STORAGE - MAINTENANCE PRACTICES

1. General

- A. This maintenance practice provides instructions for flyable storage, temporary storage and indefinite storage. Included in these instructions are inspection criteria to be used during storage. The following definitions apply to storage times:
 - (1) Flyable Storage Flyable storage is defined as a maximum of 28 days nonoperational storage and/or the first 25 hours of intermittent engine operation.
 - (2) Temporary Storage Temporary storage is defined as a maximum of 90 days nonoperational status.
 - (3) Indefinite Storage Indefinite storage is defined as more than 90 days nonoperational status.
- B. Airplanes in storage should be returned to service using steps which are detailed in Return To Service Maintenance Practices.

2. Flyable Storage and Inspection

- A. Storage Procedures.
 - (1) If the airplane will be out of service for five days or more, disconnect battery; and, as necessary, clean and coat the intercell hardware with a light coat of neutral nonconductive grease, such as petroleum jelly, to prevent corrosion.
 - (2) If battery is left in airplane, regular servicing will be required to prevent discharge. If battery is removed from the airplane check it regularly for state of charge.
 - (3) After two weeks, rotate airplane tires to prevent flat areas. Mark tires with tape to ensure tire is placed at a minimum of 90 degrees from previous position.
 - (4) Do not set parking brake if a long period of inactivity is anticipated, as brake seizing can result.
 - (5) Airplanes in storage 0 to 7 days Engine may be left in an inactive state, with no preservation protection, provided engine is sheltered, humidity is not excessively high and engine is not subjected to extreme temperature changes that would produce condensation.
 - (6) Airplanes in storage 8 to 28 days Engines inactive for up to 28 days require no preservation, provided all engine openings are sealed off and relative humidity in engine is maintained at less than 40 percent. Humidity control is maintained by placing desiccant bags and humidity indicator on wooden racks in engine primary exhaust duct. Suitable windows must be provided in exhaust closure to facilitate observation of humidity indicators.
 - (7) Ensure fuel bays are full of fuel.
- B. Inspection During Storage.
 - (1) Inspection shall be carried out after 14 days of storage. If the relative humidity (as indicated on the humidity indicator) is less than 40 percent, no further action is required. If humidity indicated exceeds 40 percent, the desiccant bags must be replaced by freshly activated desiccant bags.

3. Temporary Storage and Inspection

- A. Storage Procedures.
 - NOTE: The airplane is constructed of corrosion- resistant alclad aluminum, which will last indefinitely under normal conditions if kept clean. However, these alloys are subject to oxidation. The first indication of corrosion on unpainted surfaces is in the form of white deposits or spots. On painted surfaces, paint is discolored or blistered. Storage in a dry hangar is essential to good preservation and should be procured, if possible. Varying conditions will alter measures of preservation, but under normal conditions in a dry hangar, and for storage periods not to exceed 90 days, the following methods of treatment are suggested:
 - (1) Clean and wax airplane thoroughly.
 - (2) Lubricate all airframe items.
 - (3) Remove battery and store in a cool, dry place; service battery periodically and charge as required.
 - NOTE: The airplane battery serial number is recorded in airplane equipment list. To assure accurate warranty records, battery should be reinstalled in same airplane from which it was removed. If battery is returned to service in a different airplane, appropriate record changes must be made and notification sent to the Cessna Warranty Administration Department.
 - (4) Clean any oil or grease from tires. Cover tires to protect against grease or oil.
 - (5) Either block up fuselage to relieve pressure on tires or rotate wheels every two weeks to prevent flat areas on tires.

Mark tires with tape to ensure tire is placed approximately 90 degrees from previous position.

- (6) Do not set the parking brake as brake seizing can result.
- (7) Close fuel supply firewall shutoff valve.
- (8) Disconnect fuel inlet line to oil-to-fuel heater and connect suitable oil supply line to oil-to-fuel heater fuel inlet. Blank off disconnected fuel supply line.
- (9) Disconnect fuel line at inlet to flow divider to prevent oil from entering fuel manifold, and loosen line as required to permit drainage into a suitable container.
 - NOTE: An engine treated in accordance with the following may be considered being protected against normal atmospheric corrosion for a period not to exceed 90 days.
 - NOTE: Engine preservation carried out during temporary or indefinite storage should be recorded in the engine logbook and on tags secured to the engine.
- CAUTION: Under no circumstances should preservative oil be sprayed into the compressor or exhaust ports of the engine. Dirt particles deposited on blades and vanes during engine operation will adhere and alter the airfoil shape, adversely affecting compressor efficiency.
- CAUTION: Extreme care must be taken to prevent foreign material from being drawn into engine fuel system. Equipment must be supplied with suitable filters no coarser than 10 micron rating.
- CAUTION: Under no circumstances permit preservative oil to enter engine where it may come in contact with thermocouple probe assembly. Oil contamination of probes may cause complete failure of thermocouple system.
- (10) Supply preservative oil (MIL-PRF-6081, Grade 1010) at 5 to 25 PSIG pressure. Ensure temperature is at least 16 C (60 F).
- CAUTION: Observe starter motor operating limits (refer to Pilot's Operating Handbook and Approved Airplane Flight Manual).
- (11) With ignition switch in NORMAL position, IGN circuit breaker pulled, and fuel condition lever in HIGH IDLE position, and power control lever to MAX, carry out normal motoring run until all preservative oil is displaced. During run, power control lever should be moved from MAX to IDLE and returned to MAX, and fuel condition lever from HIGH IDLE to CUTOFF and returned to HIGH IDLE to displace fuel from system.
- (12) After motoring run, check to see if preservative oil is coming from opened fuel line. If not, repeat motoring cycle until preservative oil flows from opened fuel line.
- (13) Return power control lever to IDLE, and fuel condition lever to CUTOFF. Reconnect fuel supply line to oil-to-fuel heater and fuel line to inlet of flow divider.
- (14) Install all plugs, caps and covers over all openings to prevent entry of foreign material and accumulation of moisture. Install desiccant bags and humidity indicators.
- (15) Ensure fuel bays are full of fuel.
- B. Inspection During Storage.
 - (1) Inspection shall be carried out every 14 days if the airplane is stored outside, or every 30 days if the airplane is stored inside. If the relative humidity (as indicated on the humidity indicator) is less than 40 percent, no further action is required. If humidity indicated exceeds 40 percent, the desiccant bags must be replaced by freshly activated desiccant bags.
 - (2) Drain any accumulated moisture and contamination from all fuel drains every 30 days. Refer to Chapter 12, Fuel Servicing.
 - (3) Check fuel additive concentration every 30 days using a differential refractometer. Refer to the Pilot s Operating Handbook and Approved Airplane Flight Manual for allowable concentration ranges.
 - (a) If concentration falls below acceptable range, airplane must be defueled and refueled.

4. Indefinite Storage and Inspection

- A. Storage Procedures.
 - NOTE: The airplane is constructed of corrosion- resistant alclad aluminum, which will last indefinitely under normal conditions if kept clean. However, these alloys are subject to oxidation. The first indication of corrosion on unpainted surfaces is in the form of white deposits or spots. On painted

surfaces, paint is discolored or blistered. Storage in a dry hangar is essential to good preservation and should be procured, if possible. Varying conditions will alter measures of preservation, but under normal conditions in a dry hangar, and for storage periods greater than 90 days, the following methods of treatment are suggested:

- (1) Clean and wax airplane thoroughly.
- (2) Lubricate all airframe items.
- (3) Remove battery and store in a cool, dry place; service battery periodically and charge as required.
 - NOTE: The airplane battery serial number is recorded in airplane equipment list. To assure accurate warranty records, battery should be reinstalled in same airplane from which it was removed. If battery is returned to service in a different airplane, appropriate record changes must be made and notification sent to the Cessna Warranty Administration Department.
- (4) Clean any oil or grease from tires. Cover tires to protect against grease or oil.
- (5) Either block up fuselage to relieve pressure on tires, or rotate wheels every two weeks to prevent flat areas on tires. Mark tires with tape to ensure tire is placed approximately 90 degrees from previous position.
- (6) Do not set the parking brake as brake seizing can result.
- (7) Close fuel supply firewall shutoff valve.
- (8) Disconnect fuel inlet line to oil-to-fuel heater and connect suitable oil supply line to oil-to-fuel heater fuel inlet. Blank off disconnected fuel supply line.
- (9) Disconnect fuel line at inlet to flow divider to prevent oil from entering fuel manifold, and loosen line as required to permit drainage into a suitable container.
 - NOTE: An engine treated in accordance with the following may be considered being protected against normal atmospheric corrosion for a period not to exceed 90 days.
 - NOTE: Engine preservation carried out during temporary or indefinite storage should be recorded in the engine log book and on tags secured to the engine.
- CAUTION: Under no circumstances should preservative oil be sprayed into the compressor or exhaust ports of the engine. Dirt particles deposited on blades and vanes during engine operation will adhere and alter the airfoil shape, adversely affecting compressor efficiency.
- CAUTION: Extreme care must be taken to prevent foreign material from being drawn into engine fuel system. Equipment must be supplied with suitable filters no coarser than 10 micron rating.
- CAUTION: Under no circumstances permit preservative oil to enter engine where it may come in contact with thermocouple probe assembly. Oil contamination of probes may cause complete failure of thermocouple system.
- (10) Supply preservative oil (MIL-PRF-6081, Grade 1010) at 5 to 25 PSIG pressure. Ensure temperature is at least 16♦C (60♦F).
- CAUTION: Observe starter motor operating limits (refer to Pilot's Operating Handbook and Approved Airplane Flight Manual).
- (11) With ignition switch in NORMAL position, IGN circuit breaker pulled, and fuel condition lever in HIGH IDLE position, and power control lever to MAX, carry out normal motoring run until all preservative oil is displaced. During run, power control lever should be moved from MAX to IDLE and returned to MAX, and fuel condition lever from HIGH IDLE to CUTOFF and returned to HIGH IDLE to displace fuel from system.
- (12) After motoring run, check to see if preservative oil is coming from opened fuel line. If not, repeat motoring cycle until preservative oil flows from opened fuel line.
- (13) Return power control lever to IDLE, and fuel condition lever to CUTOFF. Reconnect fuel supply line to oil-to-fuel heater and fuel line to inlet of flow divider.
- (14) Place suitable container under engine and remove drain plugs from oil tank and accessory gearbox, and chip detector from propeller reduction gearbox.
- (15) With drains open, motor engine with starter (ignition NORMAL and IGN circuit breaker pulled) to permit scavenge pumps to clear engine, indicated by cessation of steady stream of oil from drains. To prevent excessive operation with limited lubrication, limit rotation to shortest possible time to accomplish complete draining.

- (16) Remove oil filter element and allow oil to drain. Refer to Pratt and Whitney Engine Maintenance Manual for procedures.
- (17) Allow oil to drain from engine to a slow drip (approximately one-half hour), then reinstall oil filter element and chip detector and close drains.
- (18) Remove cover plates from pads of accessory drives, and spray exposed surfaces and gear shafts with engine lubricating oil (Exxon Turbo Oil 2380 or equivalent). Replace cover plates.
- (19) Install plugs, caps, and covers over all openings to prevent entry of foreign material and accumulation of moisture.
- NOTE: If engine is to remain in airplane, place desiccant bags on wooden racks in inlet and exhaust ducts.
- (20) Tag oil filler cap with date of preservation, and enter date and type of preservation in engine log book.
- (21) Install humidity indicator in air inlet end and in exhaust end of engine compartment. Cover with suitable airtight moisture barrier. Provide inspection windows at each end for observation of humidity indicators.
- (22) Install all plugs, caps and covers over all openings to prevent entry of foreign material and accumulation of moisture. Install desiccant bags and humidity indicators.
- (23) Ensure fuel bays are full of fuel.
- B. Inspection During Storage.
 - (1) Inspection shall be carried out every 14 days if the airplane is stored outside, or every 30 days if the airplane is stored inside. If the relative humidity (as indicated on the humidity indicator) is less than 40 percent, no further action is required. If humidity indicated exceeds 40 percent, the desiccant bags must be replaced with freshly activated desiccant bags.
 - (2) Drain any accumulated moisture and contamination from all fuel drains every 30 days. Refer to Chapter 12, Fuel Servicing.
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 - (a) If concentration falls below acceptable range, airplane must be defueled and refueled.