESS: maureen.sturgess@aerohamble.co.uk

Rating	Scope What do you think are the privileges and limitations of this rating?	Usefulness Is this rating necessary? (Yes/No) Please explain.	Issues State any issues that you have experienced with the rating.
AIRFRAME			
Airframe Class 1: Composite Construction Small Aircraft	Return to service any make and model of composite construction small aircraft after performing maintenance, preventive maintenance and alterations	This class rating is confusing and complicated. Apparently there are no limitations	None
Airframe Class 2: Composite Construction Large Aircraft	As above for composite construction large aircraft	As above	None
Airframe Class 3: All-metal Construction Small Aircraft	As above for all metal construction small aircraft	As above	None
Airframe Class 4: All-metal Construction	As above for all metal construction large aircraft	As above	None
Limited: Airframes of a particular make and model	Return to Service only the particular make and model of aircraft listed on the operations specifications after performing maintenance, preventive maintenance and alteration	Yes – but limitations in terms of work scope should be clearer	None
POWERPLANT			
Powerplant Class 1: Reciprocating engines of 400 HP or less	Return to service any make and model of reciprocating engine of 400 hp or less after performing maintenance, preventive maintenance and alteration	W.O the particular make and model of the engine should be specified	None
Powerplant Class 2: Reciprocating engines of more than 400 HP	As above for reciprocating engines of more than 400 hp	As above	None
Powerplant Class 3: Turbine Engines	As above for Turbine Engines	As above	None
Limited: Engines of a particular make and model		Yes, otherwise engine on wing maintenance would not be permitted	Which privileges are associated with this rating
PROPELLER			
Propeller Class 1: All fixed pitch& ground adjustable propellers of wood, metal, or composite construction	Return to service any make and model of all fixed pitch and ground adjustable propellers of wood, metal or composite construction after performing maintenance, preventive maintenance and alteration	No, it seems to be an unlimited rating	None

FAR 145 Repair Station Rating System Review Survey

Rating	Scope What do you think are the privileges and limitations of this rating?	Usefulness Is this rating necessary? (Yes/No) Please explain.	Issues State any issues that you have experienced with the rating.
Propeller Class 2: All other propellers, by make	Return to service propeller not falling into Class 1 identified by make after performing maintenance, preventive maintenance and alteration	No to avoid confusion should be combined with the limited propeller rating	None
Limited: Propellers of a particular make and model	RTS a propeller of a particular make and model after performing maintenance and preventive maintenance and alteration	Yes – see above	None
RADIO			
Radio Class 1: Communication Equipment	Return to service any communication equipment after performing maintenance, preventive maintenance and alteration	No, the limited radio rating should be sufficient	None
Radio Class 2: Navigational equipment	As above for navigational equipment	As above	None
Radio Class 3: Radar equipment	As above for radar equipment	As above	None
Limited: Radio equipment of a particular make and model	Return to service a radio equipment of a particular make and model after performing maintenance, preventive maintenance and alteration	Yes – see above	Consider this rating unnecessary
INSTRUMENT	**INSTRUMENT**		
Instrument Class 1: Mechanical	Return to service any mechanical instrument after performing maintenance, preventive maintenance and alteration	No, the limited instrument rating should be sufficient	None
Instrument Class 2: Electrical	As above for electrical instruments	As above	None
Instrument Class 3: Gyroscopic	As above for gyroscopic instruments	As above	None
Instrument Class 4: Electronic	As above for electronic instruments	As above	None
Limited: Instruments of a particular make and model	Return to service an instrument of a particular make and model after performing maintenance preventive maintenance and alteration	Yes – see above	None
ACCESSORY			
Accessory Class 1: Mechanical	Return to service any mechanical equipment after performing maintenance, preventive maintenance and alteration	No, the limited accessory rating should be sufficient	None
Accessory Class 2: Electrical	As above for electrical accessories	Ads above	None
Accessory Class 3: Electronic	As above for electronic accessories	As above	None
Limited: Accessories of a particular make and model	Return to service an accessory of a particular make and model after performing maintenance preventive maintenance and alteration .	Yes – see above	None
LIMITED	**(other than those listed above)**		
Limited Landing Gear Components	Return to service a landing gear component of a particular make and model after performing maintenance, preventive maintenance and alteration	Yes, no other ratings apply to this kind of components	None

FAR 145 Repair Station Rating System Review Survey

Rating	Scope What do you think are the privileges and limitations of this rating?	Usefulness Is this rating necessary? (Yes/No) Please explain.	Issues State any issues that you have experienced with the rating.
Limited Floats, by make	As above for floats	No – see limited emergency equipment	None
Limited Nondestructive inspection, testing and processing	To return to service work consisting in non-destructive testing and processing only	No, in case such work may be returned to service under another rating the repair station holds	None
Limited Emergency Equipment	To return to service an emergency equipment of a particular make and model after performing a maintenance and preventive maintenance and alteration .	Yes – to include all kind of emergency equipment	None
Limited Rotor blades, by make and model	To return to service rotor blades of a particular make and model after performing maintenance preventive maintenance and alteration	No, it might be part of a propeller rating	None
Limited Aircraft fabric work	No clear privileges associated with this rating)	No, should be covered by the airframe rating	None
Limited: Any other purpose as determined by the Administrator	No clear privileges associated with this rating)	No	None
Limited specialized service	The same for the limited non destructive inspection testing and process	No – see the limited, NDT, inspection testing and processing rating	None

AVIATION RULEMAKING ADVISORY COMMITTEE FOR AIR CARRIER AND GENERAL AVIATION MAINTENANCE

Repair Station Ratings Technical Report

Appendix C

Boeing's response to the committee's ratings survey.

Rating System Review Survey

The purpose of this document is to collect information regarding **YOUR** understanding and ideas on the current Part 145 ratings. Please complete only those sections with which you have experience or familiarity. **Do not submit more than one survey.**

Aviation Affiliation (e.g., FAA, Repair Station, Repair Station Customer, Maintenance Technician): Boeing repair stations

Name and Contact Information (optional): Rose Scoones, rosita.m.scoones@boeing.com

Rating	Perspective What do you think are the privileges and limitations of this rating?	Usefulness Is this rating necessary? (Yes/No) Why or why not?	Issues State any issues that you have experienced with the rating.
Airframe Class 1: Composite Construction Small Aircraft	Privileges: May perform maintenance and alterations of airframes [airframe – fuselage, booms, nacelles, cowlings, fairings, airfoil surfaces (including rotors but excluding propellers and rotating airfoils of engines) and landing gear of an aircraft and their accessories and controls.] 12,500 Lbs (maximum certificated takeoff weight, MTOW) or less that are primarily constructed of composite materials. Approve for return to service any article for which it is rated after it has been maintained or altered. Perform 100-hour, annual or progressive inspections, and return the aircraft to service. Maintain or alter any article for which it is rated at a place other than the repair station in accordance with FAR 145.51 (d), (1) (2) (3). **Limitations All Ratings:** May not maintain or alter any article for which it is rated if it requires special technical data, equipment, or facilities that are not available to it. May not approve for return to service any aircraft, airframe after major repair or major alteration unless the work was done in accordance with technical data approved by the Administrator.	No. The requirement for a Repair Station is to have the tools, equipment, facilities, data, and personnel available to perform the task. If you are not set up for Composite Repair then you could not perform the task anyway.	Not sure what composite is or isn't. What portion of airplane content has to be composite before it is considered a composite airplane? All commercial aircraft produced are a combination of composite and metal materials. One rating for aircraft is sufficient. We do not agree with the rating breakdown at 12500 Lbs. Example: a DC-3 is classed as a large aircraft, but is not anywhere nearly as complicated a design (structures or systems) as a Learjet. Differentiation might be for Rotorcraft / Fixed Wing as they are entirely different in concept and requirements. Summary: The rating systems should be based on capabilities not weight or construction.
Airframe Class 2: Composite Construction Large Aircraft	Privilege: May perform maintenance and alterations of airframes, over 12,500 Lbs (MTOW) that are primarily constructed of composite materials. Approve for return to service any article for which it is rated after it has been maintained or altered. Perform 100-hour, annual or progressive inspections, and return the aircraft to service. Maintain or alter any article for which it is rated at a place other than the repair station in accordance with FAR 145.51 (d), (1) (2) (3).	Same comment as for Class 1 above.	Same comment as for Class 1 above.

Rating	Perspective What do you think are the privileges and limitations of this rating?	Usefulness Is this rating necessary? (Yes/No) Why or why not?	Issues State any issues that you have experienced with the rating.
Airframe Class 3: All-metal Construction Small Aircraft	Privilege: May perform maintenance and alteration of all-metal construction of small airframes 12,500 Lbs or less, MTOW. Approve for return to service any article for which it is rated after it has been maintained or altered. Perform 100-hour, annual or progressive inspections, and return the aircraft to service. Maintain or alter any article for which it is rated at a place other than the repair station in accordance with FAR 145.51 (d), (1) (2) (3).	Same comment as for Class 1 above.	Same basic comments as for Class 1.
Airframe Class 4: All-metal Construction	Privilege: May perform maintenance and alteration of All-metal construction of large airframes over 12,500 Lbs, MTOW. Approve for return to service any article for which it is rated after it has been maintained or altered. Perform 100-hour, annual or progressive inspections, and return the aircraft to service. Maintain or alter any article for which it is rated at a place other than the repair station in accordance with FAR 145.51 (d), (1) (2) (3).	Same comment as for Class 1 above.	Same basic comments as for Class 1. In addition, an Airframe rating includes maintenance and alteration of airframes as described above for Class 1, yet in accordance with current regulatory interpretation a repair station must hold an additional rating, i.e., Accessory to perform that same work on accessories/landing gear etc., if the work comes into the repair station independent of the aircraft. Furthermore, for like work, i.e., battery maintenance, that would fall under a class 4 airframe rating, if the work were to be performed on a part (battery) from an aircraft rated as class 3, again an additional rating would be required.
Limited Airframe	Privilege: May maintain or alter particular makes and models of airframe. Limitation: Airframes by make and model	Yes, allows a repair station to be rated even for a single airplane/airframe rather than the "class" of airplanes.	

Rating	Perspective What do you think are the privileges and limitations of this rating?	Usefulness Is this rating necessary? (Yes/No) Why or why not?	Issues State any issues that you have experienced with the rating.
Powerplant Class 1: Reciprocating engines of 400 HP or less	Privilege: May perform Maintenance and Alteration of Reciprocating engines of 400 HP or less.	No, the horsepower rating is a moot point. Piston Engine Overhaul is Piston Engine Overhaul. There should be a Turbine Engine and a Piston Engine Rating.	
Powerplant Class 2: Reciprocating engines of more than 400 HP	Privilege: Same as Class 1 except for Reciprocating engines over 400 HP	See above comment.	
Powerplant Class 3: Turbine Engines	Privilege: Maintenance and Alteration of Turbojet, Turboprop, or Turbofan Engines	Yes, Turbine Engines are entirely different with much different requirements that Piston Engines.	
Limited Powerplant	Privilege: May perform Maintenance and Alteration of engines of a particular make and model.	Yes, allows a repair station to be rated for a prescribed amount of work rather than the "class" of Powerplant work.	
Propeller Class 1: All fixed pitch& ground adjustable propellers of wood, metal, or composite construction	Privilege: May perform Maintenance and Alteration Fixed Pitch or Ground Adjustable Propellers (Used primarily on smaller aircraft)	Yes. The difference between a Macauley fixed pitch and a Ham Standard Full Feathering Prop is large. The requirements for the more complex propellers are much more and a separate rating is advisable.	
Propeller Class 2: All other propellers, by make	Privilege: May perform Maintenance and Alteration of all other Propellers not addressed by Propeller Class 1	See above comment.	
Limited Propeller	Privilege: May perform Maintenance and Alteration of a specific make and model of Propellers	Yes, useful for Specialized Shops.	
Radio Class 1: Communication Equipment	Privilege: May perform Maintenance and Alteration of Communication Equipment: any radio transmitting or receiving equipment used to send or receive communications in flight including auxiliary and related aircraft interphone systems, amplifier systems, electrical or electronic inter-crew signaling devices, and similar equipment.	No. The type of facility, training and equipment required to perform maintenance of this type of equipment is very similar. Therefore what reason is there to have the different ratings? If a station wants to just maintain Radar Equipment, for example, let them use the limited class.	
Radio Class 2: Navigational equipment	Privilege: May perform maintenance and alteration of Navigational Equipment: Any radio system used in aircraft for en route or approach navigation, except equipment operated on radar or pulsed radio frequency principles, but not including equipment for measuring altitude or terrain clearance or other distance equipment operated on radar or pulsed radio frequency principles	See above	

Rating	Perspective What do you think are the privileges and limitations of this rating?	Usefulness Is this rating necessary? (Yes/No) Why or why not?	Issues State any issues that you have experienced with the rating.
Radio Class 3: Radar equipment	Privilege: May perform maintenance, preventive maintenance and alteration Radar equipment: Any aircraft electronic system operated on radar or pulsed radio frequency principles (Applicable equipment defined in FAR 145.31.)	See above	
Limited Radio	Privilege: May perform maintenance and alterations of Radio Equipment of a particular make and model.	Yes, see above useful for Specialized Shops	
Instrument Class 1: Mechanical	Privilege: May perform maintenance and alteration of Mechanical Instruments: Any diaphragm, bourdon tube, aneroid, optical, or mechanically driven centrifugal instrument that is used on aircraft or to operate aircraft, including tachometers, airspeed indicators, pressure gauges drift sights, magnetic compasses, altimeters, or similar mechanical instruments.	No. The type of facility, training and equipment required to perform maintenance of this type of equipment is very similar. Therefore what reason is there to have the different ratings? If a station wants to just maintain Gyro's for example, let them use the limited class.	
Instrument Class 2: Electrical	Privilege: May perform maintenance and alteration of Electrical instruments: Any self-synchronous and electrical indicating instruments and systems, including remote indicating instruments, cylinder head temperature gauges, or similar electrical instruments.	See above	
Instrument Class 3: Gyroscopic	Privilege: May perform maintenance and alteration of Gyroscopic Instruments: Any instrument or system using gyroscopic principles and motivated by air pressure or electrical energy, including automatic pilot control units, turn and bank indicators, directional gyros, and their parts, and flux gate and gyrosyn compasses.	See above	
Instrument Class 4: Electronic	Privilege: May perform maintenance and alteration of Electronic Instruments: Any instruments whose operation depends on electron tubes, transistors, or similar devices including capacitance type quantity gauges, system amplifiers, and engine analyzers.	See above	
Limited Instrument	Privilege: May perform maintenance, preventive maintenance, and alteration of a particular make and model Instrument.	Yes, useful for Specialized Shops	
Accessory Class 1: Mechanical	Privilege: May perform maintenance and alteration of Mechanical accessories: Mechanical accessories that depend on friction, hydraulics, mechanical linkage, or pneumatic pressure for operation, including aircraft wheel brakes, mechanically driven pumps, carburetors, aircraft wheel assemblies, shock absorber struts and hydraulic servo units.		

Rating	Perspective What do you think are the privileges and limitations of this rating?	Usefulness Is this rating necessary? (Yes/No) Why or why not?	Issues State any issues that you have experienced with the rating.
Accessory Class 2: Electrical	Privilege: May perform maintenance and alterations of Electrical Accessories that depend on electrical energy for their operation, and generators, including starters, voltage regulators, electric motors, electrically driven fuel pumps magnetos, or similar electrical accessories.		Class 2 and 3 Accessory ratings cover similar types of equipment, could be combined into One Class. Example: We test/repair a lot of wiring panels made up of lamps and wiring which are rated as Class 2 Accessories. We also have several wiring panels that have components installed such as resistors, diodes, transistors, etc. these could these fall under Class 2 or Class 3.
Accessory Class 3: Electronic	Privilege: May perform maintenance and alterations of Electronic Accessories: Accessories that depend on the use of an electron tube transistor, or similar device, including supercharger, temperature, air conditioning controls, or similar electronic controls.		
Limited Accessory	Privilege: May perform maintenance and alterations of particular makes and models of Accessories.	Yes, useful for Specialized Shops.	
Limited Landing Gear			
Limited Floats, by make			
Limited Nondestructive inspection, testing and processing	Privilege: May perform Nondestructive inspection, testing and processing as defined on Air Agency Operations Specifications.	Yes, allows us to maintain separate rated personnel for specialized inspections.	NDI can be performed under an Airframe rating, interpretation varies as to if a repair station must also have limited rating to perform this.
Limited Emergency Equipment	Privilege: May only perform maintenance, preventive maintenance, and alterations of particular makes and models Emergency Equipment.	Disagree, if you have the Personnel, Facilities, equipment and documentation to maintain one type of Escape Slide, Life Raft or Life Vest. You will have the system in place to maintain them all! The Repair Stations should not be levied to a particular make or model. But a general class rating like exists today.	
Limited Rotor blades, by make and model			
Limited Aircraft fabric work			
Limited: Any other purpose			

Rating	Perspective What do you think are the privileges and limitations of this rating?	Usefulness Is this rating necessary? (Yes/No) Why or why not?	Issues State any issues that you have experienced with the rating.
Limited specialized service	Privilege: May perform a special maintenance requiring equipment and/or skills not ordinarily found in a regular repair station Limitation: The repair station's operations specifications must contain the specification, either civil or military used by industry and approved by the Administrator or one developed by the repair station and approved by the Administrator, used in performing the specialized service.	Yes, useful for Specialized Shops.	

General comment: I'm sure that there are many pieces of hardware that could fall into any one of these ratings. I think you have to keep it general. There are many units that function in several systems. To try and isolate it down to a specific system would be very difficult and be open for interpretation.

AVIATION RULEMAKING ADVISORY COMMITTEE FOR AIR CARRIER AND GENERAL AVIATION MAINTENANCE

Repair Station Ratings Technical Report

Appendix D

National Air Transportation Association's response to the committee's ratings survey.

FAR 145 Repair Station Rating System Review Survey

PURPOSE: The Aviation Rulemaking Advisory Committee (ARAC) was tasked by FAA to recommend a system to rate aeronautical repair stations that mitigates problems associated with the existing system of ratings and accommodates the growth of the aviation industry. The purpose of this survey is to collect information regarding **YOUR** understanding and ideas on the current Part 145 ratings.

INSTRUCTIONS: The current Part 145 rating system is outlined in the table below. Please provide **your** perspective on the scope, usefulness, and issues associated with each rating. Only complete those sections with which you have experience or familiarity. Do not submit more than one survey.

Aviation Affiliation (*e.g.*, FAA, Repair Station, Maintenance Technician, Customer): NATA Repair Stations

Name and Contact Information (optional): Dave Smith 201-462-4023 david_smith@jetaviation.com

Rating	Scope What do you think are the privileges and limitations of this rating?	Usefulness Is this rating necessary? (Yes/No) Please explain.	Issues State any issues that you have experienced with the rating.
AIRFRAME			
Airframe Class 1: Composite Construction Small Aircraft	Repair, alter, and/or inspect any aircraft 12500 pds or less, that is of composite construction. Also repair, alter, and/or inspect any parts thereof installed or to be installed on the aircraft to be released as part of the aircraft. (release aircraft, not individual part).	No, no one has all requirements for all airframes. We therefore have always been required to ensure we have the housing, equip, personnel, etc. to perform any work. Since this is our responsibility and the limitation as to our qualification is determined by us, the rating is meaningless.	No aircraft is all composite construction and we have never been able to get a clear determination as to what constitutes "composite construction". We can repair a component (example: wheel assy.) and install it and release the aircraft, but cannot release the wheel assy as a component. This serves no purpose and we must sub out component work or get additional ratings for work we are otherwise qualified to perform.
Airframe Class 2: Composite Construction Large Aircraft	Repair, alter, and/or inspect any aircraft over 12500 pds, that is of composite construction. Also repair, alter, and/or inspect any parts thereof installed or to be installed on the aircraft to be released as part of the aircraft. (release aircraft, not individual part).	Same as above	Same as above
Airframe Class 3: All-metal Construction Small Aircraft	Repair, alter, and/or inspect any aircraft 12500 pds or less, that is of all metal construction. Also repair, alter, and/or inspect any parts thereof installed or to be installed on the aircraft to be released as part of the aircraft. (release aircraft, not individual part).	Same as above	Many aircraft are not "all metal construction", yet are accepted under this rating. This will get more complicated with newer aircraft that are made up of composite structures and other structures of metal construction. Clear definition is required if the rating system is to be continued. We can repair a component (example:

Return by January 18, 2002

FAR 145 Repair Station Rating System Review Survey

Rating	Scope What do you think are the privileges and limitations of this rating?	Usefulness Is this rating necessary? (Yes/No) Please explain.	Issues State any issues that you have experienced with the rating.
			wheel assy.) and install it and release the aircraft, but cannot release the wheel assy as a component. This serves no purpose and we must sub out component work or get additional rateings for work we are otherwise qualified to perform.
Airframe Class 4: All-metal Construction	Repair, alter, and/or inspect any aircraft over 12500 pds, that is of all metal construction. Also repair, alter, and/or inspect any parts thereof installed or to be installed on the aircraft to be released as part of the aircraft. (release aircraft, not individual part).	Same as above	Many aircraft are not "all metal construction", yet are accepted under this rating. This will get more complicated with newer aircraft that are made up of composite structures and other structures of metal construction. Clear definition is required if the rating system is to be continued. We can repair a component (example: wheel assy.) and install it and release the aircraft, but cannot release the wheel assy as a component. This serves no purpose and we must sub out component work or get additional ratings for work we are otherwise qualified to perform.
Limited: Airframes of a particular make and model	Repair, alter, and/or inspect any aircraft over 12500 pds, that is listed on the R/S OPS Specs. Also repair, alter, and/or inspect any parts thereof installed or to be installed on the aircraft to be released as part of the aircraft. (release aircraft, not individual part).	Although the aircraft for which we are rated our now defined, we must still ensure that we have the housing, equip, personnel, etc. to perform any work. Since this is our responsibility and the limitation as to our qualification is determined by us, the rating is meaningless.	We can repair a component (example: wheel assy.) and install it and release the aircraft, but cannot release the wheel assy as a component. This serves no purpose and we must sub out component work or get additional ratings for work we are otherwise qualified to perform.
POWERPLANT			
Powerplant Class 1: Reciprocating engines of 400 HP or less	Repair, alter, inspect and/or overhaul all engines and any part thereof including components/accessories supplied with the engine (recip 400 HP or less), installed or to be installed on the engine to be released as part of the engine. (release engine, not individual part).	No, no one has all requirements for all engines. We therefore have always been required to ensure we have the housing, equip, personnel, etc. to perform any work. Since this is our responsibility and the limitation as to our qualification is determined by us, the rating is meaningless.	We can repair a component (example: magneto.) and install it and release the engine, but cannot release the magneto as a component. This serves no purpose and we must sub out component work or get additional ratings for work we are otherwise qualified to perform.
Powerplant Class 2: Reciprocating engines of	Repair, alter, inspect and/or overhaul all engines and any part thereof including components/accessories supplied with the	Same as above	Same as above

FAR 145 Repair Station Rating System Review Survey

Rating	Scope What do you think are the privileges and limitations of this rating?	Usefulness Is this rating necessary? (Yes/No) Please explain.	Issues State any issues that you have experienced with the rating.
more than 400 HP	engine (recip 400 HP or less), installed or to be installed on the engine to be released as part of the engine. (release engine, not individual part).		
Powerplant Class 3: Turbine Engines	Repair, alter, inspect and/or overhaul turbine engines and any part thereof including components/accessories supplied with the engine, installed or to be installed on the engine to be released as part of the engine. (release engine, not individual part).	Same as above	Same as above
Limited: Engines of a particular make and model	Repair, alter, inspect and/or overhaul engines as listed on OPS Specs, and any part thereof including components/accessories supplied with the engine, installed or to be installed on the engine to be released as part of the engine. (release engine, not individual part).	Although the engine for which we are rated our now defined, we must still ensure that we have the housing, equip, personnel, etc. to perform any work. Since this is our responsibility and the limitation as to our qualification is determined by us, the rating is meaningless.	Same as above
PROPELLER			
Propeller Class 1: All fixed pitch& ground adjustable propellers of wood, metal, or composite construction			
Propeller Class 2: All other propellers, by make			
Limited: Propellers of a particular make and model			
RADIO			
Radio Class 1: Communication Equipment	Repair, alter, inspect and/or overhaul components as listed by regulation (not clear, see issues), and any part thereof and release components as rated.	No, no one has all requirements for all class 1 radio. We therefore have always been required to ensure we have the housing, equip, personnel, etc. to perform any work. Since this is our responsibility and the limitation as to our qualification is determined by us, the rating is meaningless.	Many components are multi functional (nav/com, etc.) and therefore require more than one rating. Although FAR 145 Appendix A lists that the rating allows for many inspections/checks etc. of the airframe system that the equipment is installed in, many FSDOs require the aircraft to be listed in the OPS Specs, or at least a statement that the component can be installed and tested. I agree that Appendix A should be eliminated, but additional confusion will be created if the rating is not clearly defined.
Radio Class 2: Navigational equipment	Same as above	Same as above	Same as above
Radio Class 3: Radar	Same as above	Same as above	Same as above

FAR 145 Repair Station Rating System Review Survey

Rating	Scope What do you think are the privileges and limitations of this rating?	Usefulness Is this rating necessary? (Yes/No) Please explain.	Issues State any issues that you have experienced with the rating.
equipment			
Limited: Radio equipment of a particular make and model	Same as above	Same as above	Same as above
INSTRUMENT			
Instrument Class 1: Mechanical			
Instrument Class 2: Electrical			
Instrument Class 3: Gyroscopic			
Instrument Class 4: Electronic			
Limited: Instruments of a particular make and model			
ACCESSORY			
Accessory Class 1: Mechanical			
Accessory Class 2: Electrical			
Accessory Class 3: Electronic			
Limited: Accessories of a particular make and model			
LIMITED	**(other than those listed above)**		
Limited Landing Gear Components			This applies to all limited ratings below. There is considerable variation in the way components are listed from FSDO to FSDO. Some by description, i.e., landing gear strut. Some by make and model. Some by finite part number including dash number. This makes it hard to compete with, audit, etc.
Limited Floats, by make			
Limited Nondestructive inspection, testing and processing			
Limited Emergency Equipment			
Limited Rotor blades, by make and model			

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FAR 145 Repair Station Rating System Review Survey

Rating	Scope What do you think are the privileges and limitations of this rating?	Usefulness Is this rating necessary? (Yes/No) Please explain.	Issues State any issues that you have experienced with the rating.
Limited Aircraft fabric work			
Limited: Any other purpose as determined by the Administrator			
Limited specialized service			Some FSDOs believe that a R/S with this rating cannot approve a component for which it is rated to perform a specific task on, for return to service. They should be able to approve it for return to service for the work performed. If they are not rated to release the article then there is no reason for a rating.

Return by January 18, 2002

Federal Register

Friday,
March 14, 2003

Part V

Department of Transportation

Federal Aviation Administration

14 CFR Parts 91, 121, 135, and 145
Repair Stations; Final Rule

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Parts 91, 121, 135, and 145

[Docket No.:FAA–1999–5836]

RIN 2120–AC38

Repair Stations

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule; delay of effective date.

SUMMARY: FAA is delaying the effective date of a final rule that amends the regulations for aeronautical repair stations. This action is necessary to give repair station certificate holders more time to develop required manuals using FAA guidance material, which has yet to be issued, before submitting the manuals to FAA for acceptance. Also this action will allow repair station certificate holders to follow FAA guidance material for requesting FAA approval of contract maintenance functions.

DATES: The effective date of the final rule amending 14 CFR parts 91, 121, 135, and 145 published on August 6, 2001, at 66 FR 41088 is delayed until October 6, 2003, with the following exception: § 145.163 is delayed until October 6, 2005.

FOR FURTHER INFORMATION CONTACT: Diana Frohn, Flight Standards Service, Aircraft Maintenance Division, General Aviation and Repair Station Branch, AFS–340, Federal Aviation Administration, 800 Independence Avenue, SW., Washington, DC 20591; telephone (202) 267–7027; e-mail *diana.frohn@faa.gov.*

SUPPLEMENTARY INFORMATION:

The Final Rule

On July 30, 2001, FAA issued Repair Stations; Final Rule with Request for Comments and Direct Final Rule with Request for Comments (66 FR 41088; August 6, 2001). That final rule, which becomes effective April 6, 2003, updates and revises part 145 of title 14, Code of Federal Regulations, which prescribes the regulations for aeronautical repair stations. In that rulemaking action, FAA established a new requirement that each repair station must maintain and use a current repair station manual and a quality control manual. FAA also prescribed the contents of these manuals.

In the preamble to the final rule FAA stated, "This final rule will become effective 20 months after it is published in the **Federal Register**. This time period is needed to develop advisory circulars and internal FAA guidance, and to train FAA personnel. Additionally, repair stations will need adequate time to comply with the new requirements." On November 7, 2002, a notice was published in the **Federal Register** (67 FR 67891) announcing the availability of Proposed Advisory Circular (AC) 145–MAN, Guide for Developing and Evaluating Repair Station and Quality Control Manuals. In response to commenter requests, FAA extended the close of the comment period for AC 145–MAN from November 22, 2002, to February 5, 2003, (67 FR 70291; November 21, 2002).

On October 21, 2002, Mr. Jason Dickstein, Counsel, sent a petition to FAA for the Aircraft Electronics Association, the Aerospace Industries Association, the Aviation Suppliers Association, and the National Air Transportation Association.

The petitioners request that FAA—

1. "Postpone the implementation date of the changes to part 145 that were published at 66 FR 41088–41124 (August 6, 2001) until no earlier than 180 days after the FAA publishes a notice in the **Federal Register** of the availability of the advisory circular that describes how to comply with the repair station manual and quality control manual provisions of new sections 145.207 through 145.211."

2. "Publish notice of implementation postponement in the **Federal Register**."

3. "Publish a transition rule that permits early compliance with the new rule."

The petitioners contend that FAA has not yet published advisory material and guidance explaining how to produce a manual that is acceptable to FAA. Further, the petitioners assert that without advisory material, FAA cannot adequately train its personnel.

FAA has reviewed the petition and agrees with the petitioners that additional time is necessary to allow each repair station to prepare a repair station manual and a quality control manual following the guidance to be provided in AC 145–MAN. Since the guidance has not yet been issued, FAA finds that an extension is in the public interest.

Although the petitioners request that FAA allow for early compliance with the new rule, FAA finds it appropriate to extend the effective date of the entire final rule. FAA has determined that it would not be in the public interest to have both the current rule and the final rule in effect at the same time. Although this would allow some repair stations to comply with the final rule while repair stations operating under the current rule prepare their manuals, FAA finds this administratively complex.

The vast majority of repair station principal inspectors have oversight responsibility for several repair stations of varying complexity. Concurrent oversight and enforcement of two separate rules with different regulatory requirements would cause confusion and adversely impact the standardized application of repair station regulations. Additionally, FAA has determined that this would not be an efficient use of its inspector resources.

Further, the petitioners request an extension of 180 days from **Federal Register** publication of the notice of availability of a final AC. Since FAA intends to publish a final AC in the near future, the agency finds that an extension of 180 days from the April 6, 2003, effective date of the rule is sufficient.

Finally, the delay in the effective date of the final rule does not impose any new requirements or any additional burden on the regulated public. FAA, therefore, finds there are no additional costs or benefits associated with this action. However, the 180-day extension will delay realization of some cost savings provided by the rule.

Good Cause for Immediate Adoption

In accordance with 5 U.S.C. 553(b)(3)(B), FAA finds good cause for issuing this rule without prior notice and comment. Seeking public comment is impracticable, unnecessary, and contrary to the public interest. This delay of effective date will give repair stations sufficient time to use FAA guidance material in preparing to operate under the amended regulations for repair stations. Given the imminence of the effective date, seeking prior public comments on this temporary delay would have been impracticable, as well as contrary to the public interest in the orderly promulgation and implementation of this rule.

In consideration of the foregoing, FAA is amending parts 91, 121, 135, and 145 to delay the effective date of the final rule by 180 days.

Issued in Washington, DC, on March 4, 2003.

Marion C. Blakey,

Administrator.

[FR Doc. 03–6181 Filed 3–12–03; 8:45 am]

BILLING CODE 4910–13–P

§ 71.1 [Amended]

■ 2. The incorporation by reference in 14 CFR 71.1 of the Federal Aviation Administration Order 7400.9K, Airspace Designations and Reporting Points, dated August 30, 2002, and effective September 16, 2002, is amended as follows:

* * * * *

Paragraph 6005 Class E airspace areas extending upward from 700 feet or more above the surface of the earth.

* * * * *

AGL IN E5 South Bend, IN [Revised]

South Bend, South Bend Regional Airport, IN
(Lat. 41°42'31" N., long. 86°19'02" W.)
Niles, Jerry Tyler Memorial Airport, MI
(Lat. 41°50'09" N., long. 86°13'31" W.)
Gipper VORTAC
(Lat. 41°46'07" N., long. 86°19'06" W.)

That airspace extending upward from 700 feet above the surface within an 8.0-mile radius of South Bend Regional Airport and within 4.4 miles south and 7 miles north of the South Bend ILS localizer east course, extending from South Bend Regional Airport to 10.5 miles east of the ILS outer marker and within 4.4 miles west and 7 miles east of the Gipper VORTAC 001° radial, extending from the South Bend Regional Airport to 10.5 miles north of the VOR and within a 6.4-mile radius of the Jerry Tyler Memorial Airport, excluding that airspace within the Dowagiac, MI, Class E airspace area.

* * * * *

Issued in Des Plaines, Illinois, on September 3, 2003.

Nancy B. Shelton,

Manager, Air Traffic Division, Great Lakes Region.

[FR Doc. 03-24602 Filed 9-26-03; 8:45 am]

BILLING CODE 4910-13-M

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 71

[Airspace Docket No. 01-ANM-16]

Establishment of Class E Airspace; Richfield Municipal Airport, Richfield, UT

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule; correction.

SUMMARY: This action corrects an error in the geographic coordinates of the final rule; correction that was published in the **Federal Register** August 12, 2003 (68 FR 47844), airspace Docket 02-ANM-16. Also, this action corrects the effective date back to September 4, 2003.

EFFECTIVE DATE: 0900 UTC, September 4, 2003

FOR FURTHER INFORMATION CONTACT: Ed Haeseker, Federal Aviation Administration, ANM-520.7, 1601 Lind Avenue SW., Renton, Washington 98055-4056, telephone (425) 227-2527; FAA Docket No. 01-ANM-16.

SUPPLEMENTARY INFORMATION:

The Rule

Airspace Docket No. 02-ANM-16, published August 12, 2003 (68 FR 47844), corrected an error in the coordinates of the east boundary description of the Class E airspace at Richfield Municipal Airport, Richfield, UT. This action corrects another geographic coordinate to the Class E Airspace at Richfield Municipal Airport, Richfield, UT. This action also corrects the effective date back to September 4, 2003.

Correction to Final Rule

■ Accordingly, pursuant to the authority delegated to me, the geographic coordinates for the Class E airspace area at Richfield Municipal Airport, Richfield, UT, as published in the **Federal Register** on August 12, 2003 (68 FR 47844), (Federal Register Document FAA-01-ANM-16; page 47844, column 3) are corrected as follows:

§ 71.1 [Corrected]

* * * * *

ANM UT E5 Richfield Municipal Airport, UT (Corrected)

[lat. 38°44'11" N., long. 112°05'56" W.]

That airspace extending upward from 700 feet above the surface of the earth within 7.5 mile radius of the Richfield Municipal Airport; and that airspace extending upward from 1,200 feet, above the surface of the earth bounded by a line beginning at lat. 39°24'30" N., long. 112°27'41" W.; to lat. 39°16'00" N., long. 112°00'00" W.; to lat. 39°42'00" N., long. 110°54'00" W.; to lat. 39°27'00" N., long. 110°46'00" W.; to lat. 39°03'00" N., long. 111°30'00" W.; to lat. 38°32'00" N., long. 110°42'00" W.; to lat. 38°20'00" N., long. 110°48'00" W.; to lat. 38°40'00" N., long. 111°47'00" W.; to 38°16'40" N., long. 112°36'40" W.; to lat. 38°29'00" N., long. 112°53'00" W.; to lat. 39°11'30" N., long. 112°34'00" W.; thence to the point of origin; excluding that airspace within Federal Airways and the Price, UT, Huntington, UT, Milford, UT, and Delta, UT Class E airspace.

The effective date on Airspace Docket No. 01-ANM-16 is hereby corrected to September 4, 2003.

Issued in Seattle, Washington, on September 11, 2003.

ViAnne Fowler,

Acting Manager, Air Traffic Division, Northwest Mountain Region.

[FR Doc. 03-24608 Filed 9-26-03; 8:45 am]

BILLING CODE 4910-13-M

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Parts 91, 121, 135, and 145

[Docket No.:FAA-1999-5836]

RIN 2120-AC38

Repair Stations

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule; delay of effective date.

SUMMARY: The FAA is delaying the effective date of a final rule that amends the regulations for aeronautical repair stations. This action is necessary to give repair station certificate holders more time to develop required manuals using recently issued FAA guidance material before submitting the manuals to FAA for acceptance. Also this action will allow repair station certificate holders to follow FAA guidance material for requesting FAA approval of contract maintenance functions.

DATES: The effective date of the final rule amending 14 CFR parts 91, 121, 135, and 145 published on August 6, 2001, at 66 FR 41088 is delayed until January 31, 2004, with the following exception: § 145.163 remains effective April 6, 2005.

FOR FURTHER INFORMATION CONTACT: Diana Frohn, Flight Standards Service, Aircraft Maintenance Division, General Aviation and Repair Station Branch, AFS-340, Federal Aviation Administration, 800 Independence Avenue, SW., Washington, DC 20591; telephone (202) 267-7027; e-mail *diana.frohn@faa.gov.*

SUPPLEMENTARY INFORMATION:

The Final Rule

On July 30, 2001, the FAA issued Repair Stations; Final Rule with Request for Comments and Direct Final Rule with Request for Comments (66 FR 41088; August 6, 2001). That final rule updates and revises part 145 of Title 14, Code of Federal Regulations, which prescribes the regulations for aeronautical repair stations. In that rulemaking action, we established a new requirement that each repair station must maintain and use a current repair station manual and a quality control manual. We also prescribed the contents of these manuals.

Initially, the final rule was to become effective April 6, 2003. However, on October 21, 2002, the FAA received a petition from the Aircraft Electronics Association, the Aerospace Industries Association, the Aviation Suppliers

Association, and the National Air Transportation Association. Those petitioners requested that the FAA extend the effective date of the final rule arguing that we had not yet published advisory material and guidance explaining how to produce an acceptable manual. Further, the petitioners asserted that without advisory material, we could not adequately train FAA personnel. We agreed with the petitioners and extended the effective date of the final rule to October 3, 2003 (68 FR 125429, March 14, 2003; 68 FR 17545, April 10, 2003).

On July 3, 2003, the FAA issued Advisory Circular No. 145–9 (AC 145–9), Guide for Developing and Evaluating Repair Station and Quality Control Manuals. That document provides information and guidance material for developing and evaluating repair station manuals and quality control manuals. The material describes an acceptable means, but not the only means, to develop a manual and comply with the rules contained in part 145. Interested parties may access AC 145–9 at the following Internet Web site: *http://www.airweb.faa.gov/Regulatory_and_Guidance_Library/rgWebcomponents.nsf/HomeFrame?OpenFrameSet.*

On July 22, 2003, the Aircraft Electronics Association, the Aviation Repair Station Association, and the National Air Transportation Association submitted another petition requesting that the FAA further extend the effective date of the final rule. The petitioners note that the FAA issued material to guide repair stations in developing the manuals required in part 145 only 90 days before the effective date of the rule. The petitioners contend that 90 days is not enough time to develop manuals using the guidance materials. Therefore, the petitioners request that we extend the effective date of the final rule an additional 120 days.

We agree with the petitioners that additional time is necessary to allow repair station certificate holders to prepare repair station manuals and quality control manuals following the guidance provided in AC 145–9. Therefore, we find that a 120-day extension is in the public interest.

The petitioners also note that § 145.221 references sections in 14 CFR parts 121, 125, and 135 related to service difficulty reporting, which have not become effective. The FAA is addressing this issue in a separate rulemaking action.

Finally, the delay in the effective date of the final rule does not impose any new requirements or any additional burden on the regulated public. However, the 120-day extension will delay realization of some cost savings provided by the rule. We, therefore, find there are no additional costs, aside from the delay in realizing some cost savings, or benefits associated with this action.

Good Cause for Immediate Adoption

In accordance with 5 U.S.C. 553(b)(3)(B), I find good cause for issuing this rule without prior notice and comment. Seeking public comment is impracticable, unnecessary, and contrary to the public interest. This delay of effective date will give repair stations sufficient time to use FAA guidance material in preparing to operate under the amended regulations for repair stations. Given the imminence of the effective date, seeking prior public comments on this temporary delay would be impracticable, as well as contrary to the public interest in the orderly promulgation and implementation of this rule.

In consideration of the foregoing, parts 91, 121, 135, and 145 are amended to delay the effective date of the final rule by 120 days.

Issued in Washington, DC, on September 23, 2003.

Marion C. Blakey,

Administrator.

[FR Doc. 03–24546 Filed 9–24–03; 2:55 pm]

BILLING CODE 4910–13–P

FEDERAL TRADE COMMISSION

16 CFR Part 305

Rule Concerning Disclosures Regarding Energy Consumption and Water Use of Certain Home Appliances and Other Products Required Under the Energy Policy and Conservation Act ("Appliance Labeling Rule")

AGENCY: Federal Trade Commission.

ACTION: Final rule.

SUMMARY: The Federal Trade Commission ("Commission") amends its Appliance Labeling Rule ("Rule") by publishing minor, technical changes to the requirements for EnergyGuide labels for dishwashers to conform the labels to a new test procedure published by the Department of Energy ("DOE") on August 29, 2003 (68 FR 51887).

EFFECTIVE DATE: The amendments become effective on February 25, 2004.

FOR FURTHER INFORMATION CONTACT: Hampton Newsome, Attorney, Division of Enforcement, Federal Trade Commission, Washington, DC 20580 (202) 326–2889.

SUPPLEMENTARY INFORMATION: The Rule was issued by the Commission in 1979, 44 FR 66466 (Nov. 19, 1979), in response to a directive in the Energy Policy and Conservation Act of 1975 ("EPCA").[1] The Rule covers several categories of major household appliances including dishwashers.

The Rule requires manufacturers of all covered appliances to disclose specific energy consumption or efficiency information (derived from the DOE test procedures) at the point of sale in the form of an "EnergyGuide" label and in catalogs. The Rule requires manufacturers to include, on labels and fact sheets, an energy consumption or efficiency figure and a "range of comparability." This range shows the highest and lowest energy consumption or efficiencies for all comparable appliance models so consumers can compare the energy consumption or efficiency of other models (perhaps competing brands) similar to the labeled model. The Rule also requires manufacturers to include, on labels for some products, a secondary energy usage disclosure in the form of an estimated annual operating cost based on a specified DOE national average cost for the fuel the appliance uses.

I. Recent DOE Test Procedure Change

On August 29, 2003, DOE published amendments to the test procedure manufacturers must use to determine the energy use of their dishwashers (68 FR 51887). The DOE amendments provide a new test procedure for testing the energy consumption of soil-sensing models, requires that manufacturers include the measurement of standby power consumption in cost and energy use for all dishwashers, and add new specifications for instrumentation requirements. Manufacturers may begin using this amended test procedure on September 29, 2003 and must use it for energy representations by February 25, 2004.[2] The amended DOE test procedure also changes the number of annual cycles used to estimate the energy consumption of a dishwasher in one year. The amendments reduce that number from 264 to 215 cycles per year (correlating to about 4 washloads per week).

[1] 42 U.S.C. 6294. The statute also requires the DOE to develop test procedures that measure how much energy the appliances use, and to determine the representative average cost a consumer pays for the different types of energy available.

[2] Under EPCA, all energy use representations (including information on the EnergyGuide labels) must reflect the amended test procedure beginning 180 days after DOE prescribes the change in the procedure (*i.e.*, the date the rule is published in the Federal Register). 42 U.S.C. 6293(c).

21 days after the filing of the application.

Docket Number: OST–2005–20051.

Date Filed: January 6, 2005.

Parties: Members of the International Air Transport Association.

Subject: PTC123 0303 dated 30 November 2004

Mail Vote 426

USA-Korea (Rep. of), Malaysia Resolutions r1–r9

PTC123 0305 dated 31 December 2004

TC123 Minutes

PTC123 Fares 0124 dated 30 November 2004

USA-Korea (Rep. of), Malaysia Specified Fares Tables

Intended effective date: 1 March 2005

Docket Number: OST–2005–20058.

Date Filed: January 6, 2005.

Parties: Members of the International Air Transport Association.

Subject: PTC31 N&C/CIRC 0289 dated 26 November 2004

Japan-North America, Caribbean Resolutions

PTC31 N&C/CIRC 0290 dated 4 January 2005

Korea (Rep. of)-Canada, Caribbean, Mexico Resolutions

PTC31 N&C/CIRC 0291 dated 26 November 2004

Korea (Rep. of)-USA Resolutions

PTC31 N&C/CIRC 0292 dated 10 December 2004

Japan, Korea (Rep. of)-Central America, South America Resolutions

PTC31 N&C/CIRC 0293 dated 26 November 2004

Mail Vote 422

North and Central, Circle Pacific Areawide Resolutions

PTC31 N&C/CIRC 0294 dated 10 December 2004

Mail Vote 423

South Asian Subcontinent, South East Asia-Central America, South America Resolutions

PTC31 N&C/CIRC 0295 dated 26 November 2004

Mail Vote 424

Malaysia-USA Resolutions r1–r91

Minutes: PTC31 N&C/CIRC 0296 dated 31 December 2004

North & Central, Circle Pacific Minutes

Tables: PTC31 N&C/CIRC Fares 0140 dated 30 November 2004

Japan-North America, Caribbean Specified Fares Tables

PTC31 N&C/CIRC Fares 0141 dated 7 December 2004

Korea (Rep. of), Malaysia-USA Specified Fares Tables

PTC31 N&C/CIRC Fares 0142 dated 10 December 2004

TC3–Central America, South America

Specified Fares Tables

PTC31 N&C/CIRC Fares 0143 dated 21 December 2004

Circle Pacific Specified Fares Tables

PTC31 N&C/CIRC Fares 0144 dated 4 January 2005

Korea (Rep. of)-Canada, Caribbean, Mexico

Specified Fares Tables

Intended effective date: 1 April 2005

Renee V. Wright,

Acting Program Manager, Federal Register Liaison.

[FR Doc. 05–1152 Filed 1–19–05; 8:45 am]

BILLING CODE 4910–62–P

DEPARTMENT OF TRANSPORTATION

Office of the Secretary

Notice of Applications for Certificates of Public Convenience and Necessity and Foreign Air Carrier Permits Filed Under Subpart B (Formerly Subpart Q) During the Week Ending January 7, 2005

The following Applications for Certificates of Public Convenience and Necessity and Foreign Air Carrier Permits were filed under subpart B (formerly subpart Q) of the Department of Transportation's Procedural Regulations (See 14 CFR 301.201 *et. seq.*). The due date for Answers, Conforming Applications, or Motions To Modify Scope are set forth below for each application. Following the Answer period DOT may process the application by expedited procedures. Such procedures may consist of the adoption of a show-cause order, a tentative order, or in appropriate cases a final order without further proceedings.

Docket Number: OST–2005–20072.

Date Filed: January 7, 2005.

Due Date for Answers, Conforming Applications, or Motion to Modify Scope: January 28, 2005.

Description: Application of Skybus Airlines, LLC, requesting a certificate of Public convenience and necessity to engage in interstate scheduled air transportation of person, property, and mail between Port Columbus International Airport, and other points in the U.S.

Renee V. Wright,

Acting Program Manager, Federal Register Liaison.

[FR Doc. 05–1153 Filed 1–19–05; 8:45 am]

BILLING CODE 4910–62–P

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

[Docket No. FAA–1999–5836; Notice No. 05–01]

RIN 2120–AC38

Repair Stations

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of availability of AC; extension of comment period.

SUMMARY: This action extends the comment period for an Advisory Circular (AC) that was published on December 22, 2004. In that document, the FAA provided guidance to repair stations to establish their training programs. This extension is a result of requests from multiple commenters to extend the comment period for the AC.

DATES: Comments must be received on or before March 22, 2005.

ADDRESSES: Send all comments on AC 145–RSTP to Mr. Herbert E. Daniel, Aircraft Maintenance Division, General Aviation and Repair Station Branch (AFS–340), Federal Aviation Administration, 800 Independence Ave., SW., Washington, DC 20591; facsimile (202) 267–5115; e-mail *Herbert.E.Daniel@faa.gov.*

FOR FURTHER INFORMATION CONTACT: Mr. Herbert E. Daniel, AFS–340, at the address, facsimile, or e-mail listed above, or by telephone at (202) 267–3109; or Mr. Dan Bachelder, AFS–340, at the address or facsimile listed above or e-mail *Dan.Bachelder@faa.gov* or by telephone at (202) 267–7027.

SUPPLEMENTARY INFORMATION: *Comments Invited:* The proposed AC 145–RSTP is available on the FAA's Regulatory Guidance Library Web site at: *http://www.airweb.faa.gov/Regulatory_and_Guidance_Library/rgDAC.nsf/MainFrame?OpenFrameSet.* under the Open for Comment link. Interested persons are invited to comment on the AC by submitting written data, views, or suggestions, as they may desire. Please identify AC 145–RSTP, Repair Station Training Program, and submit comments, either hardcopy or electronic, to the appropriate address listed above.

Background

On December 22, 2004, the Federal Aviation Administration (FAA) issued the draft Advisory Circular AC 145–RSTP Repair Station Training Program (69 FR 76829, 12/22/2004). Comments to that document were to be received on or before January 21, 2005.

By letters dated January 3 and January 5, 2005, the Aircraft Electronics Association, Washington, DC and the National Air Transportation Association, Alexandria, VA requested that the FAA extend the comment period for AC 145–RSTP for 60 days. These and other industry associations stated that the original 30-day comment period did not allow repair stations adequate time to consider, review, and respond to the draft Advisory Circular while continuing to operate their businesses. All commenters requested an extension of the comment period by 60 days to provide sufficient time to evaluate this document before submitting comments to the FAA.

The FAA concurs with the requests for an extension of the comment period on AC 145–RSTP. The FAA agrees that additional time for comments will allow repair stations to review the document and formulate their comments while continuing to conduct their business. This will also allow commenters who may have anticipated an extension in the comment period to submit their comments by a certain date. Absent unusual circumstances, the FAA does nnt anticipate any further extension of the comment period for this AC.

Extension of Comment Period

Commenters have shown a substantive interest in the proposed AC and good cause for the extension. The FAA also has determined that extension of the comment period is consistent with the public interest, and that good cause exists for taking this action.

Accordingly, the comment period for AC 145–RSTP Repair Station Training Program is extended until March 22, 2005.

Issued in Washington, DC, January 14, 2005.

John M. Allen,

Acting Director, Flight Standards Service.

[FR Doc. 05–1130 Filed 1–14–05; 1:40 pm]

BILLING CODE 4910–13–P

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

Notice of Availability for the O'Hare Modernization Draft Environmental Impact Statement, Chicago O'Hare International Airport, Chicago, IL; Notice of Availability; and Notice of Public Hearing Dates, Times, and Locations

AGENCY: Federal Aviation Administration, DOT.

ACTION: Notice of availability of the O'Hare Modernization Draft Environmental Impact Statement (DEIS) and notice of intent to condnct pnblic hearings.

Location of Proposed Action: O'Hare International Airport, Des Plaines and DuPage River Watersheds, Cook and DuPage Counties, Chicago, Illinois (Sections 4, 5, 6, 7, 8, 9, 16, 17, and 18, Township 41 North, Range 10 East, 3rd P.M.). Please see the airport location maps showing the locations of the wetlands and Waters of the U.S. potentially affected by the Build Alternatives from the DEIS available on the FAA's Web site at *http://www.agl.faa.gov/OMP/DEIS.htm* under the title of Notice of Availability of the Draft EIS and Notice of Intent to Hold Pnblic Hearings.

SUMMARY: The Federal Aviation Administration (FAA) announces that the O'Hare Modernization Draft Environmental Impact Statement for Chicago O'Hare International Airport, Chicago, Illinois is available for public review and comment.

The DEIS identifies alternatives intended to address the projected needs of the Chicago region by reducing delays at O'Hare, thereby enhancing capacity of the National Airspace System, and ensuring that terminal facilities and supporting infrastructure can efficiently accommodate airport users. All of the development alternatives would result in wetland, property acquisition, air quality and noise impacts, as well as other impacts.

The FAA intends to host public hearings on the DEIS with the U.S. Army Corps of Engineers (USACE) and the Illinois Environmental Protection Agency (IEPA) Bureau of Water. The public hearings on the DEIS will be held on the following dates: Tuesday, February 22, 2005, at the Avalon Banquets, 1905 East Higgins Road, Elk Grove Village, Illinois 60007; Wednesday, February 23, 2005, at the Waterford Conference Center, 933 South Riverside Drive, Elmhurst, Illinois 60126; and Thursday, February 24, 2005, at the White Eagle, 6839 North Milwaukee Avenue, Niles, Illinois 60714. All three of these hearings will start at 2 p.m. (central standard time), and registration to participate in the hearings will conclude by 9 p.m. (central standard time). Repressentatives of FAA, USACE and IEPA will be available to provide information about the DEIS at an informational session held at the same time as the public hearings. Spanish language translators will be available at the hearings. The procedural rules governing the hearing are available from Michael W. MacMullen.

The comment period is open as of the date of this Notice of Intent and closes Wednesday, March 23, 2005. All comments are to be submitted to Michael W. MacMullen of the FAA, at the address shown below. The USACE and IEPA have requested that the FAA be the recipient of all comments regarding their actions. These comments must be sent to Michael W. MacMullen of the FAA at the address shown below, and the comments must be postmarked and email must be sent by no later than midnight, Wednesday, March 23, 2005.

The USACE is participating in the public hearings because implementation of any development alternatives, if selected, would require the USACE to approve issuance of a permit to fill wetlands under section 404 of the Clean Water Act Section. The IEPA is participating in the public hearings because implementation of any wetland development alternative, if selected, would also require IEPA to issue a Water Quality Certification under section 401 of the Clean Water Act.

SUPPLEMENTARY INFORMATION: The city of Chicago (City), Department of Aviation, as owner and operator of Chicago O'Hare International Airport (O'Hare or the Airport), PO Box 66142, Chicago, IL, 60666, proposes to modernize O'Hara to address existing and future capecity and delay problems. The City initiated master planning and the process of seeking FAA approval to amend its airport layout plan to depict the O'Hara Modernization Program (OMP). The City is also seeking the other necessary FAA approvals to implement the OMP and associated capital improvements and procedures. The FAA has prepared a DEIS addressing specific improvements at and adjacent to Chicago O'Hare International Airport, Chicago, Illilnois. FAA's DEIS presents an evaluation of the City's proposed project and reasonable alternatives. Under the City's concept, O'Hare's existing seven-runway configuration would be replaced by an eight-runway configuration, in which six runways would be oriented generally in the east/west direction, the existing northeast/southwest-oriented Runways 4L/22R and 4R/22L would remain, and Runways 14L/32R and 14R/32L would be closed.

Please see the airport location maps showing the locations of the wetlands and Waters of the U.S. kpotentially affected by the Build Alternatives from the DEIS available on the FAA's Web site at *http://www.agl.faa.gov/OMP/DEIS.htm* under the title Notice of Availability of the Draft EIS and Notice of Intent to Hold Public Hearings.

21 days after the filing of the application.

Docket Number: OST–2005–20051.

Date Filed: January 6, 2005.

Parties: Members of the International Air Transport Association.

Subject: PTC123 0303 dated 30 November 2004

Mail Vote 426

USA-Korea (Rep. of), Malaysia Resolutions r1–r9

PTC123 0305 dated 31 December 2004

TC123 Minutes

PTC123 Fares 0124 dated 30 November 2004

USA-Korea (Rep. of), Malaysia Specified Fares Tables

Intended effective date: 1 March 2005

Docket Number: OST–2005–20058.

Date Filed: January 6, 2005.

Parties: Members of the International Air Transport Association.

Subject: PTC31 N&C/CIRC 0289 dated 26 November 2004

Japan-North America, Caribbean Resolutions

PTC31 N&C/CIRC 0290 dated 4 January 2005

Korea (Rep. of)-Canada, Caribbean, Mexico Resolutions

PTC31 N&C/CIRC 0291 dated 26 November 2004

Korea (Rep. of)-USA Resolutions

PTC31 N&C/CIRC 0292 dated 10 December 2004

Japan, Korea (Rep. of)-Central America, South America Resolutions

PTC31 N&C/CIRC 0293 dated 26 November 2004

Mail Vote 422

North and Central, Circle Pacific Areawide Resolutions

PTC31 N&C/CIRC 0294 dated 10 December 2004

Mail Vote 423

South Asian Subcontinent, South East Asia-Central America, South America Resolutions

PTC31 N&C/CIRC 0295 dated 26 November 2004

Mail Vote 424

Malaysia-USA Resolutions r1–r91

Minutes: PTC31 N&C/CIRC 0296 dated 31 December 2004

North & Central, Circle Pacific Minutes

Tables: PTC31 N&C/CIRC Fares 0140 dated 30 November 2004

Japan-North America, Caribbean Specified Fares Tables

PTC31 N&C/CIRC Fares 0141 dated 7 December 2004

Korea (Rep. of), Malaysia-USA Specified Fares Tables

PTC31 N&C/CIRC Fares 0142 dated 10 December 2004

TC3–Central America, South America

Specified Fares Tables

PTC31 N&C/CIRC Fares 0143 dated 21 December 2004

Circle Pacific Specified Fares Tables

PTC31 N&C/CIRC Fares 0144 dated 4 January 2005

Korea (Rep. of)-Canada, Caribbean, Mexico

Specified Fares Tables

Intended effective date: 1 April 2005

Renee V. Wright,

Acting Program Manager, Federal Register Liaison.

[FR Doc. 05–1152 Filed 1–19–05; 8:45 am]

BILLING CODE 4910–62–P

DEPARTMENT OF TRANSPORTATION

Office of the Secretary

Notice of Applications for Certificates of Public Convenience and Necessity and Foreign Air Carrier Permits Filed Under Subpart B (Formerly Subpart Q) During the Week Ending January 7, 2005

The following Applications for Certificates of Public Convenience and Necessity and Foreign Air Carrier Permits were filed under subpart B (formerly subpart Q) of the Department of Transportation's Procedural Regulations (See 14 CFR 301.201 *et. seq.*). The due date for Answers, Conforming Applications, or Motions To Modify Scope are set forth below for each application. Following the Answer period DOT may process the application by expedited procedures. Such procedures may consist of the adoption of a show-cause order, a tentative order, or in appropriate cases a final order without further proceedings.

Docket Number: OST–2005–20072.

Date Filed: January 7, 2005.

Due Date for Answers, Conforming Applications, or Motion to Modify Scope: January 28, 2005.

Description: Application of Skybus Airlines, LLC, requesting a certificate of Public convenience and necessity to engage in interstate scheduled air transportation of person, property, and mail between Port Columbus International Airport, and other points in the U.S.

Renee V. Wright,

Acting Program Manager, Federal Register Liaison.

[FR Doc. 05–1153 Filed 1–19–05; 8:45 am]

BILLING CODE 4910–62–P

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

[Docket No. FAA–1999–5836; Notice No. 05–01]

RIN 2120–AC38

Repair Stations

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of availability of AC; extension of comment period.

SUMMARY: This action extends the comment period for an Advisory Circular (AC) that was published on December 22, 2004. In that document, the FAA provided guidance to repair stations to establish their training programs. This extension is a result of requests from multiple commenters to extend the comment period for the AC.

DATES: Comments must be received on or before March 22, 2005.

ADDRESSES: Send all comments on AC 145–RSTP to Mr. Herbert E. Daniel, Aircraft Maintenance Division, General Aviation and Repair Station Branch (AFS–340), Federal Aviation Administration, 800 Independence Ave., SW., Washington, DC 20591; facsimile (202) 267–5115; e-mail *Herbert.E.Daniel@faa.gov.*

FOR FURTHER INFORMATION CONTACT: Mr. Herbert E. Daniel, AFS–340, at the address, facsimile, or e-mail listed above, or by telephone at (202) 267–3109; or Mr. Dan Bachelder, AFS–340, at the address or facsimile listed above or e-mail *Dan.Bachelder@faa.gov* or by telephone at (202) 267–7027.

SUPPLEMENTARY INFORMATION: *Comments Invited:* The proposed AC 145–RSTP is available on the FAA's Regulatory Guidance Library Web site at: *http://www.airweb.faa.gov/Regulatory_and_Guidance_Library/rgDAC.nsf/MainFrame?OpenFrameSet.* under the Open for Comment link. Interested persons are invited to comment on the AC by submitting written data, views, or suggestions, as they may desire. Please identify AC 145–RSTP, Repair Station Training Program, and submit comments, either hardcopy or electronic, to the appropriate address listed above.

Background

On December 22, 2004, the Federal Aviation Administration (FAA) issued the draft Advisory Circular AC 145–RSTP Repair Station Training Program (69 FR 76829, 12/22/2004). Comments to that document were to be received on or before January 21, 2005.

By letters dated January 3 and January 5, 2005, the Aircraft Electronics Association, Washington, DC and the National Air Transportation Association, Alexandria, VA requested that the FAA extend the comment period for AC 145–RSTP for 60 days. These and other industry associations stated that the original 30-day comment period did not allow repair stations adequate time to consider, review, and respond to the draft Advisory Circular while continuing to operate their businesses. All commenters requested an extension of the comment period by 60 days to provide sufficient time to evaluate this document before submitting comments to the FAA.

The FAA concurs with the requests for an extension of the comment period on AC 145–RSTP. The FAA agrees that additional time for comments will allow repair stations to review the document and formulate their comments while continuing to conduct their business. This will also allow commenters who may have anticipated an extension in the comment period to submit their comments by a certain date. Absent unusual circumstances, the FAA does nnt anticipate any further extension of the comment period for this AC.

Extension of Comment Period

Commenters have shown a substantive interest in the proposed AC and good cause for the extension. The FAA also has determined that extension of the comment period is consistent with the public interest, and that good cause exists for taking this action.

Accordingly, the comment period for AC 145–RSTP Repair Station Training Program is extended until March 22, 2005.

Issued in Washington, DC, January 14, 2005.

John M. Allen,

Acting Director, Flight Standards Service.

[FR Doc. 05–1130 Filed 1–14–05; 1:40 pm]

BILLING CODE 4910–13–P

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

Notice of Availability for the O'Hare Modernization Draft Environmental Impact Statement, Chicago O'Hare International Airport, Chicago, IL; Notice of Availability; and Notice of Public Hearing Dates, Times, and Locations

AGENCY: Federal Aviation Administration, DOT.

ACTION: Notice of availability of the O'Hare Modernization Draft Environmental Impact Statement (DEIS) and notice of intent to condnct pnblic hearings.

Location of Proposed Action: O'Hare International Airport, Des Plaines and DuPage River Watersheds, Cook and DuPage Counties, Chicago, Illinois (Sections 4, 5, 6, 7, 8, 9, 16, 17, and 18, Township 41 North, Range 10 East, 3rd P.M.). Please see the airport location maps showing the locations of the wetlands and Waters of the U.S. potentially affected by the Build Alternatives from the DEIS available on the FAA's Web site at *http://www.agl.faa.gov/OMP/DEIS.htm* under the title of Notice of Availability of the Draft EIS and Notice of Intent to Hold Pnblic Hearings.

SUMMARY: The Federal Aviation Administration (FAA) announces that the O'Hare Modernization Draft Environmental Impact Statement for Chicago O'Hare International Airport, Chicago, Illinois is available for public review and comment.

The DEIS identifies alternatives intended to address the projected needs of the Chicago region by reducing delays at O'Hare, thereby enhancing capacity of the National Airspace System, and ensuring that terminal facilities and supporting infrastructure can efficiently accommodate airport users. All of the development alternatives would result in wetland, property acquisition, air quality and noise impacts, as well as other impacts.

The FAA intends to host public hearings on the DEIS with the U.S. Army Corps of Engineers (USACE) and the Illinois Environmental Protection Agency (IEPA) Bureau of Water. The public hearings on the DEIS will be held on the following dates: Tuesday, February 22, 2005, at the Avalon Banquets, 1905 East Higgins Road, Elk Grove Village, Illinois 60007; Wednesday, February 23, 2005, at the Waterford Conference Center, 933 South Riverside Drive, Elmhurst, Illinois 60126; and Thursday, February 24, 2005, at the White Eagle, 6839 North Milwaukee Avenue, Niles, Illinois 60714. All three of these hearings will start at 2 p.m. (central standard time), and registration to participate in the hearings will conclude by 9 p.m. (central standard time). Repressentatives of FAA, USACE and IEPA will be available to provide information about the DEIS at an informational session held at the same time as the public hearings. Spanish language translators will be available at the hearings. The procedural rules governing the hearing are available from Michael W. MacMullen.

The comment period is open as of the date of this Notice of Intent and closes Wednesday, March 23, 2005. All comments are to be submitted to Michael W. MacMullen of the FAA, at the address shown below. The USACE and IEPA have requested that the FAA be the recipient of all comments regarding their actions. These comments must be sent to Michael W. MacMullen of the FAA at the address shown below, and the comments must be postmarked and email must be sent by no later than midnight, Wednesday, March 23, 2005.

The USACE is participating in the public hearings because implementation of any development alternatives, if selected, would require the USACE to approve issuance of a permit to fill wetlands under section 404 of the Clean Water Act Section. The IEPA is participating in the public hearings because implementation of any wetland development alternative, if selected, would also require IEPA to issue a Water Quality Certification under section 401 of the Clean Water Act.

SUPPLEMENTARY INFORMATION: The city of Chicago (City), Department of Aviation, as owner and operator of Chicago O'Hare International Airport (O'Hare or the Airport), PO Box 66142, Chicago, IL, 60666, proposes to modernize O'Hara to address existing and future capecity and delay problems. The City initiated master planning and the process of seeking FAA approval to amend its airport layout plan to depict the O'Hara Modernization Program (OMP). The City is also seeking the other necessary FAA approvals to implement the OMP and associated capital improvements and procedures. The FAA has prepared a DEIS addressing specific improvements at and adjacent to Chicago O'Hare International Airport, Chicago, Illilnois. FAA's DEIS presents an evaluation of the City's proposed project and reasonable alternatives. Under the City's concept, O'Hare's existing seven-runway configuration would be replaced by an eight-runway configuration, in which six runways would be oriented generally in the east/west direction, the existing northeast/southwest-oriented Runways 4L/22R and 4R/22L would remain, and Runways 14L/32R and 14R/32L would be closed.

Please see the airport location maps showing the locations of the wetlands and Waters of the U.S. kpotentially affected by the Build Alternatives from the DEIS available on the FAA's Web site at *http://www.agl.faa.gov/OMP/DEIS.htm* under the title Notice of Availability of the Draft EIS and Notice of Intent to Hold Public Hearings.