Civil Aeronautics Manual 53

Mechanic School Certificates

Second Edition

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CIVIL AERONAUTICS ADMINISTRATION

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Introductory Note

Civil Aeronautics Manual 53 contains in consolidated form (1) Civil Air Regulations, Part 53, Mechanic School Certificates, adopted by the Civil Aeronautics Board, effective June 15, 1952; and (2) the rules, policies, and interpretations issued by the Administrator of Civil Aeronautics in application to the various sections of the regulations.

CAA *rules* are supplementary regulations issued pursuant to authority expressly conferred on the Administrator in the Civil Air Regulations. Such rules are mandatory and must be complied with.

CAA *policies* provide detailed technical information on recommended methods of complying with Civil Air Regulations. Such policies are for the guidance of the public and are not mandatory in nature.

CAA *interpretations* define or explain words and phrases of the Civil Air Regulations. Such interpretations are for the guidance of the public and will be followed by the Administrator in determining compliance with the regulations.

This manual is arranged to give the number, title, and text of each section of the regulations followed by any rules, policies, or interpretations applicable to that section. These rules, policies, or interpretations of the Administrator are identified by consecutive dash numbers appended to the regulation section number.

This manual includes all material published as Civil Aeronautics Manual 53 dated August 1953, and Supplement No. 1 dated February 5, 1954. It will be revised from time to time in accordance with changes in the Civil Air Regulations, Part 53, or as the need for additional explanations are brought to the attention of the Administrator.

In case of translation, the English text of this manual shall be authoritative.

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Mechanic School Certificates

Applicability and Definitions

53.0 *Applicability of this part.* This part establishes the requirements for the issuance of mechanic school certificates and ratings and basic operating rules for the holders thereof.

53.1 *Definitions.* (a) As used in this part terms are defined as follows:

(1) *Aircraft.* An aircraft shall mean any contrivance now known or hereafter invented, used, or designed for navigation of or flight in the air, including airframe, powerplant, propeller, and appliances.

(2) *Aircraft engine.* An aircraft engine shall mean an engine used, or intended to be used, for propulsion of aircraft, and includes all parts, appurtenances, and accessories thereof other than propellers.

(3) *Airframe.* Airframe shall mean any and all kinds of fuselages, booms, nacelles, cowlings, fairings, empennages, airfoil surfaces, and landing gear, and all parts, accessories, or controls, of whatever description, appertaining thereto, but not including powerplants and propellers.

(4) *Alteration.* An alteration shall mean any appreciable change in the design of an airframe, powerplant, propeller, or appliance.

(5) *Appliances.* Appliances shall mean instruments, equipment, apparatus, parts, appurtenances, or accessories, of whatever description, which are used, or are capable of being or intended to be used, in the navigation, operation, or control of aircraft in flight (including communication equipment, electronic devices, and any other mechanism or mechanisms installed in or attached to aircraft during flight, but excluding parachutes), and which are not a part or parts of airframes, powerplants, or propellers.

(6) *Authorized representative of the Administrator.* An authorized representative of the Administrator shall mean any employee of the Civil Aeronautics Administration or any private person, authorized by the Administrator to perform particular duties of the Administrator under the provisions of this part.

(7) *Certificated mechanic.* A certificated mechanic shall mean an individual holding a valid mechanic certificate with appropriate ratings issued by the Administrator.

(8) *Component.* A component shall mean a constituent part of an aircraft.

(9) *Instrument.* An instrument shall mean a device utilizing internal mechanism to indicate visually or aurally the attitude, altitude, performance, or operation of an aircraft or any component thereof, and shall include electronic instrumentation and devices for the automatic control of navigation of the aircraft in flight.

(10) *Maintenance.* Maintenance, which includes preventive maintenance, shall mean the inspection, overhaul, repair, upkeep, and preservation of airframes, powerplants, propellers, and appliances, including the replacement of parts.

(11) *Person.* Person shall mean any individual, firm, copartnership, corporation, company, association, joint-stock association, or body politic; and includes any trustee, receiver, assignee, or other similar representative thereof.

(12) *Powerplant.* Powerplant shall mean an aircraft engine and its component parts, and other parts necessary to properly install such engine in an aircraft, but not the propeller (if used).

(13) *Propeller.* Propeller shall mean a device for propelling an aircraft through the air, having blades mounted on a power-driven shaft, which when rotated produces by its action on the air a thrust approximately parallel to the longitudinal axis of the aircraft, and shall also include control components normally supplied by the manufacturer of the propeller. It

shall also include a system of rotating airfoils which serve either to counteract the effect of the main rotor torque of a rotorcraft or to maneuver a rotorcraft about one or more of its three principal axes.

(14) *Radio.* Radio shall mean an appliance and related apparatus for the transmission and/or reception of radio signals, including electronic appliances used for intercommunication.

(15) *Repair.* Repair shall mean the restoration of an airframe, powerplant, propeller, or appliance to a condition for safe operation after damage or deterioration.

Certification Rules

53.5 *Application for certificate.* Application for a mechanic school certificate and ratings, or any modification or amendment thereof, shall be made on a form and in a manner prescribed by the Administrator.

53.5–1 *Procedure for applying for a mechanic school certificate (CAA rules which apply to sec. 53.5).* (a) *General.* When the applicant is satisfied that he is thoroughly familiar with the contents of this part, he shall make application for a mechanic school certificate on the application portion of Form ACA–614. This form may be obtained from the Office of the Regional Administrator of Civil Aeronautics located in the area most convenient to the applicant, or from the local CAA Flight Operations and Airworthiness District Office. The addresses of all regional offices of the Civil Aeronautics Administration and the States under their jurisdiction will be found in the appendix A.

(b) *Application file.* A complete application file shall consist of the original and one copy of the following:

(1) Executed Form ACA–614, Mechanic-School Application and Inspection Report;

(2) The curriculum to be used; [1]

(3) A list of facilities and materials to be used (photographs of the facilities are desirable);

(4) A list of instructors, including the type of certificate, the number, the ratings and subjects to be taught.

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53.6 *Issuance.* A mechanic school certificate with appropriate ratings prescribing such operations, specifications, and limitations as may be reasonably required in the interest of safety shall be issued to an applicant who the Administrator finds is properly and adequately equipped, has sufficient qualified personnel, and is able to conduct a mechanic school in accordance with the requirements hereinafter specified. No person may operate as a certificated mechanic school without, or in violation of, the terms of a mechanic school certificate.

53.7 *Duration.* A mechanic school certificate with appropriate ratings shall remain in effect until surrendered, suspended, revoked, or otherwise terminated by order of the Board, after which it shall be returned to the Administrator.

53.7–1 *Duration (CAA policies which apply to sec. 53.7).* A mechanic school Air Agency Certificate which has been surrendered or otherwise terminated by order of the Board should be returned to the Administrator through the CAA Regional Office or the local Flight Operations and Airworthiness District Office.

(Published in 18 F. R. 4281, July 23, 1953, effective Aug. 15, 1953; amended in 22 F. R. 3172, May 4, 1957, effective May 15, 1957.)

53.8 *Exchange of certificates.* The Administrator shall, not later than 1 year from the effective date of this part, reinspect all mechanic schools certificated prior to the effective date of this part. Upon the conclusion of each reinspection, the existing certificate and ratings of such mechanic school shall expire, and the certificate shall be returned to the Administrator. A new certificate with appropriate ratings may be issued in accordance with the provisions of this part, if such reinspection indicates compliance herewith. Until such reinspection has been completed and a new certificate has been issued, a mechanic school shall comply with the requirements of this part in effect immediately prior to this revision.

[1] When application is made by the holder of a currently effective mechanic school certificate, an entirely new curriculum need not be submitted if the previously approved and currently effective curriculum can be altered to conform to the new Part 53, in which case only the revised pages need be submitted with a notation to that effect under "Remarks, item 25 of Form ACA–614."

53.8–1 *Exchange of certificates (CAA policies which apply to sec. 53.8).* (a) *Procedure for exchange of certificates.*

(1) It is the responsibility of the Civil Aeronautics Administration to inspect all mechanic schools holding certificates issued prior to June 15, 1952. The inspecting Flight Operations and Airworthiness Inspector will notify the mechanic school, in writing, of his intent to conduct an inspection for recertification. The mechanic school will be allowed a minimum of 30 days from the date of the inspector's letter in which to study the revised regulation and prepare for this inspection. However, the school may request inspection at any time after notification of the agent's intent to conduct an inspection. Prior to the inspection the mechanic school should execute an application for a mechanic school certificate, hereinafter referred to as form ACA–614.

(2) The mechanic school should surrender the expired certificate to the inspecting inspector at the conclusion of the inspection. If the inspection indicates full compliance with the provisions of Part 53, a new mechanic school Air Agency Certificate, Form ACA–390, with appropriate ratings will be issued by the CAA Regional Office in charge of conducting the inspection for recertification.

(Published in 18 F. R. 4281, July 23, 1953, effective Aug. 15, 1953; amended in 22 F. R. 3172, May 4, 1957, effective May 15, 1957.)

53.9 *Display.* The mechanic school certificate with appropriate ratings shall be on display in the mechanic school for which the certificate was issued and available for inspection by any authorized representative of the Administrator or the Board.

53.9–1 *Display (CAA interpretations which apply to sec. 53.9).* The mechanic school certificate (Air Agency Certificate, Form ACA–390) must be displayed in a location normally accessible to the general public and must not be obscured.

(Published in 18 F. R. 4281, July 23, 1953, effective Aug. 15, 1953.)

53.10 *Change of location.* No change in the location of a certificated mechanic school shall be made without the prior written approval of the Administrator. Any change in location of a mechanic school invalidates the mechanic school certificate, unless the change has been approved by the Administrator.

53.10–1 *Change of location (CAA policies which apply to sec. 53.10).* A mechanic school changing its location should notify the Administrator, in writing, of the contemplated change through the local Flight Operations and Airworthiness Inspector or district office supervising the activities of the school. Such notification should be made at least 30 days prior to the contemplated change since it will be necessary to conduct an inspection of the school's facilities in the new location.

(Published in 18 F. R. 4281, July 23, 1953, effective Aug. 15, 1953; amended 22 F. R. 3172, May 4, 1957, effective May 15, 1957.)

53.11 *Inspection.* An authorized representative of the Administrator or the Board shall be permitted at any time to make inspections or examinations to determine a mechanic school's compliance with the provisions of this subchapter.

53.11–1 *Formal inspections (CAA policies which apply to sec. 53.11).* The applicant's compliance with the requirements of this part will be determined by the Flight Operations and Airworthiness Inspector after completing an inspection of the applicant's facilities and equipment. After the original inspection for certification or recertification, formal inspections will be made by a Flight Operations and Airworthiness Inspector every 6 months. This inspection will be made to determine if the mechanic school continues to meet the requirements under which it was originally certificated. Upon completion of the formal inspection, the Flight Operations and Airworthiness Inspector conducting the inspection will notify the mechanic school, in writing, of any discrepancies noted during the inspection.

(Published in 18 F. R. 4281, July 23, 1953, effective Aug. 15, 1953; amended 22 F. R. 3172, May 4, 1957, effective May 15, 1957.)

53.11–2 *Informal inspection (CAA policies which apply to sec. 53.11).* A Flight Operations and Airworthiness Inspector or a representative of the Board may make spot checks from time to time between formal inspections.

(Published in 18 F. R. 4281, July 23, 1953, effective Aug. 15, 1953; amended 22 F. R. 3172, May 4, 1957, effective May 15, 1957.)

53.12 *Nontransferability of certificate.* **A mechanic school certificate is not transferable.**

53.13 *Advertising.* **No certificated mechanic school shall in any manner make any statement pertaining to such school which is false or is designed to mislead any person contemplating enrollment in such school. Any advertising which indicates that such school is approved by the Administrator shall clearly differentiate between those courses which have been approved by the Administrator and those which have not.**

53.14 *Ratings.* **The following mechanic school ratings may be issued:**

(a) Airframe;

(b) Powerplant;

(c) Airframe and powerplant.

Certificate Requirements

53.20 *Certificate requirements; general.* **No applicant for a mechanic school certificate or a rating shall be issued such certificate or rating until the appropriate requirements of sections 53.21 through 53.42 are met.**

53.20–1 *Certificate requirements; general (CAA policies which apply to sec. 53.20).* The CAA will not issue a mechanic school Air Agency Certificate to an applicant unless the inspecting inspector finds that the applicable requirements of this part have been complied with in all respects.

(Published in 18 F. R. 4281, July 23, 1953, effective Aug. 15, 1953; amended 22 F. R. 3172, May 4, 1957, effective May 15, 1957.)

53.21 *Number of students.* **Each applicant shall state in his application the maximum number of students expected to be instructed at any particular time.**

53.21–1 *Number of students (CAA interpretations which apply to sec. 53.21).* The contemplated maximum student enrollment must not be exceeded unless an amended application is submitted to, and approved by, the Administrator.

(Published in 18 F. R. 4281, July 23, 1953, effective Aug. 15, 1953.)

53.22 *Facilities, equipment, and materials; general.* **Each applicant shall have at least the facilities, equipment, and materials specified in sections 53.24 through 53.26 appropriate to the rating sought, and such additional facilities, equipment, and materials as are determined by the Administrator to be necessary for a particular curriculum to train individuals to perform properly the work appropriate to the mechanic rating sought.[1]**

[1] The Administrator publishes Civil Aeronautics Manual 53 in which is set forth an outline of the equipment, facilities, and materials which are necessary for compliance with this part.

53.23 *Modification of facilities, equipment, and materials.* **No substantial modification or change in the facilities, equipment, and materials approved by the Administrator for a particular curriculum shall be made without the prior written approval of the administrator.[2]**

[2] Requests for modifications or changes should be submitted to the Regional Administrator of Civil Aeronautics for the region in which the mechanic school is located.

53.24 *Required space facilities.* **Each applicant shall have such of the following facilities as are appropriate to the rating sought which the Administrator shall determine to be adequate or necessary to accommodate the maximum number of students expected to be instructed at any particular time. Such facilities shall be properly heated, lighted, and ventilated:**

(a) A drafting room with drafting tables and equipment;

(b) A stockroom set up to insure the proper segregation of materials;

(c) Suitable separate space having proper ventilation and temperature control for doping;

(d) Suitable separate space equipped with adequate cleaning equipment;

(e) Suitable separate space provided with test stands and test clubs for running-in engines;

(f) Suitable separate space provided with adequate equipment to disassemble, repair, assemble, test, service, and inspect the following:

(1) Ignition, electrical equipment, and appliances;

(2) Carburetors and fuel systems;

(3) Hydraulic and vacuum systems as applying to the actuation of aircraft, engines, and their appliances;

(g) Suitable space with adequate equipment for the disassembly, inspection, assembly, and rigging of an aircraft;

(h) Suitable space with adequate equipment for the disassembly, inspection, overhaul, assembly, and timing of engines.

53.24–1 *Required space facilities (CAA policies which apply to secs. 53.24 and 53.22).* The facilities of the applicant should include a properly heated, lighted, and ventilated classroom. However, when not in use, the drafting room may be used as the classroom. In addition, the applicant should have the following facilities, equipment, and materials appropriate to the rating sought:

(a) Drafting room complete with drafting tables, T-squares, and other necessary drawing equipment;

(b) Stockroom set up to insure the proper separation from the working space for the segregation and protection of parts, tools, materials, etc.;

(c) Suitable separate space, temporary or permanent structure, having proper lighting, ventilation, and temperature control for doping and paint spraying;

(d) Suitable separate space equipped with wash tank and degreasing equipment with air pressure, or other adequate cleaning equipment;

(e) Suitable separated space provided with test stands and test clubs for running-in engines. Mobile or portable test stands are considered satisfactory;

(f) Suitable separate space provided with adequate equipment including benches, tables, and instruments to disassemble, repair, assemble, test, service, and inspect the following:

(1) Ignition, electrical equipment and appliances,

(2) Carburetors and fuel systems, and

(3) Hydraulic and vacuum systems as applying to aircraft, engines, and their appliances;

(g) Suitable space with adequate equipment, including tables, benches, horses, stands, jacks, etc., for the disassembly, inspection, assembly, and rigging of an aircraft;

(h) Suitable space with adequate equipment for the disassembly, inspection, overhaul, assembly, troubleshooting, and timing of engines.

(Published in 18 F. R. 4281, July 23, 1953, effective Aug. 15, 1953.)

53.25 *Required instructional equipment.* Each applicant shall have such of the following instructional equipment as is appropriate to the rating sought which need not be in an airworthy condition and which may have been damaged, but it shall have been repaired sufficiently for complete assembly. All airframes, powerplants, propellers, appliances, and components thereof on which instruction is to be given and on which practical experience is to be obtained shall be sufficiently diversified to indicate the different manners of construction, assembly, inspection, and operation when installed in an aircraft for use, and shall be provided in sufficient number to assure that not more than eight students shall work on any single unit thereof at any one time.

(a) Various types of set fuselages, wings (wing sections if of aircraft of more than 12,500 pounds maximum certificated takeoff weight), control surfaces, landing gear, radios, instruments, propellers (including propellers of fixed type, wood and metal, and adjustable and controllable metal), and aircraft reciprocating engines (including at least 1 opposed type, 1 in-line type, 1 radial type of not less than 350 horsepower, and 1 supercharged type).

(b) At least one modern-type aircraft complete with powerplant, propeller, instruments, radio (two-way), landing lights, flares, and other items of equipment and accessories on which a mechanic might be required to work and with which he should be familiar.

53.25–1 *Required instructional equipment (CAA interpretations which apply to sec. 53.25 (b)).* A modern-type aircraft means an airplane of a type currently certificated by CAA for private or commercial operation.

(Published in 18 F. R. 4281, July 23, 1953, effective Aug. 15, 1953.)

53.25–2 *Required instructional equipment (CAA policies which apply to sec. 53.25).* The aircraft used for instructional purposes should be equipped with retractable landing gear and wing flaps. However, if the aircraft used does not have such equipment, training aids, or operational mockups of retractable landing gear, wing flaps, etc., will be considered as satisfactory for instructional purposes.

(Published in 18 F. R. 4281, July 23, 1953, effective Aug. 15, 1953.)

53.26 *Required materials, tools, and shop equipment.* Each applicant shall have an adequate supply of materials and tools and such of the following shop equipment, special tools, and other miscellaneous tools and equipment as are appropriate to the rating sought and used in the construction, maintenance, and repair of aircraft to insure that each student will receive proper instruction in the construction, maintenance, and repair of aircraft. All tools and shop equipment shall be in a satisfactory working condition and shall be of a type proper for the purpose for which they are to be used:

(a) Suitable equipment for checking the alinement of crankshafts and master and connecting rods;

(b) Air riveting hammer with controls and indicator;

(c) Heat-treating equipment for rivets and small structural parts;

(d) Bending and forming tools and equipment;

(e) Suitable equipment for sand, seed, or hull blasting;

(f) Cable-splicing equipment;

(g) Suitable equipment for localized etching of propellers;

(h) Suitable equipment for measuring propeller pitch angles;

(i) Suitable assortment of go and no-go gages;

(j) Suitable equipment for steaming and bending aircraft wood;

(k) Suitable equipment for making and testing glued wood joints;

(l) Air compressor with suitable attachments; and

(m) Battery charger and testers.

53.26–1 *Required materials, tools, and shop equipment (CAA policies which apply to secs. 53.26 and 53.22).* The following tools and miscellaneous items, the quantity of each to be governed by the number of students enrolled, will be considered sufficient to assure each student of proper instruction in the construction, maintenance, and repair of aircraft. Substitutions may be made if an unlisted tool or item is determined by the inspecting inspector to be the equivalent to, or better than, any listed for instructional purposes. An applicant for a separate rating, either airframe or power plant, should select the items from the list appropriate to the rating sought, based on the requirements of the curriculum.

(a) *Airframe rating.*

(1) Jigs and fixtures (as required).
(2) Trammels.
(3) Sand or shot bags.
(4) Work stands and fixtures (as required).
(5) Tire tools.
(6) Plumb bobs.
(7) Level.
(8) Straight edge.
(9) Scales for weighing and balancing complete aircraft, including jacks and pads.
(10) Paint spray equipment, including ventilated spray booth, with facilities for temperature control.
(11) Handsaw, plane, and chisels.
(12) Miter saw.
(13) Table saw.
(14) Bandsaw.
(15) Sander.
(16) Brace and bits.
(17) Carpenter square.
(18) Cabinetmaker clamps.
(19) Paintbrushes.
(20) Assorted needles.
(21) Sewing machine (heavy duty).
(22) Fabric table.
(23) Pinking shears.
(24) Clamps and pins.
(25) Number and letter templates.
(26) Plastic and upholstery repair equipment.
(27) Control balancing jigs.
(28) Welding equipment with assortment of tips and supplies.
(29) Welding benches and vises.
(30) Metal saw (powered).
(31) Powered riveting equipment (portable).
(32) Smoothing dollies (metal).
(33) Metal brake (size as required for instructional purposes).
(34) Bucking bars.
(35) Metal shear (size as required for instructional purposes).
(36) Clecos or similar fasteners.
(37) Cold storage box (optional).
(38) Hydraulic test bench.

(b) *Powerplant rating.*

(1) Cleaning and degreasing equipment.
(2) Special engine tools (as required).

(3) Easy outs.
(4) Torque wrenches.
(5) Feeler gages.
(6) Plug and thread gages.
(7) Surface plate.
(8) V-blocks.
(9) Engine parts inspection bench and racks.
(10) Valve spring compression gage or comparison method.
(11) Valve grinding and lapping equipment.
(12) Valve and ignition timing tools.
(13) High-tension ignition harness tester.
(14) Engine accessory test equipment (bench check).
(15) Engine test stand (stationary or mobile).
(16) Test clubs and propeller installation tools.
(17) Propeller lubricating equipment.
(18) Blade turning bars.
(19) Propeller protractor.
(20) Etching equipment.
(21) Propeller spline, go and no-go gages.
(22) Balance stand and mandrels.

(c) *Miscellaneous equipment applicable to either airframe or powerplant rating.*

(1) Grinder and buffer.
(2) Drill press and assorted drills.
(3) Assorted hand tools (special wrenches, reamers, etc.).
(4) Magnifying glass (8 to 10 power).
(5) Fluorescent magnetic particle or similar inspection facilities available for instruction (on or off premises).
(6) Lathe, metal turning bench type.
(7) Hand drill (powered) with assorted drills (as required).
(8) Bench arbor press.
(9) Tube fabrication equipment.
(10) Soldering equipment.
(11) Combination square and bubble protractor.
(12) Chain hoist and bridles.
(13) Lubrication equipment.
(14) Steel tape (50 feet).
(15) Taps and dies, assorted sizes (as required).
(16) Assorted C-clamps.
(17) Inside and outside micrometers.
(18) Wire strippers.
(19) Electrical accessory test bench.
(20) Stakon equipment or equivalent.
(21) Voltohmmeter.

(Published in 18 F. R. 4281, July 23, 1953, effective Aug. 15, 1953; amended 22 F. R. 3172, May 4, 1957, effective May 15, 1957.)

53.27 *Curriculum; general.* An applicant shall offer a curriculum designed to qualify the individuals undergoing instruction to perform the duties of a mechanic for a particular rating or ratings. Each curriculum shall provide at least the number of hours of instruction specified in section 53.28 and shall include instruction in the subjects specified in sections 53.40 and 53.41. Each curriculum shall be approved by the Administrator and no change therein shall be made without his prior written approval.

53.27–1 *Curriculum; general (CAA policies which apply to sec. 53.27).* The curriculum should be so designed that the student will receive the maximum benefit from the instruction by teaching him how to apply the basic fundamentals of mechanics and sound shop practices. To accomplish this purpose, more time should be devoted to shop and laboratory work as opposed to classroom lectures during certain phases of the curriculum. To allow latitude for the adjustment of the hours in these phases, no breakdown of the number of hours for classroom lectures or shopwork is specified. However, as a minimum standard, a curriculum should provide *at least* 60 percent of the total time for shop and laboratory work. It should also provide for continuity between the lecture subjects and the related shopwork for each phase of the curriculum.

(Published in 18 F. R. 4281, July 23, 1953, effective Aug. 15, 1953.)

53.28 *Curriculum; number of hours.* At least the following number of hours of instruction shall be offered for each of the following curricula:

(a) Airframe; 960 hours.
(b) Powerplant; 960 hours.
(c) Combined airframe and powerplant; 1,650 hours.

53.40 *Airframe curriculum.* The airframe curriculum shall include the following subjects:

(a) Parts 1, 3, 4a, 4b, 5, 6, 8, 9, 18, 24, 43, 52, and 62 of this subchapter, as amended, appropriate to the curriculum;

(b) Tools, instruments, equipment, their use and care;

(c) Shop practice and procedures, use of forms;

(d) Woodworking;

(e) Welding steel structures and fittings;

(f) Aluminum alloy structures and fittings;

(g) Sheet metal, steel, stainless steel, terneplate, aluminum and aluminum alloy;

(h) Welding, riveting, and heat treating of steel, stainless steel, aluminum, aluminum alloy, structure, stock, and fittings;

(i) Controls and control surfaces;

(j) Splicing cables, bonding, brazing, and soldering;

(k) Hydraulic systems;

(l) Vacuum systems;

(m) Electrical systems;

(n) Fuel systems;

(o) Covering, fabric and stressed skin;

(p) Landing gear assembly;

(q) Assembly and rigging;

(r) Appliances: Instruments, radio, floats, flares, heaters, etc.;

(s) Inspection of certificated aircraft, use of forms, etc.;

(t) Aircraft theory and practice;

(u) Mechanical drawing; and

(v) Aircraft weight and balance.

53.40–1 *Airframe curriculum (CAA policies which apply to secs. 53.40 and 53.27).* The airframe curriculum should include the scope and coverage of the subjects oulined below. However, the curriculum need not necessarily be presented in this order since the breakdown of the various course phases is primarily intended to assist the applicant in preparing the curriculum.

(a) *Basic.*

(1) Shop mathematics (elementary).

(2) Physics (elementary).

(3) Theory of flight.

(4) Nomenclature of aircraft, its component parts and appliances.

(5) Weight and balance, including its effect on stability and performance.

(6) Shop practice.

(7) Drafting.

(8) Mechanic ethics and legal responsibilities.

(9) Proper execution of required maintenance and airworthiness documents.

(10) Demonstrations on projects consisting of:

(i) Filing, drilling, tapping, countersinking, counterboring, taper and straight reaming, threading, etc.

(ii) All types of safetying, such as cotter pins, safety wire, etc.

(iii) Orthographic projection and uses of all phases of drafting relating to this type of drawing.

(iv) Blueprint reading.

(v) Use and care of basic tools.

(b) *Woodwork.*

(1) Identification of woods used in aircraft structures.

(2) Inspection of aircraft woods for airworthiness and causes for rejection.

(3) Drying and storing of wood.

(4) Steaming and bending woods.

(5) Veneer, laminated wood and plywood.

(6) Plywood as used for stressed skin.

(7) Gluing of wood.

(8) Glue, kinds used in aircraft, preparation, and use.

(9) Grain, annular rings, knots, pitch pockets, compression wood, decayed and warped wood, including the standards for acceptance and rejection.

(10) Procedure to be followed in repair, splicing, and gluing of wood joints.

(11) All pertinent Civil Air Regulations pertaining to woodworking.

(12) Construction of a wing rib.

(13) Repair of broken wing rib.

(14) Spar splice.

(15) Repair of stressed plywood skin.

(16) Repair of a rib attached to a wing.

(17) Perform at least one project whereby the operation of the following power tools will be used: power circular saw, sander, bandsaw, and drill press.

(18) Trammel and aline a wood airplane wing.

(c) *Sheet metal and welding.*

(1) Equipment, proper use and care of welding equipment.

(2) Care and selection of proper materials to be used in making all types of welded joints, such as fluxes, welding rods, etc.

(3) Penetration and fusion of welds—hot, cold, and burned welds, causes and prevention of.

(4) Preparation of materials for welding.

(5) All types of welded joints such as fillet welds, butt welds, spot welds, rosette welds, tack welds, and angular welds.

(6) Visual inspection of welded joints, general appearance of satisfactory and unsatisfactory welds.

(7) Limitations for use of electric welding (theoretical).

(8) Warping due to welding; cause, prevention, and correction.

(9) Properties of metals.

(10) Identification of aircraft structural tubing.

(11) Heat treatment of steel structures and fittings, which should include hardening, tempering, annealing, and normalizing, surface-hardening methods, procedures, purposes, methods, usage, application, and identification of (theory).

(12) Repairs to heat-treated structures, when permissible, and reheat-treating (theory).

(13) Proper equipment and tools for cutting, fitting, alining, and welding of tubular structures.

(14) Joints and splices, insert, sleeve, fishmouth, and angular.

(15) Proper procedure used in common practice to replace or repair damaged steel tubular structures, including cluster joints and fittings.

(16) Fabrication, assembly, and alinement of tubular structures, the use of jigs, trammels, levels, and protractors.

(17) Marking of fittings for bending, proper and prohibited practices.

(18) Cutting, fitting, welding, and fabrication of aircraft structural tubing from drawings.

(19) Protective materials and finish, purpose, selection and application, exterior and interior.

(20) Care and selection of proper materials to be used in making all types of welded joints such as fluxes, welding rods, etc.

(21) Brazing.

(22) Silver soldering.

(23) Soldering stainless steel.

(24) Oxyacetylene welding.

(25) Finishing stainless steel.

(26) Procedure to be used in riveting, selection and inspection of materials, and causes for rejection.

(27) Rivets, heat treated and others, their identification, where used, and limitations and precautions to be observed in the preparation, storage, care, and use of heat-treated rivets.

(28) Riveted joints and structures, fabrication of.

(29) Cutting, forming, drilling, fitting, and alinement for riveting.

(30) Heat treatment of aluminum-alloy rivets, sheet stock, fittings, structures, etc.; purpose, procedure, types, methods, usage, application and identification of. This should include hardening and annealing.

(31) Repairs to heat-treated aluminum-alloy structures, when permissible, and reheat-treating.

(32) Identification of aluminum and aluminum-alloy materials, properties, strength, usage, weight, and their handling. This should include 2S, 3S, 17S, 24S, 52S, 53S, 51S, 75S, and A17A.

(33) Fabrication of aluminum-alloy structures and fittings.

(34) Cutting, fitting, and fabrication of aircraft structure, and fittings from drawings.

(35) Equipment and tools necessary in the fabrication of aluminum-alloy structure and fittings, their use and care.

(36) Protective applications, purpose, selection, exterior and interior.

(37) Corrosion; causes and prevention and susceptibility of aluminum and its alloys to corrosion.

(38) Precautions and limitations concerning the repair of aluminum-alloy fittings.

(39) Precautions to be observed for aluminum-alloy materials when attached to and in contact with certain other materials and metals.

(40) Repair and maintenance of cowling and cowl fastening.

(41) Cleaning of aluminum and aluminum alloys, care to be used in selection of materials for this purpose.

(42) Cutting, forming, bending, fitting, and fabrication of stressed skin metal covering, including its repair.

(43) Computing bend allowance and application of same on flat sheet layout.

(44) Manner and procedure of attaching metal skin to structure.

(45) Construction, repair, and maintenance of fuel and oil tanks, and precautions to be observed in service and repair of same.

(46) Floats and hulls, construction, repair and protective applications.

(47) Firewalls, installation, and regulations pertaining thereto.

(48) Cowling, fairing, streamlining, covering, etc.; installation, care, repair, and inspection.

(49) Procedure, materials, and equipment used in hand forming intricate shapes and compound curves from sheet metal.

(50) Magnesium alloys used in aircraft.

(51) Blind type of sheet metal fasteners.

(52) Typical aircraft repairs to metal spars, ribs, bulkheads, and stringers.

(53) Repair of metal trailing edges of wings and control surfaces.

(54) All applicable Civil Air Regulations.

(d) *Fabric covering and finishing.*

(1) Identification of fabrics to be used for covering.

(2) Cutting and fitting.

(3) Thread, cord, tapes, selection, use and application of.

(4) Inspection before applying covering.

(5) Removing old protective coatings from structural members.

(6) Protective coatings for structural part to be covered by fabric.

(7) Machine sewing, hand sewing, tacking, and ribstitching, knots, spacing, etc.

(8) Inspection openings, location, and number required.

(9) Fabric repairs and the testing of used fabric.

(10) Application of protective materials for coverings, both by hand and spray guns, their mixing, selection, and purpose served.

(11) Equipment required in the application of protective materials, use of same, and precautions to be observed in applying.

(12) Rejuvenation of protective coating.

(13) Location, dimensions, and regulations pertaining to the application of symbols, numbers, and letters for the identification of aircraft; procedure to be followed in applying.

(14) Determination of the grade of fabric to be applied to a specific aircraft.

(15) Estimates in the cost of fabric covering, refinishing, and repairs.

(16) Civil Air Regulations pertaining to the above.

(e) *Fuel systems.*

(1) Fuel-line installation, annealing, beading, attachment, size and capacity, and precautions to be observed in installation. Fuel-system inspection; identification of flexible lines and specifications relating thereto.

(2) Hose connections, liners, clamps, strainer fittings, drains, and control valves.

(3) Fuel tanks, installation, padding, ventilation, draining, cleaning, repairing, inspection, and testing.

(4) Gages, caps, and markings for content and capacity.

(5) Fuel-system components.

(6) Fuel transfer systems.

(7) Explanation and troubleshooting of typical fuel systems.

(8) Civil Air Regulations pertaining to the above.

(f) *Landing-gear assembly.*

(1) Types of landing gears, shock units, fabrication, materials used, and installation, maintenance, repair, adjustment, and inspection.

(2) Alinement of landing gears.

(3) Brakes, wheels, tires, etc.:

(i) Operation, inspection, maintenance repair, adjustment, and bleeding of shoe, tube, and disk-type brakes.

(ii) Operation, disassembly, inspection, maintenance, and repair of push-type, pull-type, and diaphragm-type master cylinders.

(iii) Troubleshooting of the various individual brake systems.

(4) Inspection, maintenance, and lubrication of wheel bearings.

(5) Civil Air Regulations pertaining to the above.

(g) *Hydraulic and pneumatic systems.*

(1) Basic hydraulic and pneumatic principles.

(2) Explanation of the basic systems and the working principles of the component parts.

(3) Explanation of the constant pressure system and the operation and adjustment of the various units used.

(4) Operation, adjustment, and inspection of power-brake systems.

(5) Operation, adjustment, and inspection of wing-flap systems.

(6) Operation, adjustment, and inspection of landing-gear retraction systems.

(7) Troubleshooting of all the above systems.

(8) Flaring and bending of aircraft tubing to definite specifications.

(9) Installation, identification, and replacement of lines and fittings.

(10) Servicing, disassembly, inspection, testing, and adjustment of the component parts of the basic and constant pressure systems.

(h) *Aircraft electrical systems.*

(1) Installation, bonding, conduits, materials to be used and precautions to be observed in installation.

(2) The reading of aircraft electrical blueprints.

(3) Navigation, cabin, and landing-light installation, repair, maintenance, and inspection.

(4) Batteries, battery boxes, drains, vents, cables, switches, and connections.

(5) Lighting systems, fuses, switches, their installation and inspection.

(6) Power units, such as flap motors, landing-gear retraction motors, generators, etc.

(7) Troubleshooting on electrical systems.

(i) *Radio installation and inspection.*

(1) Federal Communications Commission regulations pertaining to installation and operation of two-way radio.

(2) Shock panel installation.

(3) Method of connecting leads.

(4) Methods of insulating all wiring.

(5) String tying or other approved method for looming electrical wiring.

(6) Reading of wiring diagrams.

(7) Antenna installation.

(8) Use of shielding and bonding.

(j) *Instrument installation and inspection.*

(1) Instrument panel layout and installation.

(2) Construction, operation, and line inspection of engine and flight instruments.

(k) *Assembly and rigging, including control cables, controls, and control surfaces.*

(1) Equipment, instruments, and tools required, and their uses.

(2) Approved control cables; splicing, swaging, installation, and inspection.

(3) Types of control systems and control-operating mechanisms.

(4) Assembly, rigging, service, repair, adjustment, and inspection of aircraft controls, and control surfaces, including the aerodynamic considerations to be observed in their assembly and rigging.

(5) General aircraft assembly.

(6) Rigging the aircraft.

(7) Adjustments for minor flight discrepancies.

(8) Procedure to be followed for the installation, inspection, and maintenance of floats and skis; regulations pertaining to selection of same for approved stressed load, etc.

(9) Practical demonstration by students in weighing and balancing an aircraft including necessary computations.

(10) Civil Air Regulations pertaining to the above.

(l) *Aircraft appliances and miscellaneous.*

(1) Flares; installation, inspection, and precautions to be observed.

(2) Safety belts; regulations pertaining thereto, installation, testing, and inspection.

(3) Cabin heaters and pressurizing equipment; installation, repair, and inspection.

(4) De-icing and anti-icing equipment (theory).

(5) General servicing, including fueling, refueling equipment, hand starting, preflight inspection, and engine runup.

(6) Precautions against fire damage, type of fire extinguishers to use, inspection, etc.

(7) Use of battery service cart.

(8) Cleaning the aircraft; equipment and methods used.

(9) Aircraft parking, tiedown, storage, etc.

(10) Civil Air Regulations pertaining to above.

(m) *Inspection of certificated aircraft.*

(1) Conducting a thorough and detailed inspection of an aircraft for reissuance of its airworthiness certificate.

(2) Types of inspection, by whom conducted, when required, and records of same.

(3) Preparation and use of Repair and Alteration Form ACA–337 after completing repairs or alterations, including other data, drawings, etc., which may be required by CAR.

(4) Airworthiness directives, aircraft specifications, manufacturers' bulletins, etc.; how obtained, purpose and use.

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(5) Logbook entries.

(6) Civil Air Regulations pertaining to above.

(Published in 18 F. R. 4281, July 23, 1953, effective Aug. 15, 1953.)

53.41 *Powerplant curriculum.* The powerplant curriculum shall include the following subjects:

(a) Parts 1, 3, 4a, 4b, 6, 8, 9, 13, 14, 18, 24, 43, 52, and 62, of this subchapter, as amended, appropriate to the curriculum;

(b) Instruments and equipment, their use and care;

(c) Shop practice and procedures, use of forms;

(d) Fundamental powerplant requirements;

(e) Mechanical drawing;

(f) Powerplant design and construction;

(g) Carburetor and fuel injection systems;

(h) Ignition systems;

(i) Supercharging systems;

(j) Starting, generating, and regulating systems;

(k) Fuels and fuel systems;

(l) Lubrication systems;

(m) Operation and troubleshooting;

(n) Disassembly, overhaul, repair, and assembly;

(o) Inspection, use of inspection tools, theory of magnetic particle and fluorescent penetrant;

(p) Block testing;

(q) Propeller installation and maintenance;

(r) Powerplant installation;

(s) Powerplant maintenance;

(t) Turbojet, turboprop, and compound engines;

(u) Theory and principles of powerplant operation;

(v) Aircraft powerplant development; and

(w) Aircraft weight and balance.

53.41-1 *Powerplant curriculum (CAA policies which apply to secs. 53.41 and 53.27).* The powerplant curriculum should include the scope and coverage of the subjects as outlined below. However, the curriculum need not necessarily be presented in this order since the breakdown of the various course phases is primarily intended to assist the applicant in preparing the curriculum.

(a) *Basic.* Same as airframe.

(b) *Powerplant overhaul and operation.*

(1) Four-stroke cycle principles.

(2) Theory of operation and fundamental principles of turbojet, turboprop, and compound engines (demonstration models for these engines not required).

(3) Power output factors, conversion of energy to b. m. p.

(4) Horsepower and its calculation.

(5) The engine and its parts; nomenclature, function, and design features.

(6) Engine disassembly, care in the handling of parts and tools; shop cleanliness and safety.

(7) Cleaning procedures and selection of proper cleaners.

(8) Explanation of manufacturers' limitations.

(9) Inspection of engine parts, use of precision instruments such as micrometers, dial gages, maximum wear gages, etc.

(10) Magnetic particle and penetrant inspection; operation of equipment and interpretation of indications.

(11) Recording the inspection and other engine overhaul phases.

(12) Approved engine repair procedures, such as rebushing, replacing valve guides, replacing studs, etc.

(13) Use of hand tools such as drills, reamers, taps, and dies.

(14) Use of common engine overhaul equipment such as valve grinders, seat reamers, lathes, etc.

(15) Engine disassembly, cleaning, inspection of parts, tolerances, repairs and replacements, reassembly, torque valves, timing installations, inspection, and safetying. This shall include but is not limited to:

(i) Valve grinding, seat refacing, guide and seat replacement, etc.

(ii) Valve and ignition timing.

(iii) Engine installation and inspection.

(16) Accessory buildup, run-in and testing the engine after overhaul or repair.

(17) Cold-weather starting, operation, and stopping procedures.

(18) General troubleshooting.

(19) General servicing, including fueling, refueling equipment, hand starting, preflight inspection, and engine runup.

(20) Preparation of the engine for storage; purpose of clear gas run; use of CAA forms pertaining to maintenance, repair, overhaul, etc.

(21) Cost estimates, records, parts ordering and stocking, and the general rules pertaining to the operation of an engine repair and overhaul shop.

(22) Civil Air Regulations pertaining to the operation, repair, and overhaul of engines.

(c) *Carburetion.*

(1) Theory and principles of carburetion.

(2) Types of carburetors; their construction, installation, operation, repair, maintenance, adjustment, and inspection.

(3) Induction systems, diffusers, blowers, superchargers, carburetor heaters, air mazes, etc.

(4) Carburetor troubles and corrective measures.

(5) Bench testing carburetors (float level, fuel flow, etc.).

(6) Fuel systems and their component parts.

(7) Aircraft fuel specifications and fuels to be used in aircraft operations.

(d) *Electrical systems and accessories.*

(1) Theory of basic electricity, magnetism, nomenclature, and related terms.

(2) Aircraft starters; types, principles, theory, electrical hookup, and operation (motors).

(3) Boosters; types, theory, electrical hookup, and operation.

(4) Generators; types, theory, electrical hookup, maintenance, and troubleshooting.

(5) Selection of wires or cables; sizes, soldering, terminal, and swaging.

(6) Construction and use of continuity test equipment; voltmeters, ammeters, ohmmeters, in the location of troubles in electrical units and circuits. Fuses; installation and precautions to be followed in replacement.

(7) Mockup work representing the entire aircraft electrical system and power source as related to the engine. Installation of equipment on aircraft.

(8) Complete overhaul procedure; starters, generators, and motors.

(9) Installation, adjustment of generator control boxes, boosters, etc.

(10) Spark plugs; types, theory, maintenance, installation, and troubleshooting.

(11) Battery ignition system; principles and function.

(12) Magneto ignition, high tension, low tension; theory, principles, maintenance, troubleshooting.

(13) Ignition harnesses, plastic, supercharged, standard, shielded, unshielded; theory, troubles, maintenance, testing.

(14) Aircraft batteries; types, capacity, theory, maintenance, charging, and installation.

(15) Use of all types of test equipment necessary to the maintenance, repair, and inspection of all the above types of equipment.

(e) *Lubrication.*

(1) Theory and purpose of lubrication.

(2) Oils and lubricants; types, grades, and properties.

(3) Lubrication systems; dry and wet sump, splash and pressure.

(4) Pumps; types, installation, location, actuation, operation, construction, maintenance, repair, and inspection.

(5) Lines, hose connections, tanks, drains, vents, filters, etc.; their installation, care, and inspection.

(6) Heating and cooling; radiators, lagging, etc. Installation, maintenance, repair, and inspection.

(7) Pressure relief valves; types, location, purpose, adjustment, maintenance, repair, and inspection. Troubleshooting, high and low pressures, engine symptoms due to lubrication problems.

(f) *Propellers.*

(1) Aircraft propeller theory.

(2) Types; wood and metal, fixed, adjustable, controllable, automatic, feathering, etc.

(3) R. p. m. and hp. ratings, limitations, and use.

(4) Propeller, including hub and blade; identification data, location, etc.

(5) Maintenance and servicing of propellers.

(6) Alterations and modifications, repairs and inspections as recommended by the propeller manufacturer and in accordance with Civil Air Regulations; the extent of repairs permissible and by whom to be made, including changes in marking.

(7) Theory of local etching and magnetic particle inspection, procedure, purpose, and

extent used. Records; where recorded and by whom.

(8) Tracking of propellers; purpose and procedure.

(9) Propeller removal and installation and proper fitting; changes in installation to reduce vibration for representative types and models of all popular propellers.

(10) Equipment, tools, and instruments necessary to properly adjust, service, and make such repairs as are permissible; the use and care of this equipment. Special emphasis is to be placed on safetying devices, such as lock rings, lock wires, cotter pins, clevis pins, safety wire, etc.

(11) Maintenance, adjustment, and operation of controllable propellers.

(12) Maintenance, adjustment, and operation of the constant speed governor.

(13) Construction, adjustment, operation, and maintenance of the hydromatic propeller.

(14) Construction, adjustment, and operation of electric propellers (theory).

(15) Operation of synchronization systems.

(16) Propeller de-icing and anti-icing systems (theory).

(17) Construction and operation of reverse thrust propellers (theory).

(18) Proper use and care of propeller maintenance, repair, and testing equipment.

(Published in 18 F. R. 4281, July 23, 1953, effective Aug. 15, 1953.)

53.42 *Instructors.* An applicant shall have that number of instructors holding appropriate mechanic certificates and ratings and such other qualified personnel as the Administrator determines necessary to provide adequate instruction and supervision of the students.

53.42–1 *Instructors (CAA policies which apply to sec. 53.42).* The applicant may use specialized instructors who are not certificated mechanics for giving instruction on subjects such as mathematics, physics, drawing, etc.

(Published in 18 F. R. 4281, July 23, 1953, effective Aug. 15, 1953.)

Operating Rules

53.50 *Operating rules; general.* All holders of mechanic school certificates with appropriate ratings shall, in the conduct of the school, comply with the operating rules set forth in sections 53.41 through 53.58.

53.51 *Quality of instruction.* The quality of instruction shall be such that at least 80 percent of the students who apply within 60 days after graduation for mechanic certificates and ratings appropriate to the curriculum from which they were graduated will be able to qualify for such certificates and ratings.

53.52 *Hours of attendance.* No student shall be required to attend any class or classes of instruction for more than 8 hours in any day, or more than 6 days or 40 hours in any 7-day period.

53.52–1 *Hours of attendance (CAA interpretations which apply to sec. 53.52).* No student will be required to attend any class or classes of instruction more than 8 hours in any day, and in no case more than 40 hours in any 7-day period, or more than 6 days in any 7-day period. In the event a student be required to attend classes of instruction for more than 5 days of a 7-day period, the total attendance time shall not exceed the 40-hour limit.

(Published in 18 F. R. 4281, July 23, 1953, effective Aug. 15, 1953.)

53.53 *Examinations.* Upon completion of each subject included in any approved curriculum each student shall be given an appropriate examination.

53.53–1 *Examinations (CAA interpretations which apply to sec. 53.53).* The examinations given by the approved school are to test the students' knowledge of the subject just completed, and do not constitute the CAA examinations required by Part 24 of the Civil Air Regulation for the issuance of a mechanic certificate.

(Published in 18 F. R. 4281, July 23, 1953, effective Aug. 15, 1953.)

53.53–2 *Entrance examinations (CAA policies which apply to sec. 53.53).* A certificated mechanic school may apply credit toward the completion of its approved course for work an applicant has satisfactorily completed while a student at another mechanic school, accredited college, State-owned vocational or trade school, or military technical specialty school. The amount of credit to be allowed may be determined by requiring that the applicant pass an entrance examination equivalent to one given

their own students at the completion of each course; phase; or by requiring that the applicant furnish a properly authenticated transcript of grades from the former school showing the curriculum in which he was enrolled, and the hours of attendance, as well as the grades for each subject. In lieu of a transcript of grades, the amount of credit to be allowed an applicant with military technical specialty training will be determined by the entrance examination. In any case, the credit given any applicant is to be shown in hours on the student record.

(Published in 18 F. R. 4281, July 23, 1953, effective Aug. 15, 1953; amended in 19 F. R. 674, Feb. 5, 1954, effective Feb. 5, 1954.)

53.54 *Transcript of grades.* A certificated mechanic school shall furnish a transcript of grades for each graduate and each student leaving the school prior to graduation. The transcript shall be properly authenticated by an official of the school, and it shall state the curriculum and courses in which the student was enrolled, whether the student satisfactorily completed the particular curriculum and courses, and the final grades received in each course.

53.55 *Graduation certificate.* A certificated mechanic school shall furnish each graduate a graduation certificate properly authenticated by an official of the school. Each graduation certificate shall show the date of graduation.

53.55–1 *Graduation certificate (CAA policies which apply to sec. 53.55).* The grade on the Graduation Certificate, Form ACA–391, should be an average grade, and should reflect the standard of performance of the student during the entire course and not just the grade made on the final examinations given by the school.

(Published in 18 F. R. 4281, July 23, 1953, effective Aug. 15, 1953.)

53.56 *Required student records.* A certificated mechanic school shall maintain a current record of each student enrolled, showing the student's attendance, courses in which enrolled, examinations, and grades. These records shall be retained by the school for at least 2 years from the date of termination of enrollment. During such period the records shall be available for inspection by an authorized representative of the Administrator or the Board.

53.56–1 *Required student records (CAA policies which apply to sec. 53.56).* (a) A certificated mechanic school should also maintain a progress chart or an individual progress record for each student, showing the practical projects or laboratory work completed, or to be completed, by the student in each phase of the approved course. The chart, or record, should be kept current so that at all times a record of the student's progress will be available.

(b) When a certificated mechanic school applies credit toward the completion of its approved course for work satisfactorily completed by a student at another mechanic school, accredited college, State-owned vocational or trade school, or military technical specialty school, the records should contain a properly authenticated transcript of grades from such school, including the curriculum in which the applicant was enrolled, listing each major instructional unit or subject, the hours of attendance, and the grades for each subject.

(Published in 18 F. R. 4281, July 23, 1953, effective Aug. 15, 1953.)

53.57 *Maintenance of facilities, equipment, and material.* The holder of a mechanic school certificate shall maintain all facilities, equipment, and material in conformity with the standards required for the original issuance of the certificate.

53.58 *Reports.* On the 1st day of January and July of each year and at such other times as the Administrator may require, every holder of a mechanic school certificate shall transmit to the Administrator a correct and completely executed report on the form prescribed and furnished by the Administrator. Such reports shall include the following information as to students enrolled in the course or courses approved by the Administrator;

(a) The names of all students enrolled;

(b) The course or courses for which they are enrolled;

(c) The names of the students who have been graduated within the period covered by the report and the course or courses from which graduated;

(d) The names of all students dropped from enrollment within the period covered by the report and the reasons therefor.

53.58–1 *Reports (CAA rules which apply to sec. 53.58).* On the 1st day of January and July of each year, the holder of a mechanic school certificate shall transmit to the local CAA Flight Operations and Airworthiness District Office a correct and completely executed Mechanic School Report, Form ACA–392.

(Published in 18 F. R. 4281, July 23, 1953, effective Aug. 15, 1953; amended 22 F. R. 3172, May 4, 1957, effective May 15, 1957.)

Appendix A

CAA Regional Offices and Areas of Jurisdiction

Region 1. **Headquarters Office at Jamaica, Long Island, N. Y.**

Composed of the States of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, Delaware, New Jersey, Pennsylvania, Ohio, Maryland, Virginia, West Virginia, Kentucky, and the District of Columbia.

Region 2. **Headquarters Office at Fort Worth, Tex.**

Composed of the States of Tennessee, North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Arkansas, Oklahoma, Louisiana, and Texas, and Puerto Rico, Swan Island, the Virgin Islands, and the Canal Zone.

Region 3. **Headquarters Office at Kansas City, Mo.**

Composed of the States of Michigan, Indiana, Wisconsin, Illinois, Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, and Kansas.

Region 4. **Headquarters Office at Los Angeles, Calif.**

Composed of the States of Montana, Wyoming, Colorado, New Mexico, Arizona, Utah, Idaho, Washington, Oregon, Nevada, and California.

Region 5. **Headquarters Office at Anchorage, Alaska.**

Consists of the Territory of Alaska, including the Aleutian Islands.

Region 6. **Headquarters Office at Honolulu, T. H.**

Consists of the areas contained within the Honolulu, Wake, and Guam Flight Information Regions established by ICAO. (Major operations are conducted in the Territory of Hawaii and the islands of Canton, Wake, and Guam.)

Appendix B

Forms

DEPARTMENT OF COMMERCE
CIVIL AERONAUTICS ADMINISTRATION

BUDGET BUREAU NO. 41-R070.4
APPROVAL EXPIRES AUGUST 31, 1950

TO BE COMPLETED BY AGENT

SIGNATURE

DATE RECEIVED

MECHANIC SCHOOL REPORT

1. NAME OF SCHOOL: Pence Aviation School

2. ADDRESS: 2299 Fifth Avenue, Pittsburgh, Pennsylvania

3. CERTIFICATE NUMBER: 1010

4. DATE OF CERTIFICATE: 11/6/50

5. TYPE OF TRAINING FOR WHICH SCHOOL IS CERTIFICATED: ☒ COMBINED AIRCRAFT AND ENGINE ☒ AIRCRAFT ☐ ENGINE

ITEM	TOTAL DAY	TOTAL NIGHT
6. TOTAL SCHOOL HOURS IN		
a. COMBINED A & E COURSE	1890	1890
b. AIRCRAFT COURSE	1155	1155
c. ENGINE COURSE	1155	1155
7. HOURS OF TRAINING PER WEEK PER STUDENT, EXCLUSIVE OF REST PERIODS AND LUNCH HOUR	32.5	17.5
8. APPROXIMATE PER CENT OF TOTAL COURSE SPENT IN CLASSROOM OR THEORY IN		
a. COMBINED A & E COURSE	25%	25%
b. AIRCRAFT COURSE	25%	25%
c. ENGINE COURSE	25%	25%
9. INSTRUCTORS		
a. NUMBER OF INSTRUCTORS IN SCHOOL	12	1
b. NUMBER OF INSTRUCTORS THAT HAVE GROUND INSTRUCTORS CERTIFICATES	4	1
c. NUMBER OF INSTRUCTORS THAT HAVE BOTH A & E CERTIFICATES	8	1
d. NUMBER OF INSTRUCTORS THAT HAVE AN AIRCRAFT CERTIFICATE ONLY	0	0
e. NUMBER OF INSTRUCTORS THAT HAVE AN ENGINE CERTIFICATE ONLY	0	0
10. AVERAGE NUMBER OF STUDENTS PER INSTRUCTOR *(Count only those instructors that actually conduct classes daily)*	11	15
11. NUMBER OF STUDENTS IN THE LARGEST CLASS	17	15
12. NUMBER OF STUDENTS CURRENTLY ENROLLED IN THE SCHOOL IN		
a. COMBINED A & E COURSE	21	14
b. AIRCRAFT COURSE	0	0
c. ENGINE COURSE	1	1
13. NUMBER OF STUDENTS DROPPED FROM THE SCHOOL SINCE THE LAST REPORT	6	11
14.*NUMBER OF GRADUATES SINCE LAST REPORT IN		
a. COMBINED A & E COURSE	17	0
b. AIRCRAFT COURSE	0	0
c. ENGINE COURSE	1	1
15. NUMBER OF STUDENTS WHO ARE VETERANS TAKING TRAINING UNDER G.I. BILL	15	15
16. DOES YOUR SCHOOL GIVE A MECHANIC REFRESHER COURSE IN ADDITION TO REGULAR COURSE?	☒ YES	☐ NO
17. NUMBER OF DESIGNATED MECHANIC EXAMINERS LOCATED AT YOUR SCHOOL	1	
18. IF YOUR SCHOOL GIVES A MAINTENANCE OR AERONAUTICAL ENGINEERING COURSE IN ADDITION TO THE A & E COURSE, GIVE NUMBER OF HOURS FOR THIS COURSE	No	
19. WHEN WAS YOUR CURRICULUM NOW IN USE APPROVED AND SEALED?	11/6/50	

REMARKS OR SUGGESTIONS *(If more space is required, continue on reverse)*

CERTIFICATION - I certify that the above statements and the statements made in any attachment are true.

SIGNATURE Clifford C. Phelps

DATE July 1, 1952 TITLE Director of Training

*Attach a list of graduates, giving their full name, the course in which they graduated and dates of entrance and completion of course.

21609

FORM ACA-392 (8-49)

Form ACA-614 (7-49)

DEPARTMENT OF COMMERCE
CIVIL AERONAUTICS ADMINISTRATION

Form Approved, Budget Bureau No. 41-R102.

CERTIFICATE NO. | DATE

RECOMMENDATION
☐ APPROVED
☐ DISAPPROVED

(AVIATION SAFETY AGENT)

MECHANIC SCHOOL APPLICATION AND INSPECTION REPORT

(NOTE.—Application on reverse side of this form)

INSPECTION REPORT ☐ INITIAL INSPECTION ☐ ROUTINE INSPECTION

1. NAME OF SCHOOL	2. ADDRESS

3. COURSES GIVEN IN ACCORDANCE WITH CIVIL AIR REGULATIONS	KIND OF COURSE	TOTAL HOURS	NUMBER WEEKS DURATION
	A. COMBINED AIRCRAFT AND ENGINE		
	B. AIRCRAFT		
	C. ENGINE		

	YES	NO*
4. Does the present course of study meet the requirements of CAR 53 and CAM 53?		
5. Is the course of study considered up-to-date and adequate for current requirements?		
6. Is the instruction personnel competent and properly certificated?		
7. Does the school have sufficient instructional aids for all phases of training?		
8. Does the applicant operate an aircraft and/or engine-repair station?		
a. Does the school have sufficient classroom and shop areas separate from the repair station?		
b. Are students thoroughly trained in fundamentals before permitted to do practical work in repair station?		
9. Do all students have an opportunity to do practical overhaul work on live equipment before graduation?		
10. Do facilities, equipment, and records meet current minimum requirements of CAR 53 and CAM 53?		
11. Is required equipment in possession of school conveniently located for training purposes?		
12. Are necessary materials, supplies, and tools available for training and proper storage facilities provided?		
13. Are classrooms and shop space adequate for courses given?		
14. Are classrooms and shops properly equipped, heated, lighted, and ventilated?		
15. Have proper safety measures been taken to insure adequate protection of students operating dangerous equipment, including engine test stands?		
16. Are classrooms and shop areas sufficiently clean and orderly to show evidence of good housekeeping?		
17. Does the school offer full cooperation with respect to examinations, inspections, reports, and other requirements?		
**18. Do school records indicate that at least 80 percent of graduates who take CAA written and practical examinations on completion of course are successful on first attempt?		
**19. Are school's mechanic examiners maintaining satisfactory standards and records on CAA practical examinations?		

20. TOTAL NUMBER OF HOURS OF TRAINING PER DAY PER STUDENT, EXCLUSIVE OF REST AND LUNCH PERIODS	21. APPROXIMATE NUMBER OF SQUARE FEET OF SPACE USED FOR TRAINING	22. PRESENT ENROLLMENT OF SCHOOL	23. DATE CURRICULUM NOW IN USE APPROVED AND SEALED

24. GIVE YOUR ESTIMATE OF THE SCHOOL AS TO ITS GENERAL ABILITY TO SATISFACTORILY FUNCTION AS A CERTIFICATED MECHANIC SCHOOL

* Explain items checked "No" on a separate sheet. ** Items not applicable on initial inspection.

16—50890-1 (OVER) Form ACA-614 (7-49)

25. REMARKS: INCLUDE ANY RECOMMENDATIONS THAT YOU MADE FOR IMPROVING THE SCHOOL. IF A LETTER WAS SENT POINTING OUT DEFICIENCIES, ATTACH A COPY. (IF ADDITIONAL SPACE IS NEEDED, CONTINUE ON SEPARATE SHEET OF PAPER.)

APPLICATION FOR MECHANIC SCHOOL CERTIFICATE AND RATING

☒ ORIGINAL APPLICATION ☐ ADDITIONAL RATINGS

1. NAME OF SCHOOL	2. ADDRESS
Myles Aircraft Mechanic School	645 Skyway Road, Kansas City, Missouri

3. RATING(S) APPLIED FOR

☒ COMBINED AIRCRAFT AND ENGINE ☒ AIRCRAFT ☒ ENGINE

	YES	NO
4. Do the present classrooms, shop space, facilities, equipment, and materials meet the requirements of Part 53 of the Civil Air Regulations?	X	
5. Are three (3) copies attached of a list of instructors giving type, number, and ratings of their certificates and subjects to be taught?	X	
6. Are four (4) copies attached of all proposed curriculums for which approval is requested?	X	
7. Are three (3) copies attached of an inventory of facilities, equipment, and materials used by the school?	X	

8. WHAT IS THE PRESENT ENROLLMENT OF THE SCHOOL?	9. WHAT IS THE CONTEMPLATED ENROLLMENT OF THE SCHOOL?
1000	1000

CERTIFICATION.—I CERTIFY THAT THE STATEMENTS MADE ABOVE, AND THE STATEMENTS MADE IN ANY ATTACHMENTS HERETO ARE CORRECT AND TRUE.

April 20, 1952	A. R. Myles	Director of Training
(DATE)	(SIGNATURE OF APPLICANT)	(TITLE)

U. S. GOVERNMENT PRINTING OFFICE: 1957 O—425345