

REVISION OF CERTIFICATION STANDARDS FOR  
AVIATION MAINTENANCE PERSONNEL

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SUMMARY

Part 65, Subparts D and E, of the Federal Aviation Regulations (FAR) identify the certification requirements for aviation mechanics and aviation repairmen. The training, experience, privileges, ratings, recordkeeping, and currency requirements for aviation maintenance personnel are also addressed by these parts of the FAR. The recent emergence of the aging fleet problem and the introduction of new technologies, aircraft, engines, and aeronautical products has caused certain portions of these rules to become obsolete. Further, international political arrangements, such as bilateral airworthiness and maintenance agreements, International Civil Aviation Organization (ICAO) standards, certain international agreements for maintenance personnel training, and mechanic certificate reciprocity, have all impacted on the current regulatory policy.

INTRODUCTION

Part 65, the primary body of regulations directly relating to the certification of aviation maintenance technicians and repairmen, has not been revised for more than 23 years, and certain, related regulations specifying requirements for aviation maintenance technicians and repairmen have undergone only minor revisions since that time. These minor regulatory changes were accomplished to reflect and integrate more closely with changes in other, related regulations such as Parts 43, 91, 121, 135, 145, and 147 of the FAR. The potential for confusion in the interpretation of Part 65 and other, related regulations has become more evident during the increase in aviation activity driven by deregulation, recent national aviation safety inspection program inspections, and the current FAA regulatory review of Part 147--Aviation Maintenance Technician Schools, (AMTS). In addition, the emerging problems of the aging aircraft fleet have demonstrated a critical need for an extensive evaluation of the current aviation mechanic system of ratings, training, and experience. The ongoing introduction of new technologies and aircraft into the aviation system has highlighted the need for a new evaluation of the aviation mechanic certification process and the possibility of incorporating a revised system of requirements and privileges.

Under the existing rule, aviation mechanic applicants can use military experience to qualify for aviation mechanic certificates, but as military training has been becoming more specialized, fewer military applicants are qualifying for the broader privileges of the FAA aviation mechanic certificate, leaving an experience gap for applicants from the armed forces. Moreover, as the result of international agreements, aircraft maintenance has become a global activity, requiring reevaluation of the current system. The following discussion provides examples of problems considered in the previous section:

1. Inconsistent interpretations: In one FAA region, mechanics performing maintenance on certificated public aircraft maintained in accordance with the FAR were denied eligibility for an inspection authorization (IA). The Aircraft Maintenance Division, AFS-300, advised the region that this type of aircraft maintenance experience did, in fact, meet the requirements of this rule for IA eligibility. Had this issue not been resolved in a timely manner, a worldwide aircraft maintenance program for the United States Air Force would have been seriously disrupted.

2. Aging aircraft fleet problems: During the investigation of several recent aircraft accidents and incidents resulting from structural failure, it became evident that more training and possibly a new certification procedure was required to train and regulate persons engaged in nondestructive aircraft structural inspection. Further, since no single nationally accepted certification standard for this type of discipline now exists, there is no single standard for the FAA to use in evaluating the certification or training of these persons.

3. New technology introduction: During recent aviation industry/FAA maintenance panel reviews, it became evident from the discussions that few maintenance personnel have the technical skills or the industry training required to maintain and inspect composite aircraft structures properly. The same servicing difficulties, according to the aviation industry, will also apply to certain avionics, electromechanical systems, computer-based built-in-test equipment, and many solid-state electronic aircraft systems. No specific FAA certification exists for mechanics engaged in maintaining these complex systems.

4. Equipment type, size, and complexity: Many airline and complex aircraft operators have expressed an interest in FAA certification of mechanics for specific models or types of aircraft, particularly for large and/or complex types such as the Boeing 747 or the Lockheed L1011. Many of the inspection criteria necessary to perform maintenance on these type of aircraft are, in fact, specifically related to the particular aircraft involved. Helicopter operators have also expressed concerns that many of

the maintenance operations that are specific to helicopters are of such a complex nature that a completely different FAA rating is required for helicopter maintenance personnel.

5. International/bilateral agreements: Both the United States/Canadian bilateral maintenance agreement and ICAO will be affected by international events, including the sweeping airworthiness rule changes currently under way in Canada and the recommendations for changing ICAO aircraft mechanic standards as proposed by a recent ICAO Aircraft Maintenance Engineer Licensing Panel. Moreover, the increasing international character of aircraft leasing, parts exchanging, and FAA-certificated foreign repair facilities will and are impacting the current status of FAA-certificated aviation mechanics and repairmen.

The FAA also participated in the recent ICAO Aircraft Maintenance Engineer Licensing Panel. The panel discussed the member state mechanic licensing differences and made recommendations for changes in ICAO certification of maintenance personnel worldwide. The major ICAO issues impacting the certification of FAA maintenance personnel involve the degree of specialization of FAA aviation mechanics and the standards for personnel approving aircraft and components for return to service. In some cases, the licensing differences between ICAO standards and FAA-certificated maintenance personnel could affect the acceptance of American aviation products abroad.

The FAA conducted a series of FAA/industry listening sessions for Part 147 AMTS, the Air Transport Association of America, airline representatives, repair stations, mechanic organizations, and FAA personnel. These sessions were primarily concerned with the regulatory review of Part 147 leading to a notice of proposed rulemaking (NPRM), but the current and future status of Parts 43, 65, and 145 of the FAR were examined as well. The listening sessions incorporated an FAA survey that indicated that there was a strong need to examine the certification standards and privileges granted to aviation mechanics under Part 65 since a number of issues related to Part 147 also impacted Part 65.

AFS-300 recently completed the draft NPRM for Part 147 AMTS. The NPRM addresses the AMTS' administrative and curriculum requirements for the training of aviation mechanics. However, while the NPRM is expected to produce a better trained aviation maintenance technician, there has been no change in the current system of ratings, so the graduate aviation mechanic will still be limited to the current airframe and powerplant ratings specified in the existing Part 65.

On a related issue, in order to clarify and broaden the Part 65 requirements for an IA, AFS-300 is developing a notice to explicitly provide that a person performing maintenance on public aircraft in accordance with the FAR will meet the experience requirements for an IA.

## RESULTS AND DISCUSSION

The development of background information to conduct the regulatory review of Part 65 will require a comprehensive job task analysis (JTA) of what an aircraft maintenance technician does, how often a particular task is done, how it is accomplished, and what types of knowledge, skills, and abilities (KSA) are required to accomplish the task. Further, the JTA will determine how many additional new task elements a mechanic must be able to accomplish since the last maintenance technician JTA's were developed over 2 decades ago. The original JTA study, called the Allen Study (after the original investigator, Dr. David Allen), determined that there are over 125 separate task elements a technician was required to perform in 1968. Since that time, obviously, many new tasks have been required of aircraft maintenance technicians. Many of the new task requirements are driven by the newly emerging technologies of digital electronics, fly by wire, composite structures, fan engines, and so on.

The well publicized problems of the aging fleet have also served to point up some gaps in the maintenance sector. Nondestructive inspection and corrosion control programs are just two of a number of new or rapidly changing maintenance specialties that are required to maintain the aging fleet. Many other issues that were never part of the original regulation may impact the forthcoming rule evaluation. Such parameters as proper work station lighting, temperature, maintenance technician color vision, fatigue and duty times may all impact the development of the JTA.

Some of the JTA issues that will be considered include the aging aircraft fleet problems. During the investigation of several recent aircraft accidents and incidents resulting from structural failure, it became evident that more training and possibly a new certification procedure was required to train and/or regulate persons engaged in nondestructive aircraft structural inspection. Further, since no nationally accepted certification standard for this type of discipline now exists, the FAA cannot properly evaluate the certification or training of these persons.

## CONCLUDING REMARKS

Based on the need to appraise these factors, the FAA is of the opinion that the existing Part 65 and some portions of its companion regulations are in need of a complete regulatory evaluation. It is important to note, however, that this regulation is quite global in scope and depending on the extent of any modifications that might be proposed, some changes could be required in a number of other regulations. In order

to ensure that any regulatory project would encompass enough material to provide a thorough review, our proposed regulatory evaluation will include, but not be limited to:

- A. An analytical evaluation of the aircraft mechanic's occupation, to include KSA's.
- B. Training requirements.
- C. Certification standards.
- D. Rating system.
- E. Currency requirements.
- F. Limitations.
- G. Experience requirements.
- H. Inspection authorization requirements and limitations.
- I. AMTS integration.
- J. Maintenance standards.
- K. Impact on related FAR sections.
- L. Impact on bilateral international agreements and ICAO standards.

