PIPER

Customer Services

SERVICE LETTER No. 633

Piper Aircraft Corporation

Lock Haven, Pennsylvania, U.S.A.

October 9, 1972

Subject: Inspection and Repair of Flood Exposed Airplanes

Models and Serial Numbers Affected: All Piper airplanes exposed to flood water in Susquehanna River basin as a result of Hurricane Agnes in 1972.

Purpose: In view of recent requests by owners of flood exposed airplanes to provide information concerning aircraft and/or components that have been subjected to flood exposure, the following are offered as basic guidelines. These guidelines are general in nature and would necessarily be applied or varied to fit the individual situation according to water level, length of time of exposure and other variables.

This information is provided to basically cover those areas that might not normally be obvious to the mechanic.

Instructions: Determine the water level on the aircraft. Determine which operating and/or electrical components have been exposed to the water.

All repairs and/or adjustments are to be made in accordance with appropriate Piper Service Manual, Manufacturer's instructions, and F.A.R. Part 43, with particular attention to silt, corrosion and contaminants.

I. Airframe -- if immersed.

A. Clean silt and contaminants from airframe.
B. Tubular structures -- check for corrosion. Clean and re-preserve as required. (Refer to Service Letter No. 629 dated September 5, 1972.)
C. Wings -- inspect to ensure that contaminants are cleaned from fuel cell areas.
D. Landing Gear -- check all landing gear bearings, locks, torque links, shimmey dampeners, etc. Check all limit switches -- replace non-sealed type. Jack aircraft and cycle landing gear to ensure proper operation.

II. Control Surfaces -- if immersed.

A. Remove surface, clean and check all bearings --

Instructions: (continued)

relube or replace as necessary.

B. Rebalance before installation.

III. Control Systems -- if immersed.

A. Clean and inspect all cables for evidence of corrosion -- replace corroded cables. Re-preserve galvanized cable with MIL-C-11796 Class 2 (hot).

B. Clean and inspect all control system pulleys and bearings.

C. Clean and inspect all trim system cables, pulleys, drums, bearings, jack screws, etc. Do not apply preservation to trim cables.

IV. Actuating Cables -- if immersed.

A. Inspect "push-pull" actuating cables for powerplant, heating and ventilating system, fuel systems, etc. for proper operation.

V. Engines (see attached Avco Lycoming Service Bulletin)

A. Accessories -- inspect.

B. Engine mounts -- inspect for corrosion. (Refer to Piper Service Letter No. 629 dated September 5, 1972.)

VI. Propellers -- if immersed.

A. Inspect and repair as necessary in an authorized propeller shop.

VII. Hydraulic Systems -- if immersed.

A. Replace hydraulic powerpak.

VIII. Electrical Systems -- if immersed.

A. Replace all circuit breakers and switches (see landing gear for possible exception). Replace all solenoids, relays and master contactors.

B. Replace battery.

C. Disassemble all connectors; clean and inspect for corrosion. Replace all corroded or pitte connectors. Inspect for wire corrosion at connector.

Instructions: (continued)

D. Check all harness assemblies for entrapped contaminants. Clean and check for short circuits.
E. Remove electric motors and motor driven pumps. (Refer to Piper for instructions.)
F. Remove all potted solid state electrical equipment such as flap time delay relays, alternator inop. switches, windshield heat timers, low fuel warning switches, etc. Clean, dry and bench check per Piper Service Manual.
G. Replace de-icer timers. Clean and check prop de-icer brush holders.
H. Clean and check voltage regulators and over-voltage relays. Replace as necessary.
I. Clean and check all strobe light power supplies. Refer to Piper Service Manual.
J. Replace all fuel senders, trim tab sender pots, cowl flap sender pots, flap position senders, etc.
K. Clean, inspect and check heated pitot systems.

IX. AutoPilot Systems -- if immersed.

A. Bench check in accordance with Piper Service Manual. Pay particular attention to clutch settings.

X. Vacuum and Instrument Pressure Systems -- if immersed.

A. Replace gyros.
B. Replace filters.
C. Clean and inspect all lines.
D. Clean and check all regulating valves (refer to Piper for instructions).
E. Remove engine driven pump (refer to Piper Service Manual).

XI. Induction and Exhaust Systems -- if immersed.

A. Clean and inspect induction system for silt and corrosion. Check all hinges and gaskets. Replace as necessary.
B. Replace induction air filters.
C. Clean and inspect exhaust system.
D. Clean and inspect all heat shrouds and ducting and turbocharger components.

Instructions: (continued)

XII. Fuel Systems -- if immersed.

A. Remove and clean fuel cells and clean all associated lines and components.
B. Clean and inspect all fuel cell vents, cap vents and vent lines.

XIII. Instruments -- if immersed.

A. Clean instrument air lines, pitot and static vents.

XIV. Heating and Ventilating Systems -- if immersed.

A. Replace gasoline heaters (including blowers, fuel valve and motors).
B. Clean and inspect all distribution boxes, ducting and valves.
C. Inspect and check system control cables. Replace all corroded or binding cables.

XV. Pressurization Systems -- if immersed.

A. Remove and replace all system controls and valves.

XVI. Oxygen Systems -- if immersed.

A. Disconnect all lines from source and outlets; clean all fittings and lines per MIL-I-5585A.
B. Remove regulator valves (refer to manufacturer for instructions).
C. Replace pressure gauge.

XVII. Avionics Systems -- if immersed.

A. Replace avionics.
B. Clean and inspect antennas and connectors.

XVIII. Insulation and Upholstery -- if immersed.

A. Remove all wet insulation. Thoroughly clean and dry (or replace).
B. Remove all wet upholstery. Thoroughly clean and dry (or replace) so that corrosion does not progress in back up materials.

XIX. Fabric -- if immersed.

A. Clean and check per F.A.R. Part 43.

AVCO LYCOMING DIVISION
WILLIAMSPORT, PENNSYLVANIA 17701

Service Bulletin

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DATE: September 1, 1972

Service Bulletin No. 357
Engineering Aspects are
FAA (DEER) Approved

SUBJECT: Engine Inspection in Event of Immersion

MODELS AFFECTED: All Avco Lycoming Aircraft Engines

TIME OF COMPLIANCE: Before engine is returned to service after immersion in water.

An engine that has been immersed in water must not be operated until it has been inspected. Completely disassemble engine and examine all parts paying particular attention for evidence of corrosion, rust or contaminants imbedded on bearing surfaces, piston, mounting flanges or any aluminum, magnesium or bronze surface that may be porous. Remove evidence of rust, or corrosion. If pitting in stressed areas is found, the part should not be reused. Silt imbedded in porous surfaces may be removed. Be certain oil passages, dowel holes and similar hidden openings and recesses are thoroughly free from contaminants. Test electrical components and fuel metering devices in accordance with manufacturer's instructions to determine fitness for future use.

Reassemble the engine using new seals, gaskets, stressed bolts, nuts and crankshaft sludge tubes. All reused parts must conform with Table of Limits, No. SSP-2070, for fits and clearances.

NOTE

Aircraft systems that supply either fuel or oil to the engine must be thoroughly cleaned, including oil cooler, lines, valves, etc. to prevent contamination of the engine after reassembly.