

Federal Aviation Administration
Aviation Rulemaking Advisory Committee

Executive Committee
Aviation Maintenance Technician Schools Working Group
Task 1 – 14 CFR Parts 147, Appendices B, C, and D, Part 65

200(a) under the Act¹⁶ where such definition of short sales may be found. Further, Rule 4.5(f) exempts OTP Holders and OTP Firms from reporting short positions if such a position resulted from a sale specified in clause (9) of paragraph (e) of Rule 10a-1 under the Act. Since clause (9) has been removed from Rule 10a-1(e) under the Act, the exemption to OTP Holders and OTP Firms is no longer applicable, and shall be removed as a reference with NYSE Arca Rule 4.5(f).

Additionally, the Exchange proposes to increase the frequency of periodic reports that OTP Holders and OTP Firms must submit to the Exchange concerning short positions in securities, as prescribed by NYSE Arca Rule 4.5(f), from monthly to twice per month. This increase in the frequency of such reports is consistent with similar changes recently approved by the Commission for the NASD, NYSE, and the Amex.¹⁷

The Exchange shall implement the new periodic reporting requirements for short positions of OTP Holders and OTP Firms in September 2007 to be consistent with the increased reporting requirements of other self-regulatory organizations.¹⁸

2. Statutory Basis

The Exchange believes the proposed rule changes are consistent with Section 6(b) of the Act¹⁹ in general and further the objectives of Section 6(b)(5)²⁰ in particular in that they are designed to prevent fraudulent and manipulative acts and practices, to promote just and equitable principles of trade, to foster cooperation and coordination with persons engaged in facilitating transactions in securities, and to remove impediments to and perfect the mechanism of a free and open market and a national market system.

B. Self-Regulatory Organization's Statement on Burden on Competition

The Exchange does not believe that the proposed rule changes will impose any burden on competition that is not necessary or appropriate in furtherance of the purposes of the Act.

C. Self-Regulatory Organization's Statement on Comments on the Proposed Rule Changes Received From Members, Participants or Others

Written comments on the proposed rule changes were neither solicited nor received.

III. Date of Effectiveness of the Proposed Rule Changes and Timing for Commission Action

Because the foregoing proposed rule changes do not (i) Significantly affect the protection of investors or the public interest, (ii) impose any significant burden on competition, or (iii) become operative within 30 days after the date of the filing, they have become effective upon filing pursuant to Section 19(b)(3)(A) of the Act²¹ and Rule 19b-4(f)(6)²² thereunder.

At any time within 60 days of the filing of the proposed rule changes, the Commission may summarily abrogate such rule changes if it appears to the Commission that such action is necessary or appropriate in the public interest, for the protection of investors, or otherwise in furtherance of the purposes of the Act.²³

IV. Solicitation of Comments

Interested persons are invited to submit written data, views, and arguments concerning the foregoing, including whether the proposed rule changes are consistent with the Act. Comments may be submitted by any of the following methods:

Electronic Comments

- Use the Commission's Internet comment form (<http://www.sec.gov/rules/sro.shtml>); or
- Send an e-mail to rule-comments@sec.gov. Please include File No. SR-NYSEArca-2007-48 or SR-NYSEArca-2007-49 on the subject line.

Paper Comments

- Send paper comments in triplicate to Nancy M. Morris, Secretary, Securities and Exchange Commission, 100 F Street NE., Washington, DC 20549-1090.

All submissions should refer to File No. SR-NYSEArca-2007-48 or SR-NYSEArca-2007-49. This file number should be included on the subject line if e-mail is used. To help the Commission process and review your comments more efficiently, please use only one method. The Commission will post all comments on the Commission's Internet Web site (<http://www.sec.gov/>

[rules/sro.shtml](http://www.sec.gov/rules/sro.shtml)). Copies of the submission, all subsequent amendments, all written statements with respect to the proposed rule changes that are filed with the Commission, and all written communications relating to the proposed rule changes between the Commission and any person, other than those that may be withheld from the public in accordance with the provisions of 5 U.S.C. 552, will be available for inspection and copying in the Commission's Public Reference Room. Copies of such filing also will be available for inspection and copying at the principal offices of the Exchange. All comments received will be posted without change; the Commission does not edit personal identifying information from submissions. You should submit only information that you wish to make available publicly. All submissions should refer to File No. SR-NYSEArca-2007-48 or SR-NYSEArca-2007-49 and should be submitted on or before July 3, 2007.

For the Commission, by the Division of Market Regulation, pursuant to delegated authority.²⁴

Florence E. Harmon,

Deputy Secretary.

[FR Doc. E7-11266 Filed 6-11-07; 8:45 am]

BILLING CODE 8010-01-P

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

Aviation Rulemaking Advisory Committee—New Task

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of new task assignment for the Aviation Rulemaking Advisory Committee (ARAC).

SUMMARY: The FAA assigned the Aviation Rulemaking Advisory Committee a new task to: Review and recommend revisions to certain requirements for operation of aviation maintenance technician schools. This notice is to inform the public of this ARAC activity.

FOR FURTHER INFORMATION CONTACT: Ferrin Moore, Aircraft Maintenance Division, AFS-301, Federal Aviation Administration, 800 Independence Avenue, SW., Washington, DC 20591; telephone (202) 267-3809, e-mail ferrin.c.moore@faa.gov.

SUPPLEMENTARY INFORMATION:

²⁴ 17 CFR 200.30-3(a)(12).

¹⁶ See 17 CFR 240.200(a).

¹⁷ See Securities Exchange Act Release No. 34-55406 (March 6, 2007), 72 FR 11071 (March 12, 2007) (SR-NASD-2006-131; SR-NYSE-2006-111; SR-Amex-2007-05).

¹⁸ See supra note 10.

¹⁹ 15 U.S.C. 78f(b).

²⁰ 15 U.S.C. 78f(b)(5).

²¹ 15 U.S.C. 78s(b)(3)(A).

²² 17 CFR 19b-4(f)(6).

²³ See 15 U.S.C. 78s(b)(3)(C).

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. This includes obtaining advice and recommendations on 14 CFR Part 147—Aviation Maintenance Technician Schools.

In order to develop such advice and recommendations, the ARAC may choose to establish working groups to which specific tasks are assigned. Such working groups are comprised of experts from those organizations having an interest in the assigned tasks. A working group member need not be representative of the full committee. The Aviation Maintenance Technician Schools Curriculum and Operating Requirements Working Group is a new working group that is being established by the ARAC.

A review of General Accounting Office Report GAO-03-317, dated March 2003, indicates a need to update the curriculum requirements for aviation mechanics. Currently, FAA certificated Aviation Maintenance Technician Schools must offer a curriculum that addresses each of the subject areas described in 14 CFR, Part 147, Appendices B, C, and D. Each subject area must be taught to the level prescribed, and as defined in 14 CFR, Part 147, Appendix A. In addition, § 147.21(b) of Part 147 mandates the number of teaching hours devoted to each group of subject areas (General, Airframe, and Powerplant). These hours are: General—400, Airframe—750, Powerplant—750. A total of 1,900 hours is needed for a combined Airframe and Powerplant curriculum. In addition, the FAA has issued exemptions to aviation maintenance technician schools enabling the schools to substitute experience required in § 65.77 for subject hours. Section 65.75(a) prescribes, in pertinent part, that applicants must pass a written test after meeting the experience requirements of § 65.77. Section 65.77 also requires applicants to complete training and present an appropriate graduation certificate or certificate of completion from a certificated aviation maintenance technician school before being eligible to take the written test for a certificate or rating.

Task

(1) The working group is tasked to evaluate §§ 147.21 and 147.31 and appendices A through D of 14 CFR Part 147, and make recommendations to ARAC that would enable the AMT

schools to meet the needs of their clientele more effectively. The working group is tasked to recommend revisions to 14 CFR Part 147 to contain some basic, consistent, requirements. The objective is to provide an easier means to keep current training curricula, training criteria, and hours of training, while remaining within the minimum requirements outlined in §§ 147.21 and 147.31, and appendices A through D of 14 CFR Part 147.

As part of its task, the working group will review available information about general curriculum requirements and specific operating rules for attendance and enrollment, tests, and credit for prior instruction or experience that could be applicable to meeting the requirements of §§ 147.21 and 147.31 and appendices A through D of 14 CFR Part 147.

(2) In addition, the working group is tasked to evaluate and incorporate, as appropriate, revisions granted by exemption to §§ 65.75(a) and 65.77 of 14 CFR Part 65. The working group should consider the appropriateness of modifying § 65.75(a) to allow students enrolled in Part 147 Aviation Maintenance Technician Schools to take the Aviation Mechanic written tests after completing the corresponding portion of the curriculum, but before meeting the experience requirements of § 65.77. Section 65.77 prescribes, in pertinent part, that each applicant for a mechanic certificate or rating must present either an appropriate graduation certificate or a certificate of completion from a certificated aviation maintenance technician school or documented evidence, satisfactory to the Administrator before certification. The FAA has issued grants of exemption to allow students to take equivalency tests for the aviation maintenance airframe and aviation maintenance powerplant ratings certification. The FAA agreed with the petitioners that testing immediately after completing a course is academically sound. ARAC will make recommendations to the FAA, as appropriate, for revising these requirements and associated guidance material.

Schedule: Required completion is no later than 9 months after the first working group meeting or June 30, 2008, whichever occurs first.

ARAC Acceptance of Task

ARAC accepted the task and assigned the task to the Aviation Maintenance Technician Schools Curriculum and Operating Requirements Working Group, which is being formed and will be managed by the Executive Committee of ARAC. The working group serves as

staff to ARAC and assists in the analysis of assigned tasks. ARAC must review and approve the working group's recommendations. If ARAC accepts the working group's recommendations, it will forward them to the FAA. The FAA will submit the recommendations it receives to the agency's Rulemaking Management Council to address the availability of resources and priority within its rulemaking program.

Working Group Activity

The Aviation Maintenance Technician Schools Curriculum and Operating Requirements Working Group must comply with the procedures adopted by ARAC. As part of the procedures, the working group must:

1. Recommend a work plan for completion of the task, including the rationale supporting such a plan for consideration at the next Executive Committee meeting of ARAC held following publication of this notice.
2. Give a detailed conceptual presentation of the proposed recommendations before proceeding with the work stated in item 3 below.
3. If proposed rule changes are recommended, provide supporting economic and other required analyses. If new or revised requirements or compliance methods are not recommended, a draft report stating the rationale for not making such recommendations; and
4. Provide a status report at each Executive Committee meeting of the ARAC.

Participation in the Working Group

The Aviation Maintenance Technician Schools Curriculum and Operating Requirements Working Group will be composed of technical experts having an interest in the assigned task. A working group member need not be a representative or a member of the Aviation Rulemaking Advisory Committee. Membership of the working group will have broad experience in developing curriculum and operating requirements for maintenance technician schools. The working group may organize, oversee, guide and monitor activities and progress of subject matter experts as needed to accomplish the task assigned. The working group chair and the FAA representative will select the membership for the working group, with concurrence of the Executive Committee of ARAC and the FAA. Subject matter experts will address individual issues and will be invited to present their views and positions for consideration by the working group. This allows for an optimum working group size with

appropriate representation to achieve informed consensus and foster successful completion of the task. This may also allow the participation of a large number of cross-functional subject matter experts. The working group members should have the appropriate subject matter knowledge, broad maintenance curriculum development experience and responsibility within their organization and authority to represent their respective part of the aviation community.

If you have expertise in the subject matter and wish to become a member of the working group, write to the person listed under the caption **FOR FURTHER INFORMATION CONTACT** expressing that desire. Describe your interest in the task and state the expertise you would bring to the working group. We must receive all requests by July 17, 2007. The Executive Committee and the FAA will review the requests and advise you whether or not your request is approved.

If you are chosen for membership on the working group, you must represent your aviation community segment and actively participate in the working group by attending all meetings, and providing written comments when requested to do so. You must devote the resources necessary to support the working group in meeting any assigned deadlines. You must keep your management chain and those you may represent advised of working group activities and decisions to ensure that the proposed technical solutions don't conflict with your sponsoring organization's position when the subject is presented to the Executive Committee for approval. Once the working group has begun deliberations, members will not be added or substituted without the approval of the Executive Committee, FAA and the working group chair.

The Secretary of Transportation determined that the formation 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.

Meetings of the Executive Committee of ARAC are open to the public. Meetings of the Aviation Maintenance Technician Schools Curriculum and Operating Requirements Working Group will not be open to the public, except to the extent individuals with an interest and expertise are selected to participate. The FAA will make no public announcement of working group meetings.

Issued in Washington, DC, on June 1, 2007.

Pamela Hamilton-Powell,
Executive Director, Aviation Rulemaking
Advisory Committee.

[FR Doc. E7-11260 Filed 6-11-07; 8:45 am]

BILLING CODE 4910-13-P

DEPARTMENT OF TRANSPORTATION

National Highway Traffic Safety Administration

[Docket No. NHTSA-2007-28430, Notice 1]

Mosler Automotive; Receipt of Application for a Temporary Exemption From the Advanced Air Bag Requirements of FMVSS No. 208

AGENCY: National Highway Traffic Safety Administration (NHTSA), Department of Transportation (DOT).

ACTION: Notice of receipt of petition for temporary exemption from provisions of Federal Motor Vehicle Safety Standard (FMVSS) No. 208, *Occupant Crash Protection*.

SUMMARY: In accordance with the procedures in 49 CFR Part 555, Mosler Automotive has petitioned the agency for a temporary exemption from certain advanced air bag requirements of FMVSS No. 208. The basis for the application is that compliance would cause substantial economic hardship to a manufacturer that has tried in good faith to comply with the standard.¹

This notice of receipt of an application for temporary exemption is published in accordance with the statutory provisions of 49 U.S.C. 30113(b)(2). NHTSA has made no judgment on the merits of the application.

DATES: You should submit your comments not later than July 12, 2007.

FOR FURTHER INFORMATION CONTACT: Mr. Ed Glancy or Ms. Rebecca Schade, Office of the Chief Counsel, NCC-112, National Highway Traffic Safety Administration, 1200 New Jersey Avenue, SE., West Building 4th Floor, Room W41-326, Washington, DC 20590. Telephone: (202) 366-2992; Fax: (202) 366-3820.

Comments: We invite you to submit comments on the application described above. You may submit comments identified by docket number at the heading of this notice by any of the following methods:

- **Web Site:** <http://dms.dot.gov>. Follow the instructions for submitting

¹To view the application, go to: <http://dms.dot.gov/search/searchFormSimple.cfm> and enter the docket number set forth in the heading of this document.

comments on the DOT electronic docket site by clicking on "Help and Information" or "Help/Info."

- **Fax:** 1-202-493-2251.
- **Mail:** U.S. Department of Transportation, Docket Operations, M-30, Room W12-140, 1200 New Jersey Avenue, SE., Washington, DC 20590.
- **Hand Delivery:** 1200 New Jersey Avenue, SE., West Building Ground Floor, Room W12-140, Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.
- **Federal eRulemaking Portal:** Go to <http://www.regulations.gov>. Follow the online instructions for submitting comments.

Instructions: All submissions must include the agency name and docket number or Regulatory Identification Number (RIN) for this rulemaking. For detailed instructions on submitting comments and additional information on the rulemaking process, see the Public Participation heading of the **SUPPLEMENTARY INFORMATION** section of this document. Note that all comments received will be posted without change to <http://dms.dot.gov>, including any personal information provided. Please see the Privacy Act discussion under the Public Participation heading.

Docket: For access to the docket to read background documents or comments received, go to <http://dms.dot.gov> at any time or to 1200 New Jersey Avenue, SE., West Building Ground Floor, Room W12-140, Washington, DC 20590, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. Telephone: (202) 366-9826.

Privacy Act: Anyone is able to search the electronic form of all comments received into any of our dockets by the name of the individual submitting the comment (or signing the comment, if submitted on behalf of an association, business, labor union, etc.). You may review DOT's complete Privacy Act Statement in the **Federal Register** published on April 11, 2000 (Volume 65, Number 70; Pages 19477-78) or you may visit <http://dms.dot.gov>.

We shall consider all comments received before the close of business on the comment closing date indicated above. To the extent possible, we shall also consider comments filed after the closing date.

I. Advanced Air Bag Requirements and Small Volume Manufacturers

In 2000, NHTSA upgraded the requirements for air bags in passenger cars and light trucks, requiring what are commonly known as "advanced air

Pratt & Whitney
400 Main Street
East Hartford, CT 06108



Pratt & Whitney
A United Technologies Company

January 8, 2009

Federal Aviation Administration 800 Independence Avenue, SW Washington, D.C. 20591

Attention: Pam Hamilton, Director, Office of Rulemaking
ARAC Recommendation, Part 147 Aviation Maintenance
Subject: Technician
Schools Curriculum and Operating Requirements
ARAC Tasking, Federal Register (Volume 72, number 112, June
Reference: 12,
2007)

Dear Pam,

The ARAC Executive Committee and the Part 147 Aviation Maintenance Technician Schools Curriculum and Operating Requirements Working Group are pleased to submit the attached report as an ARAC recommendation. This document addresses the reference tasking in which ARAC was asked to review the existing Part 147 requirements for aviation maintenance training schools and provide recommendations for updating the requirements. The ARAC Executive Committee has approved this report for transmittal as an ARAC recommendation to the FAA. There was one comment from an ARAC member which is provided below for FAA consideration.

“Training for AFS Inspectors involved in training centers and programs should be a comprehensive course for all disciplines with breakout or follow on training for each of the various specialties (AMT, Pilot, Dispatcher, etc.)”

I would like to express our thanks to all of the Working Group members for their dedication in completing this very challenging task.

Sincerely yours,

A handwritten signature in black ink that reads "Craig R. Bolt". The signature is written in a cursive, slightly slanted style.

ARAC Chair

Copy: Gerri Robinson- FAA, Office of Rulemaking ARAC EXCOM
Dr Raymond Thompson – Part 147 WG Chair
Ferrin Moore – FAA Representative to Part 147 WG



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

MAR 3 2009

Mr. Craig R. Bolt
Chair, Executive Committee for the
Aviation Rulemaking Advisory Committee
Pratt & Whitney
400 Main Street, Mail Stop 162-14
East Hartford, CT 06108

Dear Mr. Bolt:

This is in reply to your letter dated January 8, 2009. That letter sent the recommendations from the Aviation Rulemaking Advisory Committee (ARAC) Executive Committee (EXCOM) of the Part 147 Aviation Maintenance Technician Schools Curriculum and Operating Requirements Working Group. I understand the EXCOM approved, without dissent, the Working Group's recommendation following the December 12, 2008, meeting.

I wish to thank the Part 147 Aviation Maintenance Technician Schools Curriculum and Operating Requirements Working Group and EXCOM members who provided resources to develop, review, and approve the recommendation. The report will be placed on the ARAC website at: http://www.faa.gov/regulations_policies/rulemaking/committees/ arac/.

We consider your submittal of the Part 147 Aviation Maintenance Technician Schools Curriculum and Operating Requirements Working Group report as completion of the original tasking issued on June 1, 2007 (72 FR 32390, June 12, 2007). We will keep the committee apprised of the agency's efforts on this recommendation through the Federal Aviation Administration report at future EXCOM meetings.

Sincerely,

Pamela Hamilton-Powell
Director, Office of Rulemaking

Part 147 Aviation Maintenance Technician Schools Curriculum and
Operating Requirements Working Group

Final Report

For Submission to the

Aviation Rule Advisory Committee – Executive Committee

December 5, 2008

This report is confidential to the working group and may only be distributed to the FAA, ARAC Executive Committee, Working Group, and other persons approved by the ARAC Excom.

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Message From The Chair

Over the past 18 months, a group of dedicated aviation professionals have labored on behalf of aviation maintenance training schools. Their hard work and commitment to bettering AMTS training and the overall process by which schools are governed is displayed in the 11 recommendations being submitted. Discussion was vigorous and not without contention at times. In all cases, the group was able to find common ground and move the process forward.

I have been proud to work with my colleagues on this project. All our working group members have my thanks and sincere appreciation for their efforts. Each of them has invested considerable time and expense for the betterment of aviation maintenance education.

In addition, working with my FAA colleagues has been a pleasure. Many thanks to Ferrin Moore (co-chair) and Monalisa Tindall. I wish to make special commendation to Ed Hall, whose insight and reason have proved invaluable.

I wish to thank the Aviation Technician and Education Council for providing input from their unique vantage point as the primary organization representing AMTSs. Their willingness to participate, advise, and take leadership in some of the processes being recommended is appreciated.

Finally, I know I speak for the working group when I offer special thanks to Jim Ballough of the Federal Aviation Administration. His vision and drive were key factors to this work being commissioned.

Raymond E. Thompson
Chair, ARAC Part 147 Working Group

I. Executive Summary

The CFR Part 147 Working Group was established in June 2007 to review the training curriculum and governance processes for aviation maintenance training schools approved by the Federal Aviation Administration. Over the course of 18 months, the working group has developed a set of 11 recommendations for consideration by the Aviation Rule Executive Committee.

These recommendations are as follows:

Recommendation 1 – Creation of a Part 147 Training Specification and resulting rule change to 147.5(b)

- Creation of a training specification for easier operations and updating of dynamic areas such as curriculum. The training specification also contains the curriculum subject area topics. This expands on the existing reference to operations specifications in CFR Part 147.5.

Recommendation 2 - Modify Appendices A – D

- The curriculum subjects are updated and are maintained in the rule. A new method of dual teaching levels using knowledge and skill is recommended.

Recommendation 3 –Creation of the Maintenance Training Review Board

- A review board is created that performs a biennial review of the AMTS curriculum and recommends changes. The board will be led by the Aviation Technician Education Council.

Recommendation 4 – Changes to CFR Part 147.21(b) and 147.21(c)

- The minimum training hours specified in Part 147.21(b) are maintained at 1900 (combined airframe and powerplant) but are redistributed. A new distribution of 450 hours general, 800 airframe, and 650 powerplant are recommended. Part 147.21(c) adds reference to training specification.

Recommendation 5 – Include Part 147 in Draft Advisory Circular “Alternatives to Classroom Training” (Dated: 9/27/05) and Finalize

- Improvements in technology require AMTSs to be allowed to use alternative delivery methods where appropriate. The draft AC needs to include Part 147 and be finalized.

Recommendation 6 - Changes to CFR Part 147.31

- Clarification of terms, definitions, and processes are made to improved consistency in interpretation.

Recommendation 7 – Formalizing the Exemption Process

- The FAA routinely grants exemptions to allow student who have completed the General curriculum to take the written examination prior to completion of the airframe and/or powerplant curricula. New language in Part 147.35 eliminates the need for granting future exemptions.

Recommendation 8 – Creation of a Specific School Surveillance Training Course for Principle Inspectors

- Currently there is no course available for inspectors with AMTS surveillance responsibilities. A dedicated course will improve consistency of interpretation and enforcement.

Recommendation 9 – Review and Update of Advisory Circular AC 147.3A

Recommendation 10 – Review and Update of the Practical Test Standards and Knowledge Tests

Recommendation 11 – Review and Update of 8900.1 Guidance

- While updating of documents related to rule such as advisory circulars and practical test standards is mandated, time limits for revision are provided.

The working group recommends a implantation period of three years from approval. AMTSs would be required to have implemented all required changes within three years. The Maintenance Training Review Board would be created and begin its process immediately after the implementation date.

Improving the quality of AMTS graduates is achieved with these proposals. Improvements in curriculum will better align graduates with industry needs. The review process will ensure that the curriculum continues to evolve and maintains closer alignment with industry. Changes to processes, definitions, and creation of a dedicated inspector training course will improve the quality and consistency of oversight and enforcement.

Aviation maintenance professionals are a vital element in maintaining the prominence of the United States in the global aviation and aerospace market. Quality maintenance begins with quality training. The recommendations offered will ensure that the foundational training provided meets the needs of our industry.

II. Background

FAA certificated Aviation Maintenance Technician Schools must offer a curriculum that addresses each of the subject areas described in 14 CFR, Part 147, Appendices B, C, and D. Each subject area must be taught to the level prescribed, and as defined in 14 CFR, Part 147, Appendix A. In addition, § 147.21(b) of Part 147 mandates the number of teaching hours devoted to each group of subject areas (General, Airframe, and Powerplant). These hours are: General—400, Airframe—750, Powerplant—750. A total of 1,900 hours is needed for a combined Airframe and Powerplant curriculum.

In addition, the FAA has issued exemptions to AMTSs enabling schools to substitute experience required in § 65.77 for subject hours. Section 65.75(a) prescribes, in pertinent part, that applicants must pass a written test after meeting the experience requirements of § 65.77. Section 65.77 also requires applicants to complete training and present an appropriate graduation certificate or certificate of completion from a certificated AMTS before being eligible to take the written test for a certificate or rating.

A. Statement of the Problem

The CFR Part 147 training curriculum was approved in 1970. Minor revision of the curriculum took place in 1992. With the curriculum subjects and topics embedded with Part 147, curriculum change (i.e. rule change) is difficult and has occurred once in the 38 years since initial rule implementation. The Part 147 curriculum has not evolved to match fundamental changes in aircraft technology. Although all curricula have some degree of lag behind current processes, the maintenance training curriculum is now experiencing a serious mismatch, with what is currently considered to be basic, accepted technology.

Problems associated with gaps between rule and advancing technology were expressed to the U.S. House of Representatives Subcommittee on Aviation in reports titled

New FAA Approach Needed to Meet Challenges of Advanced Technology (GAO/RCED-93-155), *Summary Of Subject Matter For Aviation Subcommittee Hearing On Advanced Aircraft Technology And Federal Aviation Administration Aircraft Certification*, October 20, 1993. Further expressions were made in the *Development Of Standards For The Delivery Of Aviation Maintenance Technician Certification Using Distance Learning Technology* (Kroes, White, & Watson, 2001) and *Optimization Of Aviation Maintenance Personnel Training And Certification* (Goldsby & Soulis, 2002),

These reports were followed by the GAO report titled *Aviation Safety-FAA Needs To Update The Curriculum And Certification Requirements For Aviation Mechanics* (GAO 03-317, March 2003). The March 2003 GAO report details a serious and growing gap between the minimum training curriculum as required by Part 147 and the current and forecast levels of aircraft technology.

Placement of detailed curriculum topics in the rule is a barrier to routine curriculum review and modification. The curriculum itself requires updating to more closely align with the minimum knowledge an entry-level maintenance technician as required by industry.

B. History

Aircraft technology is constantly evolving. The need for improved performance, lower manufacturing and operating costs, reduction in emissions and waste, have led manufacturers to make major improvements to technology. Widespread usage of advanced materials, advanced electronic operating systems, computers, high bypass propulsion systems, and the 'smart' aircraft did not exist in civilian aviation in 1970, when the primary training curriculum used today was created. Since minor curriculum changes in 1992, the

industry has produced aircraft such as the Boeing 777 and Airbus A380. Similar advancements in technology have occurred in all levels of aircraft in general and business aviation. Rapid advances in rotorcraft technology, unmanned aerial vehicles, glass panel LSAs and the spread of electronics into every aspect of aircraft are not addressed, even at a minimum level, in the current minimum required curriculum. Aircraft maintenance practices themselves have changed with the growth of third party providers and a growing awareness of human factors.

The 1992 Part 147 revision included the following new curriculum related items: 1) allowed the use of computers in training; 2) moderate inclusion of composite materials; 3) unducted fans; and, 4) auxiliary power units.

C. National Transportation Safety Board (NTSB) Recommendations

None

D. Reference Material

8900 Draft Volume 2: Air Operator and Air Agency Certification and Application Process, Section 12: Certification of a Part 147 Aviation Maintenance Technician Schools.

8900.1 Volume 8: General Technical Functions; Chapter 2 technical Groups, Boards, And National Resources; Section 1 Background Information.

8900.1 Volume 8: General Technical Functions; Chapter 2: Technical Groups, Boards, And National Resources; Section 3 Flight Operations Evaluation Boards.

8900.1 Volume 3 General Technical Administration; Chapter 18 Operations Specifications; Section 6 Parts D And E—Maintenance Mspecs/Opspecs.

8900.1 Volume 3: General Technical Administration; Chapter 18: Operations Specifications; Section 3: Part A Operations Specifications—General.

8900.1 Volume 3: General Technical Administration; Chapter 18: Operations Specifications; Section 6 Parts D And E—Maintenance Mspecs/Opspecs.

AC 147-3A Certification and Operation of Aviation Maintenance Technician Schools.

Aviation Safety-FAA Needs To Update The Curriculum And Certification Requirements For Aviation Mechanics (GAO 03-317, March 2003).

Development Of Standards For The Delivery Of Aviation Maintenance Technician Certification Using Distance Learning Technology (Kroes, White, & Watson, 2001)

Draft Advisory Circular: Alternatives to Classroom Training (AFS-210).

FAA-S-8081-26: Aviation Mechanic General Practical Test Standards.

FAA-S-8081-27: Aviation Mechanic Airframe Practical Test Standards.

FAA-S-8081-28: Aviation Mechanic Powerplant Practical Test Standards.

FOEB Meeting Agenda: 27-27, June 2007.

ICAO Convention on International Civil Aviation: Document 7300/9.

New FAA Approach Needed to Meet Challenges of Advanced Technology (GAO/RCED-93-155).

Optimization Of Aviation Maintenance Personnel Training And Certification (Goldsby & Soulis, 2002).

Summary Of Subject Matter For Aviation Subcommittee Hearing On Advanced Aircraft Technology And Federal Aviation Administration Aircraft Certification, October 20, 1993.

Title 14 Code of Federal Regulations Part 65: Certification of Airmen Other Than Flight Crewmembers.

Title 14 Code of Federal Regulations Part 142: Training Centers.

Title 14 Code of Federal Regulations Part 147: Aviation Maintenance Technician Schools.

III. General Discussion

The Aviation Maintenance Technician Schools Curriculum and Operating Requirements Working Group (known hereafter as the Working Group) was established by the Aviation Rule Advisory Committee via the Federal Register / Vol. 72, No. 112 / Tuesday, June 12, 2007. The initial working group was selected from persons submitting notification of interest per the tasking announcement in the Federal Register (Volume 72, number 112, Tuesday, June 12, 2007). Additional persons were invited to participate to ensure sufficient diversity and number.

The membership of the Part 147 Working Group is displayed in Table 1. Working co-chairs are Dr. Raymond E. Thompson and Mr. Ferrin Moore. The chairs wish to extend their sincere thanks for the time and dedication each member has contributed to the process.

Table 1 – Part 147 Working Group Members

Last	First	Organization
Breeding	JR	Community College of the Air Force, Maxwell AFB
Compitello	Peter	Delta Air Lines
Cotti	Eli	NBAA
Courtney	Brenda	FAA
Culver	Larry	FAA. AFS-630
Curtis	Floyd	NCATT
Dinkins	Barbara	FAA
Filippone	Don	AirTran Airways
Finnegan	Brian	Professional Aviation Maintenance Association
Giles	Carol	FAA

Goertzen	Ryan	Air Wisconsin Airlines Corporation
Goglia	John	Prior NTSB Board Member
Grant	J. Clinton	Tarrant Community College
Guerrero	Tim	Redstone College-Denver
Gulliver	P. Kevin	Nida Corporation
Hagovsky	Tom	Purdue University
Hall	Ed	FAA
Heffernan	Ellen	HAI
Hendershot	Tom	AMT Society
Hestilow	Rickey	NCATT
Horning	Chuck	Embry-Riddle University
Jones	David	Aviation Institute of Maintenance
Mackiewicz	Stan	NATA
Mader, PhD.	James	Pittsburgh Institute of Aeronautics
Martinez	Anthony	Lockheed Martin Space Systems
Mirgle	Fred	Embry-Riddle University
Moore	Ferrin	FAA
Peri	Ric	Aircraft Electronics Association (AEA)
Shaver	Tim	FAA
Singleton	Mike	JetBlue Airways
Smith	Stacey	FAA
Smith	Andrew	K-State at Salina
Sprang	Gene	PAMA
Summers	Harold	HAI
Thompson	Raymond	DAE University
Tindall	Monalisa	FAA

The working group has conducted six in-person work sessions with significant electronic communication between meetings. The meeting dates and locations were:

September 2007 – Washington, DC
November 2007 – Atlanta, GA
January 2008 – Orlando, FL
April 2008 – Washington, DC
June 2008 – Washington, DC
November 2008 – Washington DC

III-A. Working Group Activities

Early discussion within the working group saw this ARAC as an opportunity to make significant changes to Part 147. In addition to the specific tasking, the areas of greatest interest included changing Part 147 from a proscriptive framework to an outcomes based process. This desire stemmed from the belief that if a student could successfully complete all the curriculum requirements, then specifying minimum hours could be eliminated. Ultimately, the written, oral, and practical certification examinations are outcomes based. Why shouldn't the education process reflect that as well?

Ultimately, this approach was deemed unsatisfactory primarily due to the inability to have proper surveillance. Approved training providers needed some minimum standard to be evaluated against. A second approach was to allow variance in the number of hours in each curriculum area. Schools could determine the appropriate distribution, within certain plus/minus limits, that best suit the needs of their customers, as long as the minimum total hours of instruction met the regulation. This approach became problematic since it would not be possible to have a minimum standard of certification and student transfers would be difficult.

As will be seen, the working group concluded that the best solution was to redistribute the curriculum hours and restructure the curriculum topics. Also, moving the topics out of the rule, with a robust process for monitoring change, was created. The working group is recommending substantive change, but change that we believe to be appropriate and acceptable to all users.

To meet the tasking requirements, the working group divided activity into eight (8) subsets. These were:

- 1) Review of the current curriculum, including subject, topics, and performance levels.
- 2) Review the minimum training hour requirements and the distribution in the General, Airframe, and Powerplant curricula detailed in Part 147.21.
- 3) Review of moving the curriculum topics and performance levels in a manner that would require periodic review and consideration of change without change to Part 147.
- 4) Study the role and use of alternative, or e-learning, methods.
- 5) Review in detail Part 147.31.
- 6) Review the current Advisory Circular AC 147.3A to identify areas that need reviewed in general, and likely pending rule change.
- 7) Provide recommendations for the training of Principal Maintenance Inspectors and Principal Avionics Inspectors with responsibilities for approved Part 147 training providers.
- 8) Review Parts 65.75 & 65.77 regarding exemptions

III-B: Utilizing Training Specifications

Review, updating, and modification of the curriculum contained in Part 147 Appendices B – D has been a constant issue. Previous updating of the curriculum occurred in 1992. Prior to the 1992 revision, only minor revisions have taken place since the initial rule was enacted in 1970. With changes in technology, it is believed that a static minimum curriculum does not meet broad industry needs. Approved training providers have the ability, within the current rule, to add additional hours and content beyond the minimum requirements. However, this can be an economic detriment and on occasion not been

allowed by Principal Inspectors (PI)'s in the belief that the specified curriculum must be rigidly adhered to. In addition to the specific changes to the minimum curriculum previously discussed, the working group strongly believes that a method of routine curriculum review and potential updating must be put into place. Hence the working group recommends the creation of process whereby the curriculum subject topics (elements) are not contained within CFR Part 147.

CFR Part 147.5(b) states “An applicant who meets the requirements of this part is entitled to an aviation maintenance technician school certificate and associated ratings prescribing such *operations specifications* and limitations as are necessary in the interests of safety.” Interestingly, Part 147 does not utilize operations specifications, relying on the Appendix method of controlling the curriculum. CFR Part 142 operators are similar to Part 147 operators in that both support training curriculum requirements and airman certification. To support Part 142, a training specification (i.e. operations specification) has been developed and is used by Part 142 operators. The working group supports a similar concept with the development of a Part 147 training specification for providers to follow. Currently, approved training providers have a curriculum procedures document and approved curriculum on file with their local FSDO. Much of the information that would be required by a Part 147 training specification is already contained within the curriculum procedures document. Adhering to a training specification will improve minimum standardization of data across all schools and within the FAA. The primary role of the training specification is to contain the details of the Master Minimum Curriculum List (MMCL).

Currently, Appendices B – D contain the full required minimum listing of subject areas, topics, and levels.

Recommendation 1 – Creation of a Part 147 Training Specification and resulting rule change to 147.5(b)

It is recommended to create a specific *Training Specification* for CFR Part 147 versus current *Operations Specification and limitation* as reference in Part 147.5(b) as follows:

Proposed Changes to CFR Part 147.5(b)	
Current Part 147.5	Proposed Part 147.5
<p>(b) An applicant who meets the requirements of this part is entitled to an aviation maintenance technician school certificate and associated ratings prescribing such operations specifications and limitations as are necessary in the interests of safety.</p>	<p>(b) An applicant who meets the requirements of this part is entitled to an aviation maintenance technician school certificate and associated ratings prescribing such <i>TRAINING</i> specifications and limitations as are necessary in the interests of safety.</p> <p style="text-align: center;"><i>No Changes</i></p>
	<p>(c) <i>No person may operate an Approved Aviation Maintenance Technician School without, or in violation of a training certificate and training specifications issued under this part.</i></p> <p style="text-align: center;"><i>New Subpart & Language</i></p>

An example of a Part 147 Training Specification is displayed in ***Attachment A*** of this document. Currently, according to CFR Part 119.51, only the operations specifications

for Parts 121 and 135 may be changed by the Administrator without following established changes processes. Since the existing specifications for Parts 142, 145, and potentially Part 147 are not listed in Part 119, the only avenue for change bypassing the MTRB process is via Title 49 Section 44709 which allows reexamination of any certificate issued by the FAA. In the opinion of the working group, this means a school's certificate could be reexamined but the Part 147 Training Specification would not be. This results primarily from the fact that schools are air agency's but not air operators.

III-C. Revisions To The Existing Part 147 Curriculum

Review of the curriculum was a key task for the working group. The diversity of members ensured that a wide variety of industry input was obtained. The working group recommendations contain several important changes.

First, the overall curriculum content was reviewed. Additional electrical and electronic system topics were added. Performance factors such as human factors were added. The additions to content were placed primarily in the General and Airframe areas, with a redistribution of subject area hours reflective of these additions (see Recommendation 4). Second, the working group felt that the current inclusive level system (1, 2, and 3) was restrictive. Specific knowledge and manipulative skill levels for each topic were identified. This allows for an appropriate distribution of theory and practice to be provided for each topic, at an appropriate level.

Third, and most significant, is the removal of curriculum topics to the training specification. At present, all curriculum subject areas, associated topics, and instructional levels are embedded within the CFR Part 147 appendices. Changing any of these, even to the smallest degree, requires rule change. This has been a deterrent to change. The curriculum in Part 147 has not been changed in more than 15 years. Considering the rapid evolution of aircraft and the accelerating level of technological change, the curriculum lags considerably.

To maintain a minimum breadth of curriculum, the subject areas required will be kept in the rule. The subject areas are the broad topics that act as the umbrella for current and future technology. Curriculum specifics are outlined in the curriculum topics associated with each subject. To facilitate change, the topics and instructional levels will

be placed in the training specification (see Attachment A). The training specification is enforceable and changeable without opening the rule. To ensure that changes are made in an orderly fashion, a review process has been created (*see Recommendation 3*). As noted previously, arbitrary changes to the training specification by the Administrator are unlikely since Part 147 is not specified in CFR Part 119.51. While this has yet to be tested, the working group believes this minimal risk is more than compensated for by the ability to change the minimum curriculum on a periodic basis without the need for rule change.

The working group wishes to emphasize that the updated minimum curriculum is just that – the minimum. Schools may request approval of higher levels of instruction or add content beyond the minimum required. The working group recognizes that specific geographic or customer needs may make such additions desirable. To facilitate this, new language has been added to Appendix A to this effect.

Recommendation 2 - Modify Appendices A - D

It is proposed to modify Appendix A as follows:

Current Appendix A	Proposed Appendix A
<p>This appendix defines terms used in appendices B, C, and D of this part, and describes the levels of proficiency at which items under each subject in each curriculum must be taught, as outlined in appendices B, C, and D.</p>	<p>This appendix defines terms used in appendices B, C, and D of this part, and describes the levels of proficiency at which items under each subject in each curriculum must be taught, as outlined in appendices B, C, and D.</p> <p>An AMTS may create a curriculum exceeding the master minimum curriculum list to meet program desires and industry desires in the AMTS region.</p> <p><i>New Language Added</i></p>

<p>(a) <i>Definitions.</i> As used in appendices B, C, and D:</p> <p>(1) <i>Inspect</i> means to examine by sight and touch.</p> <p>(2) <i>Check</i> means to verify proper operation.</p> <p>(3) <i>Troubleshoot</i> means to analyze and identify malfunctions.</p> <p>(4) <i>Service</i> means to perform functions that assure continued operation.</p> <p>(5) <i>Repair</i> means to correct a defective condition. Repair of an airframe or powerplant system includes component replacement and adjustment, but not component repair.</p> <p>(6) <i>Overhaul</i> means to disassemble, inspect, repair as necessary, and check.</p>	<p>(a) <i>Definitions.</i> As used in appendices B, C, and D:</p> <p>(1) <i>Inspect</i> means to examine by sight and touch.</p> <p>(2) <i>Check</i> means to verify proper operation.</p> <p>(3) <i>Troubleshoot</i> means to analyze and identify malfunctions.</p> <p>(4) <i>Service</i> means to perform functions that assure continued operation.</p> <p>(5) <i>Repair</i> means to correct a defective condition. Repair of an airframe or powerplant system includes component replacement and adjustment, but not component repair.</p> <p>(6) <i>Overhaul</i> means to disassemble, inspect, repair as necessary, and check.</p> <p>(7) Classroom (Traditional Instructor-led) – A learning environment with the basic training capabilities (chalk/white boards, tables, etc) led by an instructor.</p> <p>(8) Blended Delivery - the combination of multiple approaches to learning that is facilitated by the effective use of different modes of delivery and training resources.</p> <p>(9) Distance Learning – (also known as Distance Education, Advanced Distributed Learning; Virtual Training, computer based training, web-based learning, home study, e-learning) Formal learning activity that is accomplished when students and instructors are separated by geographic distance or by time.</p> <p>(10) Unit Instructional Hour – When the classroom method of delivery is utilized, instruction unit hour shall not be less than 50 minutes in length. When an alternative method of delivery is utilized, the instructional period is the</p>
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	<p>time necessary for the learning objective (knowledge, skill, performance) to be accomplished by the student under instruction.</p> <p>(11) Training Resources – Resource descriptions may be general, but should be comprehensive enough to clearly define the role of each resource in the alternative training program. Resources may include:</p> <ul style="list-style-type: none"> • Personnel – training management and instructors • Facilities – may be at a central training site, off-site learning centers, or various individual geographic locations • Equipment – stand-alone computers, networks, laptops, LANs, web, lab equipment, mockups, etc. • Software – operating systems, browsers, learning content, and specialized programs • Curriculum – videos, computer-based lessons, workbooks, study guides, CDs, DVD, part-task trainers • Third Party – vendors, contractors, consultants, etc • Distance Learning – as described • Classroom – as described <p><i>New Definitions Added</i></p>
<p>(b) <i>Teaching levels.</i></p> <p>(1) Level 1 requires:</p> <ul style="list-style-type: none"> (i) Knowledge of general principles, but no practical application. (ii) No development of manipulative skill. (iii) Instruction by lecture, demonstration, and discussion. <p>(2) Level 2 requires:</p> <ul style="list-style-type: none"> (i) Knowledge of general principles, and limited practical application. (ii) Development of sufficient 	<p>(b) <i>Teaching levels:</i></p> <p><u>Knowledge Levels</u></p> <p>A - Be Familiar – Familiar with basic facts, terms/principle elements of the subject. Instruction by classroom, blended, or distance learning as approved.</p> <p>B - Knows – Knows general principles, facts, and terms about the subject. Can explain the basic operation of component/system/concept. Instruction by</p>

<p>manipulative skill to perform basic operations. (iii) Instruction by lecture, demonstration, discussion, and limited practical application. (3) Level 3 requires: (i) Knowledge of general principles, and performance of a high degree of practical application. (ii) Development of sufficient manipulative skills to simulate return to service. (iii) Instruction by lecture, demonstration, discussion, and a high degree of practical application.</p>	<p>classroom, blended, or distance learning as approved.</p> <p>C - Understands – Understands the principles, facts, and terms about the subject. Can apply this understanding to the subject to the subject and troubleshoot/analyze/resolve problems. Instruction by classroom, blended or distance learning as approved.</p> <p><u>Skill Levels</u></p> <p>1 - No Skill Demonstration Required</p> <p>2 - Competent – Be able to find and interpret maintenance data and information, and perform basic operations using appropriate data, tools, and equipment. Limited practical application.</p> <p>3 - Proficient – Perform skill operations to a simulated return-to-service standard using appropriate data, tools, and equipment. Maintenance and inspections are performed in accordance with acceptable or approved data. High degree of practical application.</p> <p><i>New Language and Definitions</i></p>
<p>(c) <i>Teaching materials and equipment.</i> The curriculum may be presented utilizing currently accepted educational materials and equipment, including, but not limited to: calculators, computers, and audio-visual equipment.</p>	<p>(c) <i>Teaching materials and equipment.</i> The curriculum may be presented utilizing currently accepted educational materials and equipment, including, but not limited to: calculators, computers, and audio-visual equipment.</p> <p><i>No Changes</i></p>

It is proposed to modify Appendix B – General Curriculum Subjects as follows:

Subjects*

- A. Fundamental Electricity / Electronics
- B. Aircraft Drawings
- C. Weight and Balance
- D. Fluid Lines and Fittings
- E. Aircraft Material, Hardware, and Processes
- F. Ground Operations and Servicing
- G. Corrosion
- H. Maintenance Forms, Records, and Publications
- I. Physics for Aviation
- J. Inspection Concepts and Techniques
- K. Human Factors
- L. Foreign Object Elimination (FOE)
- M. Alert, Caution, and Warning Indications

** Note: Curriculum topics have been transferred to the proposed Training Specification.*

See Attachment A.

It is proposed to modify Appendix C –Airframe Curriculum Subjects as follows:

Subjects*

- A. Metallic Structures
- B. Non-Metallic Structures
- C. Flight Controls
- D. Airframe Inspection
- E. Landing Gear Systems
- F. Hydraulic and Pneumatic Systems
- G. Environmental Systems
- H. Aircraft Instrument Systems
- I. Communication and Navigation Systems
- J. Aircraft Fuel Systems
- K. Aircraft Electrical Systems
- L. Ice and Rain Control Systems
- M. Airframe Fire Protection Systems
- N. Rotorcraft Fundamentals
- O. Water and Waste Systems

** Note: Curriculum topics have been transferred to the proposed Training Specification.*

See Attachment A.

It is proposed to modify Appendix D – Powerplant Curriculum Subjects as follows:

Subjects*

- A. Reciprocating Engines
- B. Turbine engines
- C. Engine Inspection
- D. Engine Fire Protection Systems
- E. Engine Instrument Systems
- F. Engine Electrical Systems
- G. Lubrication Systems
- H. Ignition and Starting Systems
- I. Fuel Metering Systems
- J. Reciprocating Engine Induction and Cooling Systems
- K. Turbine Engine Air System
- L. Engine Exhaust and Reverser Systems
- M. Propellers

** Note: Curriculum topics have been transferred to the proposed Training Specification.*

See Attachment A.

III-D: The Maintenance Training Review Board

While the current placement of the complete minimum curriculum in the rule makes change difficult, it is understood that placement of curriculum items outside the rule allows for the potential of unnecessary or unjustifiable changes without input from schools or industry. This creates a tension between schools and industry's desire to update the curriculum in a controlled fashion and having undesired change forced upon schools. To minimize this tension, the working group recommends that the Master Minimum Curriculum List (MMCL) be maintained and reviewed by the Maintenance Training Review Board (MTRB).

Recommendation 3 –Creation of the Maintenance Training Review Board

It is recommended that a Maintenance Training Review Board be created. The task of the MTRB will be to review the MMCL and recommend changes on a biennial cycle with the MTRB being established within one year of rule implementation. This group would be authorized via addition to the 8900.1 Volume 8 procedures, in the Chapter 2 TECHNICAL GROUPS, BOARDS, AND NATIONAL RESOURCES section. The following outlines the proposed review board and review process:

Section (TBD) Maintenance Training Review Boards

GENERAL. This section contains a description of the purpose, composition, and responsibilities of a Maintenance Training Review Board (MTRB). This section also contains guidance to be used by operations inspectors for using the resources available from an MTRB and for serving as a member of an MTRB.

RESPONSIBILITIES OF THE MTRB. The primary tasks of an MTRB are the review and revision of master minimum curriculum lists (MMCL). The MTRB also has responsibility for coordinating with organizations that provide aviation maintenance training and private sector agencies and organizations that employ, or represent employers

of certified aircraft maintenance technicians. The MTRB is responsible for coordinating with both aviation maintenance technician schools and private sector users to review the existing CFR Part 147 training specification curriculum and recommend changes in the curriculum to the FAA on a biennial basis. The MTRB is also responsible for sending a copy of meeting minutes, the proposed MMCL, and any subsequent revisions, to the Aircraft Maintenance Division (AFS-300) for review and coordination by the AFS-300 manager prior to approval.

COMPOSITION OF THE MTRB. An MTRB is comprised of a co-chair from the Aviation Technician Education Council (ATEC) Board of Directors, a co-chair from the industry representatives listed below, Flight Standards District Office (FSDO) primary maintenance inspector with AMTS surveillance responsibilities and a primary avionics inspector with AMTS surveillance responsibilities, a representative from the Aircraft Maintenance Division (AFS-300), a representative from the Regulatory Support Division (AFS-600), and as follows:

Chairpersons. The MTRB is co-chaired. The education co-chair is provided by the ATEC Board of Directors. The industry co-chair is selected from the MTRB industry representatives.

MTRB Members. Members of the MTRB are selected from the following industry entities that employ aviation maintenance technicians or use the services thereof:

- FAA Representatives (4)
 - FSDO PI with AMTS surveillance
 - FSDO PAI with AMTS surveillance
 - Aircraft Maintenance Division (AFS-300)
 - Regulatory Support Division (AFS – 600)
- Industry Representatives (6)
 - Part 91 or Fixed Based Operators (1)
 - Part 121 air carriers (1)
 - Part 135 Air Taxi Operators (1)
 - Part 145 Repair Stations (1)
 - Military Training (1)
 - Original Equipment Manufacturers (1)
- Education Representatives - 147 AMTS representatives (5) Representing one from each of the following groups comprised of ATEC Board members or selected by the Board
 - Education Co-chair
 - Proprietary AMTS operators
 - Two-year AMTS operators
 - Four-year AMTS operators
 - High School AMTS operators

The MTRB Industry Representatives will be selected from the industry segments as listed above. These representatives could also potentially serve a dual role, representing various industry organizations that may include but is not limited to the following list: the AMT Society, Aerospace Industries Association (AIA), Association for Women in Aircraft Maintenance (AWAM), General Aviation Manufacturers Association (GAMA), Air Transport Association (ATA), Aeronautical Repair Station Association (ARSA), National Air Transport Association (NATA), Helicopter Association International (HAI), Regional Aircraft Association (RAA), National Business Aircraft Association (NBAA), Aircraft Electronics Association (AEA), National Aerospace FOD Prevention, Inc (NAFPI), National Advisory Committee for Aeronautics (NACA), National Center for Aircraft Technician Training (NCATT), Professional Aviation Maintenance Association (PAMA), Women in Aviation (WIA), and military training organizations.

MTRB MEMBER SELECTION PROCESS

INITIAL SELECTION. Industry Co-chair will be selected by the ARAC Working Group. This person must be a member of the original working group and must represent one of the categories of Industry Representation.

The Industry Co-chair will be responsible for selecting the initial industry representation from the listed industry representative categories. The Industry Co-chair will be responsible for the initial solicitation and creating the selection process for the MTRB Industry representatives.

Education Co-chair will be selected by the ATEC Board of Directors. This person must be a current ATEC Board member.

All other Part 147 AMTS members will be ATEC Board members or will be selected by the ATEC Board.

TERM LENGTH OF INITIAL MTRB MEMBERS. The initial Co-Chair terms will be 4 years. Of the remaining 5 Industry Representatives: two will have an initial 4 year term and 3 will have an initial 2 year term. Of the remaining 4 Part 147 AMTS representatives: two will have an initial 4 year term and two will have an initial 2 year term.

TERM LENGTH OF MTRB MEMBERS. Term length is 4 years, other than the initial term.

TERM LIMITS OF MTRB MEMBERS. No member will serve consecutive terms including the Initial terms.

SELECTION PROCESS OF MTRB MEMBERS. At the MTRB meeting prior to expiring terms, the MTRB will select the new members for the MTRB based on the following:

Education representative will be made up of ATEC Board of Director members or selected by the ATEC Board of Directors from ATEC member school representatives.

Industry representatives will be selected by the MTRB.

FILLING VACATED MTRB MEMBER SEATS. If education representative seats become available due to ineligibility of members or resignations, the ATEC Board will select and appoint individuals to fill remaining terms.

If industry representative seats become available due to ineligibility of members or resignations, the remaining MTRB industry members will select and appoint individuals fill remaining terms.

RESPONSIBILITIES OF MTRB MEMBERS. The MTRB co-chairs, members, and other participants have the following responsibilities:

MTRB Education Co-Chair. The chair's primary task is the planning of board functions, serve as a voting board member, and preparation the meeting agenda. The chair must have served on the MTRB board as a AMTS representative for a minimum of one year prior to assuming the role of chair.

MTRB Industry Co-chair. The co-chair's primary task is to assist the chair with planning of board functions, serve as a voting board member, and preparation the meeting agenda. The co-chair also prepares minutes of each meeting and disseminates. The co-chair must have served on the MTRB board as an industry representative for a minimum of one year prior to assuming the role of chair.

MTRB Members. Members review documents, contribute technical expertise, and respond to private sector comments and questions. Members participate in meetings, as requested by the chairperson.

Other Participants. When invited by the chairperson, additional participants may attend and provide information at MTRB meetings. The chairperson may also invite other FAA personnel to attend.

Master Minimum Curriculum List Development. The process of MMCL development is described in detail in (TBD) of this order, Review of the Master Minimum Training Curriculum (MMCL) for a 14 CFR Part 147 Operator. Within this process, the MTRB has the following responsibilities MMCL revisions:

Information Gathering from the Private Sector. Recommendations to change the MMCL is developed from curriculum review information gathered by the MTRB from private sector groups, and other FAA participants. During data gathering sessions, there are opportunities for all participants to comment on specific items, using the current master minimum curriculum list (MMCL) as a worksheet.

MMCL Approval and Distribution. The MTRB chairperson sends the recommended changes to the MMCL to AFS-300 for concurrence, after which it is approved and released to AFS-260 and the public.

Revisions to the MMCL. Review of the MMCL is structured biennial event. The MTRB chairs convene the group to begin a review cycle. The Board reviews the current MMCL and determines the methodology for collection and analysis of curriculum review data. Data collection takes place with the private sector users of certificated aircraft maintenance technicians. The MTRB analyses the data and accepts or rejects each suggested change to curriculum content areas, knowledge levels, and skill levels and develops a set of preliminary MMCL change recommendations. These changes are submitted to ATEC who provides opportunity for AMTS members to provide comment on the preliminary changes proposed. The Board considers a summary report from ATEC and develops a final set of recommended changes for submission to AFS-300 for approval.

MTRB Biennial Milestones

Months 1-2: The Board meets to review the MMCL and finalize the data collection methodology.

Months 3-6: Data collection events are held with private sector users of AMT's.

Months 7-10: The Board analyzes the data and develops a set of preliminary MMCL recommendations.

Months 10-14: ATEC provides opportunity for ATEC member schools to comment on the preliminary recommendations.

Months 14-16: The Board reviews the ATEC report of school comments and creates a set of final MMCL recommendations. The final recommendations are submitted to AFS-300 for review and approval.

Months 17-18: AFS-300 reviews the MTRB recommendations and renders a decision of changes to the Part 147 Training Specification.

Months 19-20: The FAA updates the Part 147 Training Specification. AFS-600 makes appropriate modifications of testing standards.

Months 21-24: The MTRB reviews its operating processes and members. *Expiring term positions are reviewed, selected and appointed per the selection process detailed above.*

III-E: Redistribution of Curriculum Hours

Part 147.21(b) states the minimum total curriculum hours to be 1900 hours. Based on the conclusions of the Goldsby Report, the 1900 hour minimum will be retained. As suggested by the Goldsby Report, the General and Airframe hours areas have been increased, although to lesser extent than recommended in the report. The working group recommended redistributing the hours from the current levels of General 400 hours, Airframe 750 Hours, and Powerplant 750 hours to the following:

- General 450 hours
- Airframe 800 hours
- Powerplant 650 hours

With changes in aircraft technologies increasingly emphasizing electricity, electronics, and advanced materials, even in the powerplant areas, adding hours to the General and Airframe curriculum areas is appropriate.

Recommendation 4 – Changes to CFR Part 147.21(b) and 147.21(c)

It is proposed to change Part 147.21(b) to read as follows:

Proposed Changes to CFR Part 147.21	
Current CFR Part 147.21	Proposed Changes to CFR Part 147.21
<p>(b) The curriculum must offer at least the following number of hours of instruction for the rating shown, and the instruction unit hour shall not be less than 50 minutes in length—</p>	<p>(b) The curriculum will be delivered in accordance with Training Specification 147 sections B002, B003, and B004.. Classroom and laboratory curriculum delivery must offer at least the following unit instructional hours for the subject areas shown. All alternative curriculum delivery methods, as may be approved by the administrator, must offer equivalent control measures and content outcomes.</p> <p style="text-align: center;"><i>Change in Language</i></p>
<p>(1) Airframe—1,150 hours (400 general plus 750 airframe).</p> <p>(2) Powerplant—1,150 hours (400 general plus 750 powerplant).</p> <p>(3) Combined airframe and powerplant—</p>	<p>(1) Airframe—1,250 hrs (450 general plus 800 airframe).</p> <p>(2) Powerplant—1,100 hours (450 general plus 650 powerplant).</p> <p>(3) Combined airframe and powerplant—</p>

1,900 hours (400 general plus 750 airframe and 750 powerplant).	1,900 hours (450 general plus 800 airframe and 650 powerplant). <i>Redistribution of Hours</i>
(c) The curriculum must cover the subjects and items prescribed in appendixes B, C, or D, as applicable. Each item must be taught to at least the indicated level of proficiency, as defined in appendix A.	(c) The curriculum must cover the subjects prescribed in appendixes B, C, or D, and described in Training Specification 147.xxx, as applicable. Each item must be taught to at least the indicated level of proficiency, as defined in appendix A. <i>Change in Language</i>

Recommendation 5 – Include Part 147 in Draft Advisory Circular “Alternatives to Classroom Training” (Dated: 9/27/05) and Finalize

The draft advisory circular entitled “Alternatives to Classroom Training” is a good document regarding alternative education methodologies and methods of surveillance. However, the draft is directed specifically only to training programs operated under CFR 121 and 135. The working group recommends that CFR Part 147 be added since this aviation maintenance training schools are also “ground training programs”, the basis of which Part 121 and 135 is specified. Furthermore, the working group recommends that the FAA finalize the draft and move it forward for approval and publication.

III-F: Process Clarifications

Issues due to variance in interpretation by Principal Inspectors require clarification of certain details in Part 147.31.

Recommendation 6 - Changes to CFR Part 147.31

It is proposed to change Part 147.31(c) to read as follows:

Proposed Changes to CFR Part 147.31(c) & 147.31(e)	
Current CFR Part 147.31	Proposed Changes to CFR Part 147.31
<p>(c) A school may not graduate a student unless he has completed all of the appropriate curriculum requirements. However, the school may credit a student with instruction or previous experience as follows:</p> <p style="padding-left: 40px;">(1) A school may credit a student with instruction satisfactorily completed at—</p> <p style="padding-left: 80px;">(i) An accredited university, college, junior college;</p> <p style="padding-left: 80px;">(ii) An accredited vocational, technical, trade or high school;</p> <p style="padding-left: 80px;">(iii) A military technical school;</p> <p style="padding-left: 80px;">(iv) A certificated aviation maintenance technician school.</p>	<p>(c) A school may not graduate a student unless he/she has completed all of the requirements in the approved curriculum. However, the school may credit a student with instruction or previous experience as follows:</p> <p style="padding-left: 40px;">(1) A school may credit a student with instruction satisfactorily completed at –</p> <p style="padding-left: 80px;">(i) An accredited university, college, community or junior college;</p> <p style="padding-left: 80px;">(ii) An accredited vocational, technical, trade or high school;</p> <p style="padding-left: 80px;">(iii) A military technical school;</p> <p style="padding-left: 80px;">(iv) A certificated aviation maintenance technician school.</p> <p style="text-align: right;"><i>Change in Language</i></p>

<p>(2) A school may determine the amount of credit to be allowed—</p> <p>(i) By an entrance test equal to one given to the students who complete a comparable required curriculum subject at the crediting school;</p> <p>(ii) By an evaluation of an authenticated transcript from the student's former school; or</p> <p>(iii) In the case of an applicant from a military school, only on the basis of an entrance test.</p>	<p>(2) A school may determine the amount of credit to be allowed –</p> <p>(i) By an entrance test equal to one given to the students who complete a comparable required curriculum subject at the crediting school;</p> <p>(ii) By an evaluation of an official transcript from the students former school; or</p> <p>(iii) In the case of an applicant from a non-accredited military technical school, only on the basis of an entrance test.</p> <p><i>Change in Language</i></p>
<p>(3) A school may credit a student with previous aviation maintenance experience comparable to required curriculum subjects. It must determine the amount of credit to be allowed by documents verifying that experience, and by giving the student a test equal to the one given to students who complete the comparable required curriculum subject at the school.</p>	<p>(3) A school may credit a student with previous aviation maintenance experience comparable to required curriculum subjects. It must determine the amount of credit to be allowed by documents verifying that experience, and by giving the student a test equal to the one given to students who complete the comparable required curriculum subject at the school.</p> <p><i>No Changes</i></p>
<p>(4) A school may credit a student seeking an additional rating with previous satisfactory completion of the general portion of an AMTS curriculum.</p>	<p>(4) A school may credit an individual seeking an additional rating with previous satisfactory completion of the General portion of the certificate held.</p> <p><i>Change in Language</i></p>

<p>(e) A school shall use an approved system for determining final course grades and for recording student attendance. The system must show hours of absence allowed and show how the missed material will be made available to the student.</p>	<p>(e) A school shall use an approved system for determining course grades and student attendance. The attendance system must show hours of absence allowed, which may be up to 5% in each class. Missed time in excess of 5% in each course must be made-up with the missed material made available to the student.</p> <p><i>Change in Language</i></p>
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III-G: The Exemption Process

Testing exemptions have routinely been approved by the FAA based on Parts 65.75 & 65.77. Rather than open Part 65 for review and change, alternate language for Part 147.35 has been crafted that allow a school to issue a certificate of completion allowing a student to sit for the General Knowledge Test before a student meets the applicable experience requirements of §65.77 and before he/she passes the Airframe and or Powerplant written knowledge test prescribed by §65.75.

Whenever an AMTS certificated under part 147 of this chapter shows to an FAA inspector that any of its students has made satisfactory progress at the school and is prepared to take the oral and practical tests prescribed by §65.79, that student may take those tests during the final subjects of his training in the approved curriculum, before he meets the applicable experience requirements of §65.77 and before he passes each section of the written test prescribed by §65.75. Testing immediately after learning is a universally accepted instructional principle that reinforces learning, and is academically sound. This is currently allowed with both the Airframe and Powerplant curriculums, but is not allowed at the completion of the General curriculum.

Students attending an AMTS may be enrolled in a single-rating program, or the combined Airframe & Powerplant curriculum. The vast majority opts for the combined curriculum. This change is structured to provide an opportunity for testing after the completion of any section of the curriculum (General, Airframe, Powerplant).

Part 147 schools have established a procedure with their FSDO and with the Airman Certification Branch to identify and report graduates who are eligible to take the FAA knowledge, oral, and practical tests to both the FSDO, and the school's affiliated

written test center. The same procedure would be used to identify and report students who would qualify to take the AMG knowledge test after completion of the General curriculum. A graduation certificate would only be issued after the successful completion of the entire program in which the student is enrolled (Airframe, Powerplant, or Airframe & Powerplant).

The exceptional circumstances encountered by students enrolled in a Part 147 AMTS are recognized and provided for by Part 65.80 which permits a student to take the oral and practical tests prescribed by §65.79 before they meet the applicable experience requirements of §65.77. The time penalty incurred by beginning the testing process before the completion of the entire curriculum would be more than offset by the academic soundness of immediate testing.

This process is currently being executed where multiple exemptions from the regulation have been granted. This change does not differ materially from those existing exemptions. The reasons stated by the FAA for granting those exemptions also apply to this change. Therefore the working group recommends the addition of new language, designated as 147.35(c) to formalize the exempts now being granted.

Recommendation 7 – Formalizing the Exemption Process

It is proposed to add Part 147.35(c) to read as follows:

(c) Whenever an aviation AMTS certificated under part 147 of this chapter shows to an FAA inspector that any of its students has made satisfactory progress at the school and is prepared to take the General Knowledge test prescribed by §65.75, that student may take the test during their subsequent training in the approved curriculum, before they meet the

applicable experience requirements of §65.77 and before he/she passes Airframe and/or Powerplant written test prescribed by §65.75.

The school will prepare and issue a Certification of Completion to identify and report students who are eligible for testing under this part. An official of the school shall authenticate the certificate. The certificate must show the completion date and the approved curriculum title. The authority for a school to issue a certificate of completion for the General curriculum testing will be authorized in a Training Specification paragraph.

Proposed Changes to CFR Part 147.35	
Current CFR Part 147.35	Proposed Changes to CFR Part 147.35
<p>(a) Upon request, each certificated aviation maintenance technician school shall provide a transcript of the student's grades to each student who is graduated from that school or who leaves it before being graduated. An official of the school shall authenticate the transcript. The transcript must state the curriculum in which the student was enrolled, whether the student satisfactorily completed that curriculum, and the final grades the student received.</p>	<p>(a) Upon request, each certificated aviation maintenance technician school shall provide a transcript of the student's grades to each student who is graduated from that school or who leaves it before being graduated. An official of the school shall authenticate the transcript. The transcript must state the curriculum in which the student was enrolled, whether the student satisfactorily completed that curriculum, and the final grades the student received.</p> <p style="text-align: center;"><i>No Changes</i></p>
<p>(a) Upon request, each certificated aviation maintenance technician school shall provide a transcript of the student's grades to each student who is graduated from that school or who leaves it before being graduated. An official of the school shall authenticate the transcript. The transcript must state the curriculum in which the student was enrolled, whether the student satisfactorily completed that curriculum, and the final grades the student received.</p>	<p>(a) Upon request, each certificated aviation maintenance technician school shall provide a transcript of the student's grades to each student who is graduated from that school or who leaves it before being graduated. An official of the school shall authenticate the transcript. The transcript must state the curriculum in which the student was enrolled, whether the student satisfactorily completed that curriculum, and the final grades the student received.</p> <p style="text-align: center;"><i>No Changes</i></p>

Proposed Changes to CFR Part 147.35 *continued*

(c) Whenever an aviation maintenance technician school certificated under part 147 of this chapter shows to an FAA inspector that any of its students has made satisfactory progress at the school and is prepared to take the General Knowledge test prescribed by §65.75, that student may take the test during their subsequent training in the approved curriculum, before they meet the applicable experience requirements of §65.77 and before he/she passes Airframe and/or Powerplant written test prescribed by §65.75.

The school will prepare and issue a Certification of Completion to identify and report students who are eligible for testing under this part. An official of the school shall authenticate the certificate. The certificate must show the completion date and the approved curriculum title. The authority for a school to issue a certificate of completion for the General curriculum testing will be authorized in a Training Specification paragraph.

New Subpart & Language

III-H: Specific PI Training for AMTS Surveillance

A complaint often voiced by AMTS administrators is the inconsistency of FAA Principal Inspectors when interpreting CFR Part 147 regulations. For example, as schools expand their operations into adjacent districts, or as assigned inspectors are replaced, a lack of standardization can become a detriment to cooperative efforts. Because there are not many Part 147 programs across the country, very few PI's have experience in this area of surveillance. Even fewer FAA inspectors have experience in certifying AMTSs, because new programs are developed so infrequently.

It is true that the FAA provides written guidance to PI's through Advisory Circular AC147-3A and Order 8900.1, Volume 2, Chapter 12, Sections 1, 2 and 3, and Volume 6, Chapter 10. While these are sound documents that can direct the inspector through the certification and evaluation processes, they still leave a great deal open to interpretation.

In this respect, it is the position of this working group that written guidance may not be enough to provide inspectors with the direction needed to properly certify and/or oversee compliance of AMTS's with standardization and consistency. Specific training, targeting regulatory areas that are frequently open to interpretation, is needed to provide evenness of certification and surveillance from one location to another and from one inspector to another.

Irrespective of any changes to Part 147, the working group recommends such a training course be created for PI's and be established upon completion of the regulatory review and revision process. It is noted that existing language used in FAA Order 8900.1, Volume 2, Chapter 12, Section 2 specifically references existing regulatory text.

Recommendation 8 – Creation of a Specific School Surveillance Training Course for Principle Inspectors

To better serve the aviation public, it is recommended that inspectors assigned to AMTS certification and/or surveillance be given interpersonal training in the FAA's official interpretation of 14 CFR Part 147 and associated Part 147 Training Specification. It is further recommended that this training be provided at a central location, and that 14 CFR Part 147, the current relevant advisory circular(s), and the pertinent FAA orders be used as text materials. Additional input regarding the content of this training program should be received from ATEC as primary representative of AMTS's around the country and from the PI's who currently oversee the operations of these schools. In providing this centralized training, the FAA could accomplish the goal of improving standardized certification and oversight of AMTSs.

III-I: Support Documents & Practical Test Standard Review

While supporting documents such as advisory circulars and practical test standards need to be updated with rule change, the working group believes this process needs completed quickly for any Part 147 revisions.

Recommendation 9 – Review and Update of Advisory Circular AC 147.3A

It is recommended that AC147.3A be reviewed immediately upon approval of rule change and updating be completed within 12 months of rule change. It is further recommended that ATEC provide primary input to the revision and review any draft documents before final approval and release.

Recommendation 10 – Review and Update of the Practical Test Standards and Knowledge Examinations

It is recommended that AFS-600 review, expand, and update the Practical Test Standards and General, Airframe, and Powerplant knowledge examinations upon approval of rule change and updating be completed within 12 months of rule change. Any revision needs to consider the 3-year implementation requirement by schools of the new rule and training specification. It is further recommended that ATEC provide primary input to the revision and review any draft documents before final approval and release.

Recommendation 11 – Review and Update of 8900.1 Guidance

It is recommended that the FAA review and update primary inspector guidance contained within the 8900.1 documents. It is further recommended that review and updating be completed within 12 months of rule change. It is further recommended that ATEC provide

primary input to the revision and review any draft documents before final approval and release.

ATTACHMENT 1

PART 147 TRAINING SPECIFICATION

EXAMPLES for CLARIFICATION

A00 Issuance and Applicability

1.

HQ

Control:

HQ

Revision:

a. These training specifications are issued to TEXT01 whose principal training center is located at

Primary Business Address: TEXT03
TEXT02

Table 1 – Primary Point(s) of Contact

Name	Telephone Number	Facsimile Number	E-Mail Address
TABL09	TABL01	TABL02	TABL04

b. The holder of these training specifications is the holder of Air Agency Certificate Number TEXT04 and shall hereafter be referred to as the certificate holder.

c. These training specifications are issued in accordance with Title 14 Code of Federal Regulations (CFR) Section 147.5(b). The certificate holder shall conduct these operations in accordance with CFR Part 147 and the specific authorizations, limitations, and the procedures in these training specifications as issued.

TEXT99

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1. Issued by the Federal Aviation Administration.
 2. These Training Specifications are approved by direction of the Administrator.

3. Date Approval is effective:

Amendment Number:

4. I hereby accept and receive the Training Specifications in this paragraph.

U.S. Department
of Transportation
Federal Aviation
Administration

Part 147 Aviation Maintenance Technician School

Date:

A00 Definitions and Abbreviations

2.

HQ

Control:

HQ

Revision:

Unless otherwise defined in these training specifications, all words, phrases, definitions, and abbreviations have identical meanings to those used in Title 14 Code of Federal Regulations (CFR) and Title 49 United States Code, Subtitle VII, as amended.

Additionally, the definitions listed below are applicable to operations conducted in accordance with these training specifications.

Term or Terms	Definition
<u>Accreditation</u>	This term refers exclusively to schools accredited within the United States and Canada.
Alternative Delivery	The combination of multiple approaches to learning that is facilitated by the effective use of different modes of delivery and training resources.
<u>Blended Delivery</u>	The combination of multiple approaches to learning that is facilitated by the effective use of different modes of delivery and training resources.
<u>Certificated Instructors</u>	Those instructors who hold FAA mechanic certificates and the ratings appropriate for the subjects to be taught.
<u>Check</u>	To verify the item's proper operation. A check is performed to verify proper operation without the item necessarily qualifying for return to service condition. At an AMTS, the item checked does not have to be the item overhauled.
Classroom (Traditional Instructor-led)	A learning environment with the basic training capabilities (chalk/white boards, tables, etc) led by an instructor.
Distance Learning	Also known as Distance Education, Advanced Distributed Learning; Virtual Training, computer based training, web-based learning, home study, e-learning) Formal learning activity that is accomplished when students and instructors are separated by geographic distance or by time.
<u>Inspect</u>	To examine by sight and/or touch (with or without inspection enhancing tools/equipment).

Term or Terms	Definition
<u>Instruction Hour</u>	The educational unit hour, as used by an AMTS, that consists of a time period of 50 to 60 minutes. This instructional time period conforms to the existing practices at many education institutions.
<u>Instructional Aids</u>	Equipment used to provide instruction. Examples include diagrams, visual aids, computers, interactive software, aircraft, and mock-ups of aircraft, engines, and components, as well as actual components, such as magnetos and fuel controls. An instructional aid is not required to meet return-to-service standards.
<u>Knowledge Level A – Be Familiar</u>	Familiar with basic facts, terms/principle elements of the subject. Instruction by classroom, blended, or distance learning as applicable
<u>Knowledge Level B - Knows</u>	Knows general principles, facts, and terms about the subject. Can explain the basic operation of component/system/concept. Instruction by classroom, blended, or distance learning as applicable.
<u>Knowledge Level C - Understands</u>	Understands the principles, facts, and terms about the subject. Can apply this understanding to the subject to the subject and troubleshoot/analyze/resolve problems. Instruction by classroom, blended or distance learning as applicable
<u>Laboratory</u>	Facilities for providing instruction in general principles that may require student demonstrations or participation. Determination of what laboratory equipment is required depends on the subject taught and the teaching level at which it is taught.
<u>Overhaul</u>	To disassemble, inspect, repair as necessary, and check in accordance with FAA-acceptable instructions; that is, manufacturers' maintenance manuals, FAA directives, and service bulletins. For an AMTS, the overhaul requirement in a teaching scenario does not require the overhauled component to meet return-to-service mechanical tolerances. For example, a runout turbine powerplant may be adequate to teach students overhaul techniques, but could present a danger if operated.

Term or Terms	Definition
<u>Practical Project</u>	A hands-on assignment that requires the use of manipulative skills taught at a teaching level of 2 or 3. A practical project generally does not include non-manipulative activities such as book reports. However, for certain required subjects such as maintenance publications, the use of FAA directives or manufacturers' data constitutes a practical project.
<u>Quality Standards</u>	A school's highest priority is to develop in the student, those manipulative skills needed to stimulate return to service. However, it is not necessary for the training aid itself to meet "return to service" standards.
<u>Ratings</u>	An AMTS may be certificated for the following ratings: airframe, powerplant, or combined A&P. The general portion of the required curriculum is not a rating, but it is a required part of all the ratings.
<u>Repair</u>	To correct a defective condition.
<u>Service</u>	To perform functions that assures continued operation.
<u>Skill Level 1 – No Skill Demonstration Required</u>	No Skill Demonstration Required
<u>Skill Level 2 - Competent</u>	Be able to find and interpret maintenance data and information, and perform basic operations using appropriate data, tools, and equipment. Limited practical application.
<u>Skill Level 3 - Proficient</u>	Perform skill operations to a simulated return-to-service standard using appropriate data, tool, and equipment. Maintenance and inspections are performed in accordance with acceptable or approved data. High degree of practical application.
<u>Special Tools</u>	Highly specialized tools, such as tensionometers, micrometers, and torque wrenches.

Term or Terms	Definition
<u>Specialized Instructors</u>	Non-FAA-certificated instructors who have been approved by the FAA to teach pertinent subjects at a particular AMTS. The AMTS must submit to the FAA a list of instructors and substitute instructors. The list must specify which subjects each instructor will teach. Then the FAA approves or disapproves each instructor individually. An instructor who does not hold an FAA mechanic certificate cannot be approved to teach subjects other than certain General curriculum subjects, such as mathematics, physics, and mechanical drawing. The list of approved instructors must be maintained by the AMTS.
Training Resources	Resource descriptions may be general, but should be comprehensive enough to clearly define the role of each resource in the alternative training program. Resources may include: <ul style="list-style-type: none">• Personnel – training management and instructors• Facilities – may be at a central training site, off-site learning centers, or various individual geographic locations• Equipment – stand-alone computers, networks, laptops, LANs, web, etc• Software – operating systems, browsers, learning content, and specialized programs• Curriculum – videos, computer-based lessons, workbooks, study guides, CDs, DVD, part-task trainers• Third Party – vendors, contractors, consultants, etc• Distance Learning – as described• Classroom – as described
<u>Troubleshoot</u>	To analyze and identify malfunctions.
<u>Unit Instructional Hour</u>	When the classroom method of delivery is utilized, instruction unit hour shall not be less than 50 minutes in length. When an Alternative method of delivery is utilized, the instructional period is the time necessary for the learning objective (knowledge, skill, performance) to be accomplished by the student under instruction.

TEXT99

-
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3. Date Approval is effective:

Amendment Number:

4. I hereby accept and receive the Training Specifications in this paragraph.

Date:

A00 Ratings

3.

**HQ
Control:
HQ
Revision:**

The Certificate Holder is authorized the following Ratings:

Ratings

TABL01 Airframe
TABL02 Powerplant
TABL03 Combined Airframe & Powerplant

TEXT99

-
-
1. Issued by the Federal Aviation Administration.
 2. Support information reference:
 3. These Training Specifications are approved by direction of the Administrator.

4. Date Approval is effective:
5. I hereby accept and receive the Training Specifications in this paragraph.

Amendment Number:

Date:

A00 Exemptions

5.

**HQ
Control
HQ
Revision**

The certificate holder is authorized to perform operations in accordance with the provisions, conditions, and/or limitations set forth in the following exemptions listed in the following table.

a. Exemptions.

Exemption Number	Date of Expiration	Remarks and/or References
Exemption Number	Date of Expiration	Exemptions Remarks

The certificate holder is not authorized to conduct any operations under the provisions of any exemptions.

TEXT99

1. Issued by the Federal Aviation Administration.
2. Support information reference:
3. These Training Specifications are approved by direction of the Administrator.

4. Date Approval is effective:
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Amendment Number:

Date:

A00 Designated Persons

7.

**HQ
Control:
HQ
Revision:**

a. The personnel listed in the following table are designated to officially apply for and receive training specifications for the certificate holder indicated below.

Table 1 – Designated Persons to Apply for and Receive Authorizations

Title	Name	Parts Authorized
TABL01	TABL02	TABL03

TEXT99

1. Issued by the Federal Aviation Administration.
2. Support information reference:
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Amendment Number:

Date:

A01 Affiliated Designated Mechanic Examiners

2. (DME's)

HQ

Control:

HQ

Revision:

- a. The certificate holder is authorized to conduct operations under 14 CFR Part 147 using affiliated Designated Mechanic Examiners. Only those DME's identified in the Flight Standards Automation System, National Vital Information Subsystem's Designated Airman Table who are affiliated with the training center are authorized to conduct tests for the training center.
- b. The certificate holder shall maintain a current list of DME's approved for use by the certificate holder and shall provide a copy of this list to the certificate holding district office (CHDO). This listing shall include the specific type of test, either Airframe, Powerplant, or combined Airframe and Powerplant, which each evaluator is authorized to conduct. The CHDO shall be provided an updated list noting any changes within five (5) working days of those changes.
- c. The certificate holder shall provide all affiliated DME, CHDO, and test centers with a graduation list with at least the following information:
 1. Names and Addresses of Graduates
 2. Graduation Dates
 3. Curriculum from which the Applicant Graduated (i.e. Airframe, Powerplant, or Combined)
 4. A Statement Certifying the Graduates, Signed and Dated by an Authorized AMTS Official

TEXT99

-
1. Issued by the Federal Aviation Administration.
 2. These Training Specifications are approved by direction of the Administrator.

3. Date Approval is effective:
4. I hereby accept and receive the Training Specifications in this paragraph.

Amendment Number:

U.S. Department
of Transportation
Federal Aviation
Administration

Part 147 Aviation Maintenance Technician School

Date:

A01 Instructors

3.

HQ

Control:

HQ

Revision:

The certificate holder shall maintain a current list of instructors accepted for use by the certificate holding district office (CHDO). The certificate holder shall provide a copy of this list to the CHDO. This listing shall include the specific curriculum in which each instructor is authorized to conduct training. The certificate holder shall provide, to the CHDO, updates to the instructor listing noting any changes within five (5) working days of those changes.

TEXT99

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-
1. Issued by the Federal Aviation Administration.
 2. These Training Specifications are approved by direction of the Administrator.

3. Date Approval is effective:

Amendment Number:

4. I hereby accept and receive the Training Specifications in this paragraph.

Date:

A02 Approved Recordkeeping System

5.

HQ

Control:

HQ

Revision:

a. The certificate holder is authorized to use the approved TEXT01 recordkeeping system, described and/or referenced in this paragraph:

TEXT02

b. The certificate holder shall maintain trainee records and records that show regulatory compliance with Instructor qualifications at the following location(s):

Table 1 – Location Information for Records

Physical Address	Mailing Address	Telephone Number	E-Mail Address
TABL01	TABL02	TABL04	TABL06

c. The certificate holder is authorized to use an approved electronic/digital recordkeeping system, described and/or referenced in this paragraph (if none, enter N/A.)

TEXT03

d. The certificate holder is authorized the use of the following electronic/digital signature procedures (if none, enter “N/A”).

TEXT04

TEXT99

-
1. Issued by the Federal Aviation Administration.
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3. Date Approval is effective:

Amendment Number:

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U.S. Department
of Transportation
Federal Aviation
Administration

Part 147 Aviation Maintenance Technician School

Date:

Print Date: 3/12/2009

A025-2
XXX FSDO

Certificate No.: XXXXXXXX

A02 Authorizations/Limitations

6.

HQ

Control:

HQ

Revision:

- a. The certificate holder is authorized to perform Training in accordance with the provisions, conditions, and/or limitations set forth in the following authorization in Table 1:

Table 1 – Curriculum Subject/Topic Areas ELIGIBLE For Distance Learning

Knowledge Level	Skill Level	Distance Learning Eligible Subject/Topic Areas
Level A	Level 1 only	Subject/Topic areas B002, B003, & B004: ALL
Level B	Level 1 only	Subject/Topic areas B002, B003, & B004: ALL
Level C	Level 1 only	Subject/Topic areas B002: ALL EXCEPT: J.1.a – Inspection Concepts and Techniques/Measuring/Tools Subject/Topic areas B003, & B004: ALL

- b. The certificate holder is not authorized to conduct Distance Learning Method curriculum delivery in any area not specified in this Training Specification.
- c. The certificate holder must specify all use of Distance Education Methods in the operating manual.
- d. Any use of distance learning must be approved by the Administrator.

-
1. Issued by the Federal Aviation Administration.
 2. These Training Specifications are approved by direction of the Administrator.

3. Date Approval is effective:

Amendment Number:

4. I hereby accept and receive the Training Specifications in this paragraph.

Date:

B00 **Required Curriculum for General (Part 147**
2. **Appendix B).**

HQ
Control:
HQ
Revision:

- a. The certificate holder is required to develop an approved curriculum covering the following elements, for the conduct of training for airman qualifications, aircraft ratings, and certifications in accordance with 14 CFR Parts 65 and 147:
- b. The certificate holder shall determine and certify each applicant's eligibility and experience requirements below prior to testing for the issuance of a certificate and place this in the trainee's training records.

Table 1: General Curriculum Subjects & Topics

General Curriculum Subject Area Topics

<u>Topic</u>	<u>Level</u>	<u>Knowledge - Skill</u>
A. Fundamental Electricity / Electronics		
1. Electron theory		A-1
2. Magnetism		A-1
3. DC electrical circuits		C-2
4. AC electrical circuits		C-2
5. Transformers		B-1
6. Ohm's law		C-1
7. Perform circuit continuity		C-3
8. Calculate and measure voltage		C-3
9. Calculate and measure current		C-3
10. Calculate and measure resistance		C-3
11. Calculate and measure power		B-1
12. Calculate capacitance / inductance		B-1
13. Series circuits		C-3
14. Parallel circuits		C-3
15. Series/parallel circuits		C-3
16. Controlling devices including switches and relays		C-2
17. Protective devices including fuses and circuit breakers		C-2
18. Resistor types and color coding		C-2
19. DC and AC motors		B-1
20. Read and interpret aircraft electrical schematics including solid state devices and logic functions		C-3
21. Utilize a multimeter		C-3
22. Inspect and service aircraft batteries		C-2

23. Semiconductors	
a. Diodes	B-1
b. Transistors	B-1
c. Integrated circuits	B-1
24. Digital logic	B-1
25. Digital numbers	B-1
26. Digital troubleshooting	B-2
27. Electrostatic discharge (ESD)	B-1
B. Aircraft Drawings	
1. Lines	B-1
2. Use drawings / blueprints	C-3
3. Draw diagrams and sketches	C-3
4. Use charts and graphs	C-2
C. Weight and Balance	
1. Terminology	B-1
2. Purpose of weighing	B-1
3. Weighing procedures	C-1
4. Weigh an aircraft	C-3
5. Perform weight and balance calculations	C-3
6. Calculate ballast / weight shift	C-2
7. Mean aerodynamic chord	B-2
D. Fluid Lines and Fittings	
1. Tubing and hose materials	B-1
2. Tubing and hose sizes	B-1
3. Tubing and hose applications	B-1
4. Identify fittings for tubing and hoses	B-1
5. Fabricate and install an aircraft tube	C-3
6. Fabricate and install an aircraft hose	C-3
7. Perform a tubing and a hose inspection	C-3
8. Installation and security requirements for tubing and hoses	C-3
9. Fluid line identification	B-2
E. Aircraft Material, Hardware, and Processes	
1. Aircraft metals:	
a. Heat treatment	B-1
b. Forces placed on aircraft metals	B-1
2. Aircraft hardware:	
a. Aircraft bolts	C-3
b. Nuts	C-3
c. Screws	C-3
d. Pins	C-3
e. Washers	C-3

- f. Turnlock fasteners C-3
 - 3. Identify and select special aircraft hardware including:
 - a. Aircraft cables C-3
 - b. Cable fittings C-3
 - c. Flexible and rigid line couplings C-3
 - 4. Safety wire:
 - a. Requirements and techniques C-3
 - b. Install safety wire on nuts, bolts, turnbuckles, and airframe and engine components C-3
 - 5. Torque
 - a. Torque tools, principles, and procedures C-3
 - b. Torque aircraft hardware C-3
- F. Ground Operations and Servicing
 - 1. Secure an aircraft C-2
 - 2. Move an aircraft C-2
 - 3. Aviation fuels and fuel servicing procedures B-1
 - 4. Airport operation B-1
 - 5. Fire extinguishers B-1
- G. Corrosion
 - 1. Washing aircraft B-1
 - 2. Corrosion theory B-1
 - 3. Perform an aircraft corrosion inspection C-3
 - 4. Identify and select aircraft finishing materials B-1
 - 5. Apply finishing materials B-2
 - 6. Inspect finishes and identify defects C-3
- H. Maintenance Forms, Records, and Publications
 - 1. Forms
 - a. Complete an FAA Form 337 (Major Repair and Alteration) C-2
 - b. FAA Form 8010-4 (Malfunction and defect report) B-1
 - c. FAA Form 8100-2 (Airworthiness Certificate) B-1
 - d. AC Form 8050-3 (Registration Certificate) B-1
 - e. FAA Form 8130 (Serviceable tag) B-1
 - 2. Records
 - a. Terminology B-1
 - b. Temporary records B-1
 - c. Permanent records B-1
 - d. Maintenance record entry requirements C-2
 - e. Write descriptions of work using typical aircraft maintenance records C-3
 - 3. Publications – demonstrate ability to read, comprehend, and apply information from FAA and manufacturers publications to the Knowledge and Skill Levels listed including:

- a. Federal Aviation Regulations
 - 1) Parts 1, 21, 25, 27, 29, 31, and 33 B-2
 - 2) Part 23, 91, 121, 125, 127, and 129 B-2
 - 3) Parts 39, 43 and 145 C-2
 - 4) Part 65 C-2
 - b. Advisory Circulars (AC) C-3
 - c. Type Certificate Data Sheets (TCD) C-3
 - d. Airworthiness Directives (AD) C-3
 - e. Supplemental Type Certificates (STC) B-2
 - e. ATA Specification 100 B-2
 - f. Manufacturers publications
 - 1) Maintenance manuals C-3
 - 2) Service bulletins, instructions, and letters C-3
 - 3) Alert service information C-2
 - 4) Master Minimum Equipment List (MMEL) C-2
 - 4. Sport Pilot aircraft maintenance and record requirements B-1
 - 5. Amateur built aircraft B-1
 - 6. Extended-range twin-engine operational performance standards (ETOPS) A-1
- I. Aviation Physics
- 1. Matter and energy B-1
 - 2. Work, power, force, and motion B-1
 - 3. Heat and pressure B-1
 - 4. Gas law and fluid mechanics B-1
 - 5. Aerodynamics / theory of flight
 - a. Atmospheric conditions B-1
 - b. Bernoulli's principle and Newtonian law B-1
 - c. Density altitude B-1
 - d. Aircraft flight controls B-2
 - e. Aerodynamic aids including vortex generators, wing fences, and stall strips B-1
 - f. Standard day B-1
 - g. Forces of flight B-2
 - h. Airfoils B-1
 - i. Axes of flight – roll, pitch, and yaw B-2
 - j. Aircraft stability B-1
- J. Inspection Concepts and Techniques
- 1. Measuring
 - a. Tools C-1
 - b. Use calipers C-3
 - c. Use micrometers C-3
 - d. Use measurement gauges C-3
 - e. Calibration and tool accuracy C-1

2. Nondestructive testing
 - a. Perform a dye penetrant inspection C-2
 - b. Magnetic particle B-2
 - c. Ultrasonic B-2
 - d. Eddy current B-2
 - e. Radiographic B-1
 3. Aircraft inspection programs B-1
 4. Aircraft inspection methods and tools B-1
 5. Focused inspections including aging aircraft, hard-landing, sudden stoppage, over-speed, and lightning strike B-1
- K. Human Factors
1. General introduction to Human Factors A-1
 2. Safety culture / organizational factors A-1
 3. Human error – error principles, event investigation, and case studies A-1
 4. Human performance and limitations A-1
 5. Environment – physical and social A-1
 6. Procedures, information, tools, and task sign-off procedures A-1
 7. Planning of tasks, equipment, and spares A-1
 8. Communication A-1
 9. Teamwork and leadership A-1
 10. Professionalism and integrity A-1
 11. Shift and task turnover A-1
 12. Undocumented maintenance A-1
 13. Fatigue management / fitness for duty A-1
 14. The Dirty Dozen A-1
- L. Foreign Object Elimination (FOE)
1. Basic terms and definitions A-1
 2. Housekeeping A-1
 3. Tool accountability A-1
 4. Hardware accountability A-1
 5. Lost items A-1
 6. Physical entry & personnel control A-1
 7. Reporting & investigation A-1
 8. Material handling A-1
 9. Parts protections A-1
 10. Hazardous materials A-1
 11. Wildlife / environment A-1
 12. Foreign object damage (FOD) effects A-1
- M. Alert, Caution, and Warning Indications A-1

B00 **Required Curriculum for Airframe (Part 147**
3. **Appendix C).**

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- c. The certificate holder is required to develop an approved curriculum covering the following elements, for the conduct of training for airman qualifications, aircraft ratings, and certifications in accordance with 14 CFR Parts 65 and 147:
- b. The certificate holder shall determine and certify each applicant's eligibility and experience requirements below prior to testing for the issuance of a certificate and place this in the trainee's training records.

Table 2 – Airframe Curriculum Subjects & Topics

<u>Topic</u>	<u>Knowledge - Skill Level</u>
A. Metallic Structures	
1. Select sheet metal	C-2
2. Select rivets and additional sheet metal hardware	C-2
3. Heat treatment of aluminum	B-1
4. Layout and bend sheet metal	C-3
5. Form sheet metal	B-1
6. Install and remove conventional rivets	C-3
7. Repair and inspect sheet metal	C-3
8. Select and install special fasteners	C-3
9. Use Manufacturer's Structural Repair Manual (SRM)	C-2
B. Non-Metallic Structures	
1. Wood structures	A-1
2. Aircraft covering	A-1
3. Composite structures	
a. Selection of composite materials	C-2
b. Select and install fasteners	C-3
c. Core materials	C-2
d. Manufacturing methods	B-1
e. Composite structure inspection procedures	C-2
f. Hot-bond repair a composite structure	C-3
g. Inspect and repair fiberglass	C-3
4. Inspect and repair plastics	B-1
5. Inspect glass	B-1

- C. Flight Controls
1. Primary and secondary flight control surfaces C-1
 2. Check alignment of structures B-2
 3. Control surface indicators B-1
 4. Inspect flight control components C-3
 5. Inspect, balance, and rig movable flight control surface C-3
- D. Airframe Inspection
1. Inspection requirements C-1
 2. Inspection and maintenance record requirements and entries C-3
 3. Inspect and check welds B-2
 4. Inspect aircraft doors, windows, and interior furnishings B-1
 5. Accomplish an airframe conformity check C-3
 6. Perform an airframe inspection to include a records check C-3
- E. Landing Gear Systems
1. Fixed and retractable landing gear systems B-1
 2. Fixed and retractable landing gear components B-1
 3. Steering systems B-1
 4. Inspect, check, and service landing gear position indicating and warning systems C-3
 5. Anti-skid system components and operation B-2
 6. Inspect and service a landing gear C-3
 7. Inspect, check, and service an anti-skid system B-2
 8. Jack aircraft C-3
 9. Perform a landing gear retraction C-3
 10. Wheels, brakes, and tires B-1
 11. Inspect /service wheels, brakes, and tires C-3
 12. Install brake lining(s) or brake assembly C-3
- F. Hydraulic and Pneumatic Systems
1. Hydraulic system
 - a. System components and fluids B-1
 - b. System operation B-1
 - c. Servicing requirements B-2
 - d. Inspect, check, service, and troubleshoot a hydraulic system C-3
 2. Pneumatic systems
 - a. Types and components B-1
 - b. Servicing requirements B-2
- G. Environmental Systems
1. Requirements for cabin environmental system B-1
 2. Pressurization systems B-1
 3. Air cycle systems B-1
 4. Vapor cycle systems B-1

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| 5. Cabin heaters | B-1 |
| 6. Inspect, check, service and troubleshoot an oxygen system | B-2 |
| 7. Aircraft instrument cooling | A-1 |

- H. Aircraft Instrument Systems
1. Pressure indicating instruments B-1
 2. Temperature indicating instruments B-1
 3. Mechanical movement measuring instruments B-1
 4. Gyroscopic instruments B-1
 5. Direction indicating instruments B-1
 6. Instrument pneumatic systems B-1
 7. Pitot static system B-2
 8. Perform a static system pressure system leak test C-3
 9. Fuel quantity indicating systems B-1
 10. Warning systems B-1
 11. Range markings B-1
 12. Digital electronic instruments
 - a. Numbering systems and data conversion A-1
 - b. Data buses and logic circuits A-1
 - c. Integrated circuits A-1
 - d. Fiber optics A-1
 - e. Electronic displays B-1
 - f. Electrostatic sensitive devices B-1
 - g. Digital aircraft systems including:
 - 1) Built in test equipment (BITE) B-1
 - 2) Central Maintenance computer System (CMCS) B-1
 - 3) Electronic flight instrument system (EFIS) B-1
 - 4) Engine indication and crew alerting system (EICAS) B-1
 - 5) Heads-up guidance system (HGS) B-1
- I. Communication and Navigation Systems
1. Communication systems:
 - a. Radio operating principles B-1
 - b. Radio components B-1
 - c. Antennas and antenna inspection requirements B-2
 - d. Interphone systems B-1
 - e. Systems including VHF, HF, intercom, and SATCOM B-1
 - f. Aircraft communication addressing and reporting
 - g. system (ACARS) B-1
 - h. Radio integrating system (AIS) B-1
 - i. Emergency locator transmitter (ELT) B-1
 2. Navigation systems:
 - a. Automatic direction finder (ADF) B-1
 - b. Very high frequency omnidirectional (VOR) B-1
 - c. Distance measuring equipment (DME) B-1
 - d. Instrument landing system (ILS) B-1
 - e. Global positioning system (GPS) B-1
 - f. Inertial navigation system (INS) B-1
 - g. Traffic alert and collision warning system (TCAS) B-1

- h. Weather radar B-1
- i. Ground proximity warning systems B-1
- j. Warning systems B-1
- k. Auto-pilot theory and components B-1
- l. Auto-pilot operation B-1
- m. Stability augmentation B-1
- n. Antennas and antenna inspection requirements B-2
- 3. Surveillance
 - a. Transponders B-1
 - b. Automatic Dependent Surveillance Broadcast (ADS-B) B-1

- J. Aircraft Fuel Systems
 - 1. Fuel system types B-1
 - 2. Components including filters and selector valves B-1
 - 3. Aircraft fuel tanks B-1
 - 4. Sealing of integral fuel tanks B-1
 - 5. Fuel flow B-1
 - 6. Fuel quantity B-1
 - 7. Fuel transfer and defueling A-1
 - 8. Fuel dump systems A-1
 - 9. Inspect, check, troubleshoot, and repair a fuel system C-3
 - 10. Operationally check fuel system B-2

- K. Aircraft Electrical Systems
 - 1. Generators B-1
 - 2. Alternators B-1
 - 3. Starter generators B-1
 - 4. Voltage regulators B-1
 - 5. DC generation systems B-2
 - 6. AC generation systems B-2
 - 7. DC power distribution systems B-1
 - 8. AC power distribution systems B-1
 - 9. Aircraft wiring:
 - a. Wire sizes, types, and selection B-2
 - b. Perform a wiring inspection verifying installation and routing C-3
 - c. Perform wire termination and splicing C-3
 - d. Shielding B-1
 - e. Perform build-up and repair of connectors C-3
 - f. Read wiring circuits and diagrams C-3
 - g. Solder aircraft wiring C-3
 - 10. Troubleshoot an airframe electrical circuit C-3
 - 11. Install, check, and service airframe electrical wiring, switches, and protective devices C-3
 - 12. Aircraft lightning protection B-1

13. Aircraft bonding	B-2
14. Aircraft lighting systems	B-1
L. Ice and Rain Control Systems	
1. Ice detection systems	B-1
2. Anti-ice systems and components	B-1
a. Inspect or operationally check pitot-static anti-ice system	C-3
3. De-ice systems and components	B-1
a. Inspect or operationally check deicer boot	C-3
M. Airframe Fire Protection Systems	
1. Types of fires and aircraft fire zones	B-1
2. Fire detection and warning systems	B-1
3. Fire detection system maintenance and inspection	B-2
4. Smoke and carbon monoxide detection systems	B-1
5. Fire extinguishing agents and types of extinguishing systems	B-1
6. Fire extinguishing system maintenance and inspection requirements	B-2
7. Inspect, check, service, troubleshoot and repair an aircraft fire detection and extinguishing system	C-3
N. Rotorcraft Fundamentals	
1. Rotorcraft aerodynamics	B-1
2. Fundamentals of rotors	C-1
3. Flight controls	C-1
4. Transmissions	B-1
5. Rig rotary wing aircraft	B-1
6. Design and operation of rotor systems	C-1
O. Water and Waste Systems	B-1

B00 **Required Curriculum for Powerplant (Part 147**
4. **Appendix D).**

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- d. The certificate holder is required to develop an approved curriculum covering the following elements, for the conduct of training for airman qualifications, aircraft ratings, and certifications in accordance with 14 CFR Parts 65 and 147:

- b. The certificate holder shall determine and certify each applicant's eligibility and experience requirements below prior to testing for the issuance of a certificate and place this in the trainee's training records.

Table 3 – Powerplant Subjects & Topics

Powerplant Curriculum Subject Area Topics

<u>Topic</u>	<u>Knowledge - Skill Level</u>
A. Reciprocating Engines	
1. Types of engines	B-1
2. Engine operating principles / theory of operation	B-1
3. Horizontally opposed engine construction and internal components	B-1
4. Radial engine construction and internal component differences	A-1
5. Remove, inspect, and install cylinder assembly	C-3
6. Adjust valves	C-3
7. Remove and install engine	C-3
8. Diesel engine operating principles / theory of operation	A-1
9. Ground operate and troubleshoot an engine	C-3
10. Storage and preservation	B-1
B. Turbine engines	
1. Engine operating principles / theory of operation	B-1
2. Types of engines	B-1
3. Engine terms and definitions	B-1
4. Cold section:	
a. Inlet ducts	B-1
b. Centrifugal compressors	B-1
c. Axial-flow compressors	B-1
d. Turbofans	B-1

- e. Blade design and attachment B-1
 - f. Diffuser section B-1
 - 5. Hot section:
 - a. Combustion section B-1
 - b. Turbine section C-2
 - c. Exhaust B-1
 - 6. Bearings and seals B-1
 - 7. Accessory drives B-1
 - 8. Bleed air systems B-1
 - 9. Auxiliary power units B-1
 - 10. Turboprop engines B-1
 - 11. Remove and install engine C-3
 - 12. Ground operate and troubleshoot a turbine engine C-3
 - 13. Storage and preservation B-1
- C. Engine Inspection
- 1. Reciprocating engines:
 - a. Inspection and maintenance record requirements and entries C-2
 - b. Perform a compression check C-3
 - c. Accomplish a powerplant conformity check C-3
 - d. Perform a powerplant inspection to include a records check C-3
 - 2. Turbine engines:
 - a. Inspection and maintenance record requirements and entries C-2
 - b. Accomplish a powerplant conformity check C-3
 - c. Perform a powerplant inspection including a records check C-3
- D. Engine Fire Protection Systems
- 1. Types of fires and engine fire zones B-1
 - 2. Fire detection and warning system operation B-1
 - 3. Fire detection system maintenance and inspection requirements B-2
 - 4. Fire extinguishing agents, types of systems, and operation B-1
 - 5. Fire extinguishing system maintenance and inspection B-2
 - 6. Inspect, check, service, troubleshoot and repair an engine fire detection and extinguishing system C-3
- E. Engine Instrument Systems
- 1. Reciprocating engines:
 - a. Fuel flow indicating systems B-1
 - b. Pressure measuring systems B-1
 - c. Temperature measuring systems B-1

- d. Tachometers B-1
- e. Manifold pressure B-1
- f. Inspect, check, and troubleshoot an engine instrument system C-3

2. Turbine engines:
 - a. Fuel flow indicating systems B-1
 - b. Temperature measuring systems B-1
 - c. Position indicating systems B-1
 - d. Tachometers B-1
 - e. Torquemeters B-1
 - f. Engine pressure ratio (EPR) B-1
 - g. Engine Indicating and Crew Alerting System (EICAS) B-1
 - h. Full Authority Digital Engine Controls (FADEC) B-1
 - i. Electronic centralized aircraft monitoring (ECAM) B-1
 - j. Inspect, check, and troubleshoot an engine instrument system C-3
 3. Range markings B-1
- F. Engine Electrical Systems
1. Generators B-1
 2. Alternators B-1
 3. Starter generators B-1
 4. Voltage regulators B-1
 5. DC generation systems B-2
 6. AC generation systems B-2
 7. Engine wiring – differences from Airframe wiring C-2
 8. Inspect, check, and service engine electrical wiring, switches, and protective devices C-3
- G. Lubrication Systems
1. Reciprocating engines
 - a. Functions and characteristics of reciprocating engine oils B-1
 - b. Types and grades of engine oil B-1
 - c. Wet-sump system B-1
 - d. Dry-sump system B-1
 - e. Lubrication system operation and components B-1
 - f. Inspect and service a lubrication system C-3
 2. Turbine engines
 - a. Functions and characteristics of turbine engine oil B-1
 - b. Types and grades of engine oil B-1
 - c. Lubrication system operation and components B-1
 - d. Inspect and service a lubrication system including chip detectors C-3
- H. Ignition and Starting Systems
1. Reciprocating engine:

- a. Ignition system theory B-1
 - b. Repair and time magneto internally C-3
 - c. Time magneto to engine C-3
 - d. Spark plug theory B-1
 - e. Remove, clean, and install spark plug C-3
 - f. Shower of sparks and impulse coupling B-1
 - g. Perform an ignition system operational check C-3
 - h. Inspect, troubleshoot, and repair an ignition system C-3
 - i. Solid state ignition systems A-1
 - j. Full Authority Digital Engine Controls (FADEC) A-1
 - k. Engine starters with Bendix drive or with right-angle drive B-1
2. Turbine engine:
- a. Ignition system theory B-1
 - b. System components B-1
 - c. Perform an ignition system inspection C-3
 - d. Starters B-1
 - e. Inspect, check and troubleshoot an electrical starting system C-2
- I. Fuel Metering Systems
1. Reciprocating engines:
- a. Engine pumps and filters B-1
 - b. Engine mixture requirements B-1
 - c. Float carburetor theory and components B-1
 - d. Float carburetor operation and adjustments B-2
 - e. Pressure carburetor adjustments A-1
 - f. Continuous flow fuel injection theory and components B-1
 - g. Continuous flow fuel injection operation, troubleshooting, and adjustment B-2
 - h. Full Authority Digital Engine Controls (FADEC) A-1
 - i. Inspect, troubleshoot, and repair a fuel metering system C-3
2. Turbine engines
- a. Engine pumps and filters B-1
 - b. Hydromechanical system design and components B-1
 - c. Full Authority Digital Engine Controls (FADEC) B-1
 - d. Fuel nozzles and manifolds B-1
 - e. Flow test fuel nozzle B-2
 - f. Inspect, check, and troubleshoot a fuel metering system C-2
- J. Reciprocating Engine Induction and Cooling Systems
- 1. Induction system design B-1
 - 2. Induction system icing B-2

- 3. Superchargers A-1
 - 4. Turbochargers and controls B-1
 - 5. Cooling systems
 - a. Air cooled reciprocating engines:
 - 1) System design and components B-1
 - 2) Inspection and maintenance requirements B-2
 - b. Liquid cooled reciprocating engines:
 - 1) System design and components B-1
 - 2) Inspection and maintenance requirements B-1
 - 6. Perform an induction and cooling system inspection C-3
- K. Turbine Engine Air System
- 1. Engine anti-ice B-1
 - 2. Compressor control
 - a. Compressor bleed B-1
 - b. Compressor / turbine case cooling B-1
- L. Engine Exhaust and Reverser Systems
- 1. Reciprocating engines:
 - a. Exhaust system design A-1
 - b. Cabin and carburetor heat B-1
 - c. Mufflers B-1
 - d. Perform an exhaust system inspection C-3
 - 2. Turbine engines:
 - a. Exhaust nozzle design A-1
 - b. Noise suppressors A-1
 - c. Design and operation of thrust reversers B-1
 - d. Cowl load sharing A-1
 - e. Perform an exhaust system inspection C-3
- M. Propellers
- 1. Propeller theory of operation including forces and aerodynamic factors B-1
 - 2. Types of propellers and blade design A-1
 - 3. Pitch control B-1
 - 4. Operation, synchronizing, and ice protection B-1
 - 5. Reciprocating engine constant speed propellers and governors B-1
 - 6. Turbine engine propellers and governors B-1
 - 7. Operation of turbine engine propellers A-1
 - 8. Remove and install an aircraft engine propeller C-3
 - 9. Check blade tracking C-3

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| 10. Inspect an aircraft propeller for airworthiness | C-3 |
| 11. Measure blade angle with a propeller protractor | C-3 |
| 12. Repair an aluminum alloy propeller blade | C-3 |

U.S. Department
of Transportation
Federal Aviation
Administration

Part 147 Aviation Maintenance Technician School

Print Date: 3/12/2009

B004-8
XXX FSDO

Certificate No.: XXXXXXXX

B00 Training Agreement Authorizations and
5. Limitations.

HQ
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- a. The certificate holder is authorized to test students at the completion of the general portion of the approved curriculum.
- b. The certificate holder is NOT authorized to test students at the completion of the general portion of the approved curriculum.

TEXT99

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1. Issued by the Federal Aviation Administration.
 2. These Training Specifications are approved by direction of the Administrator.

3. Date Approval is effective: _____ Amendment Number: _____
4. I hereby accept and receive the Training Specifications in this paragraph.

Date: _____