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MILITARY SPECIFICATION

ENGINES, AIRCRAFT, RECIPROCATING PROCESSES FOR CORROSION
PROTECTION, PREOILING AND GROUND OPERATIONS OF

This specification has been approved by the Department of Defense for use by the Departments of the Army, the Navy, and the Air Force.

1. SCOPE

1.1 This specification covers the requirements for the prevention of corrosion, preoiling, and ground operation of aircraft reciprocating engines.

2. APPLICABLE DOCUMENTS

2.1 The following specifications and drawings, of the issue in effect on date of invitation for bids, form a part of this specification:

SPECIFICATIONS

Federal

P-S-661 Solvent; Dry-Cleaning

Military

MIL-A-6091	Alcohol; Ethyl, Specially Denatured, Aircraft Barrier Material; Water Vaporproof, Flexible Containers; Shipping, Reusable, Wood, Aircraft Engine
MIL-B-131	
MIL-C-4116	Container; Shipping, Reusable, Metal, Aircraft Engine
MIL-C-5584	Corrosion-Preventive Compound, Aircraft Engine
MIL-C-6529	Desiccants (Activated) in Bags; for Static Dehumidification and Packaging
MIL-D-3464	Ethylene Glycol; Non-Corrosive, (Anti-Freeze and Cooling Liquid for Aircraft Engines)
MIL-E-5559	Engines, Aircraft Reciprocating, Preparation for Shipment and Storage of
MIL-E-6058	Fuel; Aircraft Reciprocating Engine
MIL-F-5572	Light Assembly, Cylinder Inspection, Borescope Style
MIL-L-4042	Lubricating Grease; High Temperature
MIL-L-3545	Oil, Lubricating, Jet Engine
MIL-O-6081	Lubricating Oil, General Purpose, Low Temperatures
MIL-L-7870	Lubricating Oil; Aircraft Engine
MIL-L-6082	Rubber; Synthetic, Sheet, Molded, and Extruded, for Aircraft Applications
MIL-R-6855	

MIL-E-6059A

JAN-P-127

Packaging and Packing for Overseas Shipment -
Tape, Adhesive, Pressure-Sensitive, Water
ResistantDRAWINGSAir Force-Navy Aeronautical

AN4060	Protector - Ignition Cable
AN4061	Plug - Crankcase Dehydrator
AN4062	Plug - Engine Cylinder Dehydrator, 18-mm Thread
AN4064	Plug - Engine Cylinder Dehydrator, 14-mm Thread
AN4107	Envelope - Protective, Reciprocating Engine (For use with Quick Engine Change Units)
AN7511	Indicator - Humidity, Large
AN7514	Card - Humidity-Indicating Color Comparison

U. S. Air Force Drawing (ANA Standard Issue)

52B22849	Indicator, Humidity, Card, Three Circle Impregnated Areas
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(Copies of specifications, standards, drawings, and publications required by contractors in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

3. PREPARATION

3.1 General.- The complete equipment used in the prevention of corrosion, preoiling, and ground operation of aircraft engines, shall be subject to the approval of the procuring activity.

3.2 Materials.- The materials used shall be as specified herein. Where materials that are required to be used are not covered by specifications, they shall be of the highest quality and suitable for the purpose intended.

3.2.1 Internal engine corrosion-preventive mixture.- The internal engine corrosion-preventive mixture as referenced herein shall at all times be serviced at temperatures of 220° to 250°F, unless otherwise specified, and shall at all times consist of one of the following:

- (a) A mixture of 25 percent type I corrosion-preventive compound conforming to Specification MIL-C-6529, and 75 percent grade 1100 oil conforming to Specification MIL-L-6082.
- (b) Undiluted corrosion-preventive material conforming to type II of Specification MIL-C-6529.

3.3 Engine and parts.-

3.3.1 General.- The following procedures are applicable for the preparation for storage and shipment of all types of four-cycle reciprocating engines while at the aircraft manufacturer's plant.

3.3.2 Cleaning.- Complete external cleaning of the engine shall not normally be accomplished. When cleaning individual parts for application of preservative mixture or to remove preservative mixture only, solvent-type cleaners shall be used.

When any bare metal parts are handled, such as propeller and shafts, great care shall be exercised to avoid contamination by perspiration residues.

4. PROCEDURES AND INSPECTION

4.1 General.- All reciprocating aircraft engines shall be treated in accordance with one or more of the following procedures, as applicable.

4.1.1 Installation of dehydrator plugs.- Where installation of dehydrator plugs is called for in this specification, the seating torque shall be applied as follows:

<u>Dehydrator plugs No.</u>	<u>Seating torque lb in.</u>
AN4061-1	45
AN4061-2	45
AN4061-3	45 (to normal engagement)
AN4062	25
AN4064-1	18

4.2 Treatment of engines in the plant custody.-

4.2.1 Inspection of engines.-

4.2.1.1 Inspection in Specification MIL-C-4116 and similar containers.- Immediately upon receipt, and at least every 28 days thereafter, the humidity indicator shall be inspected by comparison with Drawing AN7514 Color comparison card. Subsequent action shall be taken as defined in paragraphs 4.2.1.2.1 through 4.2.1.2.4, inclusive.

4.2.1.1.1 If the inspection reveals the relative humidity to be less than 20 percent, i.e., the humidity indicator shows a fully activated condition, no further maintenance of the engine or container shall be required until the next inspection.

4.2.1.1.2 If the inspection reveals the internal relative humidity to be between 20 and 40 percent, i.e., the internal relative humidity is approaching but has not yet reached an unsafe or corrosive condition, the desiccant shall be replaced with activated desiccant. Instructions for replacing the desiccant are defined in paragraphs 4.2.3 through 4.2.3.2, inclusive.

4.2.1.1.3 If the inspection reveals the internal relative humidity to be above 40 percent, i.e., the internal relative humidity has reached an unsafe or corrosive condition, the engine shall be removed from the container and inspected to determine the serviceability. If the engine is in a serviceable condition, it shall be represerved in accordance with paragraph 4.2.3, placed in service in accordance with paragraphs 4.3 through 4.3.1.2, inclusive, or reinstalled in the container, using a new protective envelope.

4.2.1.2 Inspection in Specification MIL-C-5584 containers.- Immediately upon receipt of the humidity indicator, a pressure check and an inspection shall be made. At least once every 90 days thereafter, a pressure check shall be made.

4.2.1.2.1 If the inspection reveals the internal pressure to be more than 1 psi gage and the relative humidity to be less than 20 percent, i.e., the humidity indicator shows a fully activated condition, no further maintenance of the engine or container shall be required until the next inspection.

MIL-E-6059A

4.2.1.2.2 If the inspection reveals the internal pressure to be less than 1 psi gage and, in the case of initial inspection, the relative humidity to be less than 20 percent, the container shall be repressurized to 5 ±1 psi gage, using clean compressed air free of liquid water. The container pressure shall be rechecked after 7 days. If the pressure has not been maintained, the engine shall be removed from the container and inspected to determine serviceability. If the engine is in a serviceable condition, it shall be placed in service in accordance with paragraphs 4.3 through 4.3.1.2, inclusive, or reinstalled in another container.

4.2.1.2.3 If the inspection reveals the internal relative humidity to be between 20 and 40 percent, i.e., the internal relative humidity is approaching but has not yet reached an unsafe or corrosive condition, the desiccant shall be replaced with activated desiccant. Instructions for replacing the desiccant are defined in paragraphs 4.2.3 through 4.2.3.2, inclusive.

4.2.1.2.4 If the inspection reveals the internal relative humidity to be above 40 percent, i.e., the internal relative humidity has reached an unsafe or corrosive condition, the engine shall be removed from the container and inspected to determine the serviceability. If the engine is in a serviceable condition, it shall be preserved in accordance with paragraph 4.2.3, placed in service in accordance with paragraphs 4.3 through 4.3.1.2, inclusive, or reinstalled in another container.

4.2.2 Procedures for handling engines in containers.-

4.2.2.1 Specification MIL-C-4116 and similar containers.- The container top and the outer protective band of paper shall be removed. The envelope shall be cut just below the seal in such manner as to remove the least amount of material. The envelope shall be lowered in such manner as to avoid tears or pinholes. The inner band of protective paper shall be removed. The bags of dehydrating agent secured around the engine, and the dehydrator plugs shall be removed. Any tears or pinholes in the envelope shall be repaired.

4.2.2.2 Specification MIL-C-5584 containers.- The internal pressure shall be released and the container top removed. The bags of dehydrating agent shall be removed from the desiccant holder. The ventilatory covers and plugs shall be removed from the engine.

4.2.2.3 Cylinder inspection.- All cylinders shall be inspected for corrosion by means of gooseneck flashlight, or boroscope, conforming to Specification MIL-L-4042, inserted through the spark plug holes. The subsequent procedure depends upon the result of this inspection as follows:

- (a) Inspection revealing no visible evidence of corrosion shall be treated in accordance with paragraphs 4.2.3, 4.2.3.1, and 4.2.3.2.
- (b) Inspection revealing discoloration or visible evidence of corrosion on less than 10 percent of the aggregate cylinder wall surfaces and which is easily removable by contact shall be treated in accordance with paragraph 4.2.2.4.
- (c) Engines which upon inspection reveal excessive discoloration, aggregate cylinder wall surface corrosion in excess of 10 percent, corrosion not easily removable, or possessing one or more cylinders having corrosion in excess of 20 percent, shall be preserved in accordance with paragraph 4.2.3, and disposed of as directed by the procuring activity.

NOTE: The inspection of engines for corrosion and the classification of engines as (a), (b), or (c) above shall be entrusted only to technically competent personnel experienced in aircraft engines. Such personnel may request partial disassembly of the engine if considered necessary to provide a sound basis for classification.

4.2.2.4 Removal of corrosion from cylinder interiors.-

- (a) The engine shall be rotated by hand a sufficient number of times to remove all discoloration or visible evidence of corrosion.
- (b) The engine shall be represerved in accordance with paragraphs 4.2.3, 4.2.3.1, and 4.2.3.2, whichever is applicable.

NOTE: Engines not responding to the treatment outlined above shall be represerved, and shall be disposed of, as directed by the procuring activity.

4.2.3 Renewal of preservation.- The interior of each cylinder shall be sprayed through the spark plug holes with the specified corrosion-preventive mixture. During the spraying, the crankshaft shall be slowly rotated by hand through four complete revolutions while spraying each cylinder. Each cylinder shall then be resprayed without turning the propeller shaft.

4.2.3.1 Closing the Specification MIL-C-4116 or similar containers.- New dehydrator plugs shall be installed in the cylinders. Dehydrating agent conforming to Specification MIL-D-3464 shall be replaced in the intake and exhaust systems and the systems resealed. New dehydrator plugs shall be installed in the oil sump and other accessible crankcase openings. All engine openings shall be sealed. The same number of units of dehydrating agent as were removed shall be installed symmetrically about the engine. A new humidity indicator card conforming to Drawing 52B22849 or Drawing AN7511, shall be installed. The inner band of protective paper shall be replaced. Air from engine envelope shall be exhausted and envelope resealed. Outer band of protective paper and the engine box cover shall be replaced.

NOTE: Should the engine envelope be torn at any time, it shall be repaired immediately by heat sealing along the gathered edges of the tear. Pinholes in metal foil bags, as defined in Specification MIL-B-131, may be repaired with tape conforming to Specification JAN-P-127, grade A, type I.

4.2.3.2 Closing the Specification MIL-C-5584 container.- The same number of units of dehydrating agent as were removed shall be installed in the desiccant holder. The humidity indicator shall be replaced. The ventilatory covers and plugs on the engine shall be replaced. The tops of the container shall be replaced. The container shall be repressurized to 5 psi \pm 1 pound using clean compressed air free of liquid water.

CAUTION - The bagged dehydrating agent shall not be removed from the moisture-resistant container until immediately before attachment to the engine.

4.2.4 Modifications.- If modifications are to be made on any detachable part of the engine, the container shall be opened in accordance with paragraphs 4.2.2 through 4.2.2.3, inclusive, and the part removed or replaced. Immediately afterwards, the container shall be closed, in accordance with applicable instructions herein.

4.2.4.1 If the engine itself must be modified, it shall be removed from the container in accordance with paragraphs 4.2.2 through 4.2.2.3, inclusive. After

MIL-E-6059A

the modifications have been completed the engine shall be returned to storage and prepared according to the applicable procedures specified herein, depending upon the extent of the modification to which the engine is subjected. At the discretion of the Inspector, complete reprereservation in accordance with the requirements of Specification MIL-E-6058 may be required.

4.2.5 Engine record entries.- A complete record of all inspections, including periodic inspection of the indicator card, and all renewals, preservation, and pre-oiling shall be entered in engine log. Any modifications shall be entered in the appropriate section of the log.

4.3 Procedure for handling engines being prepared for initial installation.-

4.3.1 Unpacking.- Unpacking and removal of the engine from the container shall be accomplished as follows.

4.3.1.1 Specification MIL-C-4116 and similar containers.- The cover of the engine shipping container shall be removed. The outer band of protective paper, if installed, shall be removed. The seal at the top of the engine envelope shall be cut carefully in order to remove the least possible amount of material. The envelope shall be lowered carefully from the engine without damaging it. All bags of dehydrating agent and the humidity indicator card shall be removed from the exterior of the engine. Any protective paper which may be around the engine shall be removed. Accessories mounting board, if attached to the engine, shall be removed, and the accessories shall be handled as indicated hereinafter. If no accessories mounting board has been used, the packaged accessories shall be removed from the shipping container. After removing the shipping bolt nuts, the engine shall be removed from both the shipping box and from the envelope. The envelope shall then be removed, cleaned, and carefully folded for subsequent reuse or reclamation according to Government directives. The engine shall be mounted on the stand. Engine containers shall be cleaned and completely assembled with all engine attachment parts, gaskets, closure bolts, etc. All blank offs, covers, seals, and screws, that are in usable condition, shall be held as Government property awaiting disposition.

4.3.1.2 Specification MIL-C-5584 containers.- The internal pressure shall be released and the container top removed. The engine shall be removed, exercising care to prevent the engine from striking the mounting plate or side rails, and placed on a stand. The shipping cover and plugs, accessory mounting platforms, etc, shall be removed from the engine and placed in the container. Any unmounted accessories shipped with the engine shall be installed on the engine. If the container is not to be reused immediately, the top shall be installed in the empty container. The container shall be cleaned and completely assembled with all engine attachment parts, gaskets, closure bolts, etc. All blank offs, covers, seals, and screws that are in usable condition shall be held as Government property awaiting disposition.

4.3.2 Cylinder treatment.- As soon as possible after the dehydration seals on the engine are broken and not later than 24 hours thereafter, all cylinders shall be sprayed internally with internal engine corrosion-preventive mixture through the spark plug opening, without moving the crankshaft.

4.3.3 Engine openings.- Exhaust port covers and the air intake cover shall not be removed from the engine until the exhaust manifold, or any part thereof, or the carburetor, is installed on the engine. If it is anticipated that a period of more than 7 days will elapse before the engine will be given the initial ground runup, the carburetor air intake shall have installed therein, where possible, at least 8 units of dehydrating agent, conforming to Specification MIL-D-3464, and the opening thereof shall be sealed with a double thickness of type I material conforming to Specification MIL-B-131, or a single thickness of type II material conforming to Specification MIL-B-131, and held in place with moistureproof tape conforming to grade A, type I of Specification JAN-P-127. Where an 8-unit bag cannot be installed,

the largest practicable size bag shall be installed. All slip joints and drain holes on the exhaust manifold and all openings in the induction system, shall be sealed using appropriate combinations of tape and moisture vapor barrier. Sealing of the induction system shall be accomplished as close to the carburetor as possible. Noninstallation of intermediate sections of ducting to accomplish this purpose is authorized. The dehydrating agent shall be installed in such manner that it will be observed when the cover is removed and a tag indicating the presence of the dehydrating agent shall be attached in a conspicuous nearby location. Engines removed from metal containers will have all ventilatory covers and plugs removed and replaced with solid nonventilatory covers and plugs. Preservation procedures as specified above will be applied.

4.3.4 Accessories.- The carburetor and water injection equipment shall be attached to the engine but shall not be depreserved. Spark plugs shall not be depreserved. Other accessories shall be drained of excess oil and shall be installed.

4.3.5 Additional precautions.- If a period of 30 days will elapse before the engine is mounted on the airframe, it shall be packaged, where applicable, in a quick engine change unit envelope conforming to Drawing AN4107, as applicable, in accordance with the following instructions:

- (a) Rear section of the envelope shall be mounted on the stand.
- (b) Power plant unit shall be installed and secured with bolts passing through the gasketed holes provided.
- (c) Front of envelope shall be installed partially.
- (d) Units of dehydrating agent conforming to Specification MIL-D-3464, shall be installed in locations where they will be readily seen upon removal of envelope. A humidity indicator conforming to Drawing 52B22849 or Drawing AN7511, shall be installed opposite the window provided.
- (e) Envelope shall be installed and sealed as soon as possible after installation of the dehydrating agent. Grade A, type I tape, conforming to Specification JAN-P-127, shall be applied over seals. Foil flaps shall be folded over the seals and secured in place with grade A, type I tape, conforming to Specification JAN-P-127.

4.3.6 Maintenance.- Inspection of humidity indicator cards (or dehydrator plugs when bag is not installed), shall be accomplished at least once every 7 days. When relative humidity above 20 percent is indicated, dehydrating agent and all dehydrator plugs shall be replaced. Whenever cylinder dehydrator plugs are replaced, the cylinders shall be resprayed with internal engine-corrosion preventive mixture in accordance with paragraph 4.2.3.

4.4 Procedure for handling engine upon initial installation.-

4.4.1 Mounting engine on aircraft.- The front portion of quick engine change envelope, if installed, shall be removed and the bagged dehydrating agent and humidity indicator shall be disposed of in accordance with current instructions. Dehydrator plugs shall be removed and inspection made for internal cylinder corrosion in accordance with paragraph 4.2.2.3. The result of this inspection shall be entered in the engine log book. If corrosion is found, the procedure specified in paragraph 4.2.2.4 shall be followed. Where corrosion is not found, cylinders shall be resprayed and dehydrating agent in intake and exhaust manifolds shall be renewed. The engine shall be dismounted from the stand and installed on the

MIL-E-6059A

airplane. The rear of the envelope shall be removed from the stand. The entire envelope shall be cleaned and folded for subsequent reuse or reclamation, according to Government directives.

4.4.2 Installing propeller.- The propeller shaft and thrust nut shall be cleaned with dry-cleaning solvent conforming to Specification P-S-661, and the cleaned areas inspected for corrosion. If corrosion is present, the thrust nut shall be removed and the cleaning process repeated, being careful not to permit any of the solvent to enter the engine. The corrosion shall be removed by polishing the affected area with crocus cloth or with a small hand-buffing wheel, using jewelers rouge or a suitable substitute. Any abrasive coarser than that specified, shall not be used. The shaft shall be cleaned to remove traces of corrosion and polishing agents. The thrust nut shall be reinstalled and tightened to proper torque. The cavity between the thrust nut and the propeller shaft shall be filled with grease conforming to Specification MIL-L-3545. A thin coat of grease conforming to Specification MIL-L-3545 shall be applied to the propeller shaft. A piece of 1/8-inch rubber sheet, class II, conforming to Specification MIL-R-6855, shall be installed in the slot of the rear cone. Using a razor or a sharp knife, the rubber shall be trimmed to the contour of the rear cone cross section, being careful not to permit any rubber to protrude beyond the surfaces of the cone. The shaft area of the cone slot shall be coated with just sufficient grease conforming to Specification MIL-L-3545 to completely fill the spaces between the rear cone and thrust nut, then installed on the propeller shaft, pushing the cone against the grease and rotating against the thrust nut and about the shaft to displace as much of the grease as possible from the rear mating surfaces. With the rear cone in place, all excess grease remaining on the cone and exposed portions of the thrust nut shall be wiped off. The hub seat mating surfaces of the rear cone shall be cleaned and dried and the propeller installed and tightened to the proper torque.

4.4.3 Preservation maintenance.- The dehydrator plugs and the bagged dehydrating agent in the intake and exhaust systems shall be replaced when a relative humidity above 20 percent (unsafe) is indicated. Cylinders shall be re-sprayed with internal engine corrosion-preventive mixture at this time, in accordance with paragraph 4.2.3. When necessary, any one cylinder dehydrator plug of each cylinder may be removed and spark plugs installed to permit installation of cowling.

4.5 Preparation of engine for initial ground runup.-

4.5.1 Removal of dehydrating agent and corrosion-preventive mixture.- All moistureproof coverings on breathers, exhaust manifold, intake manifold, etc, and all dehydrating agent contained therein shall be removed. The dehydrating plug from the oil sump or alternate locations shall be removed and the corrosion-preventive mixture allowed to drain from the engine. At the same time the propeller shaft shall be rotated to facilitate adequate draining. If necessary, a hand pump shall be used to facilitate complete removal of mixture.

4.5.2 Oil strainers.- Oil screens and filters shall be removed, cleaned in gasoline or dry cleaning solvent conforming to Specification P-S-661, coated with corrosion-preventive mixture, and reinstalled.

4.5.3 Depreservation of accessories.-

4.5.3.1 Carburetors.- Carburetor drain plugs shall be removed and the oil drained. It shall be flushed thoroughly by injecting the fuel to be used in service through the inlet. Injection shall be continued at not more than normal fuel pressure until no sign of oil is observed in the fuel as it is discharged. The carburetor shall be drained, then the fuel chamber of both the carburetor and adapter shall be filled with fuel. All plugs shall be installed. Diaphragm type shall be allowed to stand full of fuel for an absolute minimum of 8 hours (this soaking is very important to restore the flexibility of the diaphragm, to prevent flooding, and incorrect

metering). The carburetor shall then be drained. Exposed surfaces shall be wiped. Fuel lines shall be installed and plugs and lock wires replaced. Joints and control linkages shall be oiled with oil conforming to Specification MIL-L-7870.

4.5.3.2 Other accessories.- Other accessories shall be depreserved by draining excess oil, at which time the fuel feed valves shall be checked.

NOTE: Do not depreserve water injection system unless specifically authorized.

4.5.4 Complete engine installation.-

4.6 Preoiling and ground operation.-

4.6.1 Prestarting inspection.- Prior to starting the engine, for the first time after installation in the aircraft, normal preflight inspection procedures shall be observed.

4.6.2 Preoiling.-

4.6.2.1 Process for preoiling new or overhauled engines upon installation in the airplane.-

4.6.2.1.1 Servicing oil tank(s).- The oil tank(s) shall be filled with a corrosion-preventive mixture at 60°F or higher.

4.6.2.1.2 Bleeding oil lines of dry sump engines.- The oil inlet connection to the oil pump shall be disconnected and a sufficient amount of corrosion-preventive mixture shall be drained to assure that there are no obstructions or air in the oil inlet line to the oil pump. Engines provided with a pipe plug on the oil-in line or with an oil inlet temperature bulb on the oil pump shall be drained through these openings without removing the inlet line. After draining, the connections shall be reinstalled.

4.6.2.1.3 Dry-sump engines.- Dry-sump engines shall be preoiled by one of the following alternate methods.

4.6.2.1.3.1 Pressure method (preferred).-

4.6.2.1.3.1.1 If the engine is equipped with a hydromatic propeller, the plug shall be removed from the propeller dome and a sufficient quantity of corrosion-preventive mixture shall be poured into the dome to bring the mixture level to the plug hole. The plug in the propeller dome shall then be reinstalled. If sufficient corrosion-preventive mixture is forced into the propeller dome during the preoiling procedure, this step may be deleted upon approval of the procuring activity. This step is not required for engines not equipped with hydromatic propellers.

4.6.2.1.3.1.2 The mixture control shall be placed in idle cut-off position. If the engine is equipped with a carburetor not having an idle cutoff, the throttle shall be opened to the full open position. The fuel valve and ignition switch shall both be placed in the "OFF" position.

4.6.2.1.3.1.3 At least one spark plug shall be removed from each cylinder. The preoiling pump shall be connected to the opening on the high pressure side of the main pressure oil pump, which is, if possible, upstream to the oil strainer. Air free corrosion-preventive mixture shall be pumped into the engine under a pressure of 30 to 80 psi and at a temperature of 100° to 175°F from a separate servicing tank while the crankshaft is being turned. The quantity of corrosion-preventive mixture necessary to adequately preoil shall be determined by a test of the procedure on 10 engines of a particular model. A particular type of engine shall be considered adequately preoiled when a continuous dripping or flow of the

MIL-E-6059A

mixture is noted either at the top rocker arms in radial engines, from all rocker arms on opposed engines or from all the oil holes on the camshaft(s) or rocker arms on inline engines. The removal of rocker or cambox covers to determine the desired quantity of corrosion-preventive mixture is only necessary on the first 10 engines. New gaskets should be used when reinstalling the covers if necessary to secure an oil-tight seal. The maximum quantity of corrosion-preventive mixture required on any of the 10 engines plus 25 percent shall be established by the Inspector as the quantity to preoil this type of engine, and all subsequent engines shall have this amount injected. After the sump(s) have drained, replace the sump plug(s) and safety in place. The data, together with a description of equipment and procedure used, shall be submitted to the procuring activity for approval. A portable energizer, or energizer and external battery source may be used to rotate the propeller during this operation, if available. Upon completion of the above procedure, the preoiling servicing tank hose shall be disconnected and the plug, after dipping in corrosion-preventive mixture, shall be reinstalled as quickly as possible to avoid loss of corrosion-preventive mixture. The spark plugs shall then be installed. (For radial engines only, depression valves shall be installed in the cylinders as set forth in paragraph 4.6.3.2.2.2.)

CAUTION: For V-1650 engines: When preoiling V-1650 engines, the starter mechanism shall be primed with 1 pint of corrosion-preventive mixture through the breather connection on the wheelcase located above the hand-starting mechanism housing.

4.6.2.1.3.2 Gravity method.- This alternate shall be used if the required pressure equipment is not available.

4.6.2.1.3.2.1 If the engine is equipped with a hydromatic propeller, the plug shall be removed from the propeller dome and a sufficient quantity of corrosion-preventive mixture shall be poured into the dome to bring the mixture level to the plug hole. The plug in the propeller dome shall then be reinstalled. This step is not required for engines not equipped with hydromatic propellers.

4.6.2.1.3.2.2 The sump plug(s) shall be removed.

4.6.2.1.3.2.3 The mixture control shall be placed in idle cutoff position. If the engine is equipped with a carburetor not having an idle cutoff, the throttle shall be opened to the full open position. The fuel valve and ignition switch shall both be placed in the "OFF" position.

4.6.2.1.3.2.4 At least one spark plug shall be removed from each cylinder. A plug on the high-pressure side of the oil pump shall be removed and the propeller turned in the normal direction of rotation until corrosion-preventive mixture flows from the oil pressure relief valve orifice or plug opening. The oil pressure relief valve or plug shall then be reinstalled.

4.6.2.1.3.2.5 The governor oil pressure relief valve cap shall then be removed and the propeller shall be rotated until a steady stream of corrosion-preventive mixture flows from the governor oil pressure relief valve opening. The cap shall then be reinstalled. If the engine is not equipped with a governor oil pressure relief valve cap, the propeller shall then be turned until the mixture flows from the sump drain opening. A portable energizer, or energizer and external battery source may be used if available. In no event shall the airplane battery be used. The sump drain plug(s), after dipping in corrosion-preventive mixture, shall then be reinstalled. The spark plugs shall be reinstalled.

4.6.2.1.4 Wet-sump engines.- All wet-sump engines, except those incorporating an oil cooler in the pressure oil system, shall be preoiled as follows.

4.6.2.1.4.1 The oil sump shall be filled to the normal level with corrosion-preventive mixture required for the model and type of engine involved.

4.6.2.1.4.2 At least one spark plug shall be removed from each cylinder. A plug on the high-pressure side of the oil pump shall be removed and the propeller turned in the normal direction of rotation until corrosion-preventive mixture flows from the engine oil pressure relief valve orifice or plug opening. The engine oil pressure relief valve or other plug shall then be reinstalled.

4.6.2.1.4.3 The governor oil pressure relief valve cap shall be removed. The propeller shall be rotated until a steady stream of corrosion-preventive mixture flows from the governor oil pressure relief valve opening. The cap shall then be reinstalled. If the engine is not equipped with a governor oil pressure relief valve cap, the propeller shall be turned at least 30 revolutions. A portable energizer, or energizer and external battery source may be used for rotating the propeller during this operation, if available. In no event shall the airplane battery be used. The spark plugs shall be reinstalled.

4.6.2.1.5 Wet-sump engines incorporating an oil cooler in the oil system shall be preoiled as follows.

4.6.2.1.5.1 The oil sump shall be filled to the normal level with corrosion-preventive mixture required for the model and type of engine involved.

4.6.2.1.5.2 The plug in the oil cooler shall be removed. The propeller shall be turned until sufficient corrosion-preventive mixture has been expelled from the opening to insure that all air is removed from the line and the cooler. A portable energizer, or energizer and external battery source may be used for rotating the propeller, if available. In no event shall the airplane battery be used. The plug shall be installed in the cooler and the propeller turned for at least 30 revolutions. The spark plugs shall then be reinstalled.

4.6.2.2 Preoiling of engines after a period of idleness.-

4.6.2.2.1 Engines which have been prepared for storage in accordance with the 30- to 60-day procedure outlined in paragraph 4.8 shall be preoiled in accordance with paragraph 4.6.2.1.

4.6.2.3 Preoiling of dry-sump engines at oil change.- Engines shall be preoiled at oil change as follows.

4.6.2.3.1 Servicing oil tank(s).- The oil tank(s) shall be serviced to the proper level with corrosion-preventive mixture.

4.6.2.3.2 The oil pump inlet shall be bled to release any trapped air and to insure an oil supply to the pump.

4.6.2.4 Preoiling of the wet-sump engines at oil change.- Engines shall be preoiled at oil change.

4.6.3 Starting.- When starting an engine for the first time after installation, the following procedure shall be followed.

4.6.3.1 Fuel servicing.- Fuel, as specified by the procuring activity for the particular type of aircraft, shall be added to the fuel tanks in sufficient quantity to assure completion of the operation required. Unless otherwise specified by the procuring activity, the fuel serviced for ground operation will be the same as that required for flight operation.

4.6.3.2 Clearing combustion chambers.-

4.6.3.2.1 Procedure for miscellaneous engines.- The crankshaft shall be turned at least six complete revolutions in the normal direction of rotation. Care shall be exercised that no force is used to overcome hydraulic resistance

MIL-E-6059A

during this time since any extra force will result in damage to the engine. If abnormal effort is required to rotate the crankshaft, the spark plugs shall be removed to determine whether liquid has collected in the cylinders.

4.6.3.2.2 Procedure for radial engines.-

4.6.3.2.2.1 Where the position of the spark plug hole(s) is such that liquids may be trapped in portions of the cylinder intake or exhaust system, sufficient ducting should be removed to effect complete drainage. If practicable, a hand pump may be used to facilitate this operation.

4.6.3.2.2.2 Unless otherwise authorized, engine depreservation valves shall be installed in the following cylinders:

<u>Cylinders per engine</u>	<u>Install depreservation valves in cylinders numbered</u>
7	3-4-5
9	4-5-6-7
14	5-6-7-8-9-10
18	7-8-9-10-11-12
28	A3-A4-A5-A6-B3-B4 B5-C3-C4-C5-D2-D3-D4-D5

Install new or newly overhauled spark plugs in the balance of the spark plug holes. Leave the plastic spark plug terminal protectors on the leads to the cylinders containing depreservation valves. If this is not practicable, disconnect the lead wire to each spark plug at the harness on cast harnesses or ground the lead wire on tubular harnesses. With ignition off, rotate the propeller through at least 6 revolutions with the valves installed, then start the engine in accordance with instructions set forth in "Pilot flight operating instructions" and operate at 800 rpm to 1,000 rpm for approximately 30 seconds. The depreservation valves shall then be removed, spark plugs installed, and ignition wires connected.

4.6.3.3 The actual starting of the engine shall be accomplished in accordance with the instructions contained in the "Pilots flight operation instructions" and other service instructions issued for the airplane in which the engine is installed.

4.6.4 Ground operation.- The following procedure shall be observed in preparing the engine for ground tests. All ground running shall be done with cowl flaps or coolant cooler shutters in the full-open position. Whenever practicable, the airplane shall be headed into the wind. Oil cooler shutters shall be operated, if necessary, to maintain oil temperatures within the required ranges specified in the Operating instructions.

4.6.4.1 After the engine has been started and is functioning normally, it shall be run at approximately 1,000 rpm for 5 minutes, at the completion of which time the engine shall be stopped and inspected for leaks, loose nuts, and general condition. If satisfactory, the engine shall again be started and run at approximately 1,000 rpm for 25 minutes and then run for 15 minutes at 50 percent normal rated rpm.

NOTE: If the engine is equipped with a manually operated Cuno oil filter, the handle of the filter shall be turned at least once during the latter part of the first 30 minutes of operation.

4.6.4.1.1 After the preceding operation, the engine shall be stopped and the installation inspected for leaks, loose nuts, and condition of parts. The engine oil strainer shall be removed, inspected, and cleaned. Unless an unusual accumulation of lint, dirt, or other foreign material is found, it will not be necessary to drain the lubricating oil system.

4.6.4.1.2 If an oil change is found necessary, follow the directions in paragraph 4.6.2.3 or 4.6.2.4, as applicable.

4.6.5 Ground tests.-

4.6.5.1 The engine shall be restarted and run at 1,000 rpm until the oil temperature has reached the minimum specified operating temperature.

4.6.5.2 The engine speed shall be increased to 50 percent rated rpm and maintained for 15 minutes.

4.6.5.3 The operation of the engine and engine accessories shall be tested and checks made for proper carburetor idle setting, propeller operation, propeller torque, manifold pressure regulation, etc, according to the ground test procedure specified in the "Pilot's flight operating instructions" and in the "Erection and maintenance manual" for the model airplane being tested.

4.6.5.4 When these tests have been completed and it has been demonstrated that the engine operates satisfactorily within the specified limits, the engine shall be considered acceptable for flight testing.

4.6.6 Stopping.- When all tests have been completed, the engine shall be stopped according to the procedure outlined in the "Pilot's flight operating instructions" for the model airplane being tested.

4.7 Treatment after ground runup.- The lubricating oil screen shall be inspected immediately after the ground runup. If an accumulation of metal chips, synthetic rubber, scrap or lint is found, the system shall be drained and preoiled in accordance with paragraph 4.6.2.3 or 4.6.2.4 as applicable. At the discretion of the Government Inspector, the engine shall be replaced. If the engine is to be replaced, it shall be preserved in accordance with Specification MIL-E-6058, and disposed of, as directed by the procuring activity. If the inspection reveals the draining to be unnecessary, the oil tank(s) shall be completely filled with internal engine corrosion-preventive mixture and the strainer shall be reinstalled. A tag shall be placed in a conspicuous place in the cockpit indicating that the tank has been filled with preservative mixture and listing existing operating restrictions. A similar entry shall be made in the engine log book or form.

4.7.1 Flight test shall be conducted in accordance with the instructions applicable to the aircraft.

4.8 Procedure for handling engines after completion of flight test which will be idle for periods of 30 to 60 days.-

4.8.1 Application.- This procedure is applicable to all aircraft engines installed on aircraft after flight test which will be idle for periods of 30 to 60 days and to aircraft engines which will be idle for shorter periods but which cannot be operated and maintained in complete accordance with the instructions set forth hereinafter for periods of idleness less than 30 days.

4.8.2 Engine runup and preliminary preservation.-

4.8.2.1 Engine not containing internal engine corrosion-preventive mixture.- When aircraft do not have internal engine corrosion-preventive mixture in the engine as determined by log entries and instrument panel tags, the oil tank and engine sump shall be drained and drain plugs replaced. The oil tank shall be filled with internal engine corrosion-preventive mixture to the level necessary to insure adequate lubrication during subsequent runup. Entry shall be made in log and a tag attached to the instrument panel in the pilot's cockpit stating that a mixture conforming to Specification MIL-C-6529 has been installed in the engine lubricating system and the date installed.

MIL-E-6059A

4.8.2.2 Engines containing internal engine corrosion-preventive mixture.- When engine log entries and instrument panel tags indicate that Specification MIL-C-6529 mixture is already in the engine, additional internal engine corrosion-preventive mixture need be added only in the event that there is insufficient lubricant in the system for adequate lubrication during runup.

4.8.2.3 Runup.- After checking the oil supply to insure lubrication during the running period, the engine shall be warmed up and run for at least 15 minutes with an oil inlet temperature of 213° to 225°F. The oil coolers shall be blanked off or bypassed to obtain the desired oil inlet temperature. Sufficient ducting leading directly into the carburetor air box shall be removed to permit ready access with the spray gun and for effective sealing in final preservation. Controllable two-speed and two-stage supercharger clutches shall be operated at least twice during runup. Allow approximately 5 minutes between the operation of each complete clutch shift to prevent overheating. Operate propeller through full range at least three times during runup.

4.8.2.4 Shutdown.- The counterweight-type propellers shall be placed in full high pitch, and the throttle shall be sufficiently advanced to insure propeller rotation through 4 cycles of operation for each cylinder or for approximately 30 seconds after the mixture control is moved to idle cutoff. An atomized, hot 220° to 250°F, internal engine corrosion-preventive mixture shall be injected into the induction system through an appropriate opening below the carburetor, such as a mixture thermometer opening, until white smoke appears from the exhaust. Injection shall be performed at a rate of approximately 30 gallons per hour. The mixture shall be changed to idle cutoff, and as soon as the engine ceases rotating, the injecting mixture shall be stopped.

4.8.3 Disassembly.- While the engine is still warm from the preceding run, the cowling and all spark plugs shall be removed. When baffles must be removed to remove spark plugs, the baffles shall be reinstalled.

4.8.4 Cylinders, preliminary treatment.- The internal engine corrosion-preventive mixture shall be thoroughly sprayed into each cylinder through the spark plug holes while the propeller shaft is rotated through four complete revolutions for each cylinder in such manner as to thoroughly coat the cylinders, valves, and manifolds. When air is used as a pressure medium, care shall be taken to insure that it is sufficiently dry to permit a spray coat free from deposited moisture.

4.8.5 Cylinders, final treatment.- Following the mechanical checks and other operations which require rotation of the crankshaft, each cylinder shall be sprayed with corrosion-preventive mixture with the piston in the bottom dead-center position. Each cylinder shall then be resprayed with the crankshaft immobilized. After respraying, the crankshaft shall not be rotated until the engine is depreserved. Upon completion of the spraying operation, dehydrator plugs shall be installed in each spark plug hole.

CAUTION: Should the crankshaft be rotated at any time prior to de preservation, this spraying operation must be repeated.

4.8.6 Coolant system.- The coolant system (including the after cooler coolant system, if present), of liquid-cooled engines shall be kept entirely full of coolant of the type (concentration) specified for the particular airplane and for the climatic conditions to be encountered. The coolant shall be prepared with ethylene glycol conforming to Specification MIL-E-5559.

4.8.7 Fuel pumps.- Fuel pumps attached to the engine shall have the fuel line disconnected and internal engine corrosion-preventive mixture injected therein while the shaft of the engine is being rotated to insure complete coverage of the fuel parts. Auxiliary fuel pumps shall be drained and similarly oiled while being operated.

4.8.9 Carburetors.- All carburetors installed on engines being prepared for storage in aircraft need not be removed. However, they shall be drained of as much residual fuel as possible and shall be preserved in accordance with the procedures recommended by the carburetor manufacturer using Specification MIL-O-6081, grade 1010 oil.

CAUTION: Do not exceed normal fuel pressure as damage may result to the diaphragm in the carburetor.

4.8.9.1 Fuel injection systems.- Fuel and pressure gage line at master control shall be disconnected. The following shall be removed: Fuel strainer, 1/8-inch plug at bottom of regulator near body, 1/8-inch pipe plug inside fuel control unit just below the idle valve lever, and 1/8-inch pipe plug at the bottom of control shaft housing of each injection pump. After the fuel (and moisture, if any) has been drained, all plugs shall be replaced except those in the bottom of the pump control shaft housings. Fuel strainer shall be replaced. From top of fuel control unit of the master control 1/8-inch pipe plug shall be removed. Manual mixture control shall be placed in the automatic-rich position and the throttle valve in the wide open position. The fuel inlet on the master control shall be supplied with a mixture of one part corrosion preventive, conforming to Specification MIL-C-6529, and three parts grade 1010 oil, at 10 to 15 psi, conforming to Specification MIL-O-6081. When mixture flows from the top of fuel control unit of master control, mixture flow shall be stopped and 1/8 inch pipe plug replaced in the top of fuel control unit. Mixture flow shall be started and continued until gasoline-free mixture is flowing out of the bottom of pump control housing of injection pumps, then flow of mixture shall be stopped. The 1/8-inch pipe plugs shall be replaced and mixture flow resumed and engine turned over until a flow of mixture is observed in each cylinder. Excess mixture shall be drained and all plugs and lock wires replaced.

4.8.10 Terminal protectors.- Terminal protectors conforming to Drawing AN4060, or equivalent, shall be installed on spark plug leads. Spark plug terminal sleeves shall be oil free and dry, before installing protectors. Only nonchlorinated solvents shall be used for cleaning.

4.8.11 Fuel lines.- The fuel lines of the airplane's fuel system shall be reconnected.

4.8.12 Water injection equipment.- When the water injection equipment is not already adequately preserved, the following operations shall be accomplished. Particular care shall be exercised to remove all water from the system prior to flushing with oil. After draining as much water as practical out of the regulator and solenoid valve assembly, it shall be flushed thoroughly with engine fuel conforming to Specification MIL-F-5572, then with 95 percent ethanol, 99 percent methanol or alcohol conforming to Specification MIL-A-6091, and blown out with clean dry air. The interior shall be oiled thoroughly with oil conforming to Specification MIL-O-6081, grade 1010, or other material as specified by the procuring activity.

4.8.13 Crankcase openings.- All breather openings shall be adequately sealed against oil and moisture with suitable covers such as materials conforming to Specification MIL-B-131 and secured with materials conforming to Specification JAN-P-127.

4.8.14 Dehydrating engine and exhaust ports.- A 16-unit bag of dehydrating agent conforming to Specification MIL-D-3464, shall be placed and anchored in each exhaust manifold opening and in each carburetor air intake. Smaller bags shall be used in engines having openings too small to admit a 16-unit bag. The opening shall be sealed with a double thickness of type I or a single thickness of type II moisture-vapor barrier sheet material, conforming to Specification MIL-B-131, held in place

MIL-E-6059A

with grade A, type I, moisture-resistant tape, conforming to Specification JAN-P-127. All slip joints and drain holes in the exhaust system shall be taped. The sealing of the induction system shall be carried out as close to the carburetor as possible. Removal of ducting, such as between intercoolers and the carburetor to accomplish this is authorized. Alternate air doors and any other openings into the induction system, shall be sealed. The dehydrating agent should be installed in such manner that it will be removed with the cover or observed when the cover is removed. A tag shall be placed on the covering of each opening that contains dehydrating agent, stating the exact number of bags of dehydrating agent enclosed in the sealed opening.

NOTE: Extreme care must be exercised in handling activated dehydrating agent to prevent impairment of its useful absorptive capacity by premature exposure to the atmosphere.

4.8.15 Placard.- A warning tag or plate, stating that the engine is preserved and that the propeller shall not be moved until all dehydrating agent is removed, shall be placed in the cockpit of the airplane in the most conspicuous position. A similar warning tag shall be fastened to the propeller shaft or lower propeller blade. The propeller shall be coated with a heavy grease to discourage handling.

4.8.16 Log book.- A notation shall be made in the engine log book including the following information.

- (a) Preserved for 30 - 60 days
- (b) Specification MIL-E-6059A
- (c) Name of activity
- (d) Date

4.8.17 Maintenance.- Dehydrator plugs shall be inspected at 10-day intervals. When a condition approaching unsafe is revealed, the plugs and bagged dehydrating agent shall be replaced. Cylinders shall be resprayed with internal engine corrosion-preventive mixture at that time in accordance with the spraying procedures set forth in the paragraph 4.2.3. Dehydrator plugs will be checked by comparison with Drawing 52B22849 Indicator card, or a Drawing AN7514 Color comparison card.

4.8.18 Represervation.- At the end of each 60-day period, the engine shall be depreserved and preoiled in accordance with paragraph 4.6.2.1, and the airplane shall be test flown and represerved. If it is impossible to fly the airplane, the engine shall be operated for approximately 1/2 hour, followed by a complete ground runup and test in accordance with the instructions applicable to the airplane engine, and then represerved.

4.8.19 Depreservation and preoiling.- Engines shall be depreserved in accordance with the procedure given in the paragraph 4.5, and preoiled in accordance with the procedure given in paragraph 4.6.2.1.

4.9 Procedure for handling engines after flight test which will be idle for a period of 2 to 30 days.-

4.9.1 Application.- When it is definitely known that the airplane will be inoperative for more than 2 days, but will be operated within 30 days, the engine shall be treated as specified herein. This procedure may only be applied, however when it is known that the airplane will be stored in such manner as to permit periodic runup of the engine during the period of idleness. If runup during the idleness period cannot be accomplished, the engine shall be processed as required in procedure for handling engines after completion of flight test which will be idle for periods of 30 to 60 days.

4.9.2 Add internal engine corrosion-preventive mixture.-

4.9.2.1 When the airplane has internal engine corrosion-preventive mixture in the lubricating system, internal engine corrosion-preventive mixture in an amount sufficient to insure adequate lubrication during successive runup shall be added.

4.9.2.2 When it is not known that the airplane has internal engine corrosion-preventive mixture in the system, the following procedure shall be followed:

- (a) The oil tank and engine sump shall be drained.
- (b) Drain plugs shall be replaced and safety wired.
- (c) The oil tank shall be filled with internal engine corrosion-preservative mixture to the level necessary to provide adequate lubrication during the preservation runups.
- (d) A tag shall be placed on the instrument panel stating that internal engine corrosion-preventive mixture has been placed in the system together with the name of the activity and the date. A similar notation shall be made in the log books.

4.9.3 Runup.- The engine shall be runup in accordance with the following procedure:

- (a) Oil coolers shall be blanked off or bypassed to obtain the specified oil inlet temperature. Cowl flaps shall not be closed or other methods employed which would restrict flow of air around cylinders.
- (b) Engine shall be run on service fuel at an oil inlet temperature of 213° to 225°F for at least 15 minutes.
- (c) Two-speed and two-stage supercharge clutches shall be operated at least twice during runup. Approximately 5 minutes between the operation of each complete clutch shift shall be allowed to prevent overheating.
- (d) All propellers shall be operated throughout their entire pitch range prior to shutdown.

4.9.4 Shutdown.- At the end of the runup, the engine shall be shutdown in accordance with the following procedure:

- (a) Two-pitch propellers and constant-speed propellers of the counterweight type shall be placed in the high-pitch position.
- (b) The throttle shall be opened to an extent sufficient to insure proper operation of the oil scavenger pump and to insure operation of the engine through four cycles of operation for each cylinder after the mixture control is placed in the idle cutoff position.
- (c) At completion of shutdown, the cylinders shall be treated in accordance with paragraph 4.2.3.

MIL-E-6059A

4.9.5 Coolant system.- The coolant system (including after-coolant system if present), shall be kept entirely full of coolant of the type (concentration) prescribed for the particular airplane and for the climatic conditions to be encountered. The coolant shall be prepared with ethylene glycol conforming to Specification MIL-E-5559.

4.9.6 Placards and log books.- The following information shall be included in the propeller placard, the airplane, and engine log forms:

- (a) Preserved for 2-30 days
- (b) Specification MIL-E-6059A
- (c) Name of activity
- (d) Date

Records shall be kept of successive runups and shall be posted in the log book and on the propeller placard.

4.9.7 Maintenance.- The engine shall be runup on the ground at least once every week in accordance with the procedure specified above for the duration of the period of idleness.

4.9.7.1 Represervation.- This procedure shall not be extended beyond the 30-day period. If it is desired to represerve the engine after 30 days idleness, the airplane must be test flown prior to represervation. If a test flight is impossible, the engine shall be operated for approximately 1/2 hour, followed by a complete ground runup and test in accordance with the instructions applicable to the airplane engine, and then represerved.

4.9.8 Depreservation.- For restricted flight operations, engines prepared for 2 to 30 days idleness need no depreservation.

4.10 Preparation of engines for flyaway delivery.-

4.10.1 Mixture already in system.- When the aircraft has internal engine corrosion-preventive mixture in the system, the engine shall be operated on corrosion-preventive mixture and engine oil added as necessary.

4.10.2 Mixture not in system.- When the airplanes do not have internal engine corrosion-preventive mixture in the system, the oil tank and the engine shall be drained and the system shall be refilled with internal engine corrosion-preventive mixture.

4.10.3 Placard and log books.- An appropriate entry shall be made in the log book concerning the method of preservation, the name of the activity, and the date. This information shall be duplicated on a placard which shall be placed in a prominent position in the pilot's cockpit.

4.10.4 Depreservation.- Engines need no depreservation.

4.11 Inspection.-

4.11.1 The processes for handling engines and all materials entering into the procedure thereof shall be subject to inspection by Government Inspectors.

4.11.1.1 The term "Government Inspector" refers to the U. S. Air Force Representative designated by the Inspection Section, Air Materiel Command, or to the Bureau of Aeronautics Representative, as applicable.

4.11.2 The procuring activity reserves the right to conduct tests in whole or in part for final determination of compliance with the specification.

4.12 Effectiveness of equipment and procedure.- The effectiveness of equipment and procedure used by the contractor for this process, shall be checked at such intervals as may be deemed necessary by the Government Inspector.

5. NOTES

5.1 Intended use.- This specification is applicable to the treatment, preservation, preoiling, and ground operation of aircraft engines, before and after installation in the airplane. The original preparation of engines by aircraft engine manufacturers is covered by Specification MIL-E-6058.

5.2 Superseding data.- This specification supersedes Specification MIL-E-6059 which specification incorporated the requirements of Specification AN-E-50.

5.3 A list of the equipment necessary for compliance with the instructions contained herein, may be obtained upon application to either U. S. Air Force, Air Materiel Command, Wright-Patterson Air Force Base, Ohio, or to the Bureau of Aeronautics, Navy Department, Washington 25, D.C.

5.4 The dehydrating agents, humidity indicator cards, engine envelopes, shipping plates, accessory drive covers, etc, removed from engines during unpacking will be stored and disposed of according to instructions from the Government Inspector.

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Navy - Bureau of Aeronautics
Air Force