



**Customer
Services
Division**

SERVICE LETTER

FIELD SERVICE ENGINEERING ☐ BOEING COMMERCIAL AIRPLANE GROUP ☐ P.O. BOX 3707 ☐ SEATTLE ☐ WASHINGTON 98124-2207

707-SL-29-18

727-SL-29-35

737-SL-29-50

747-SL-29-30

757-SL-29-16 ✓

767-SL-29-25

ATA: 2902-00

10 January 1991

SUBJECT: BMS 3-11 HYDRAULIC FLUID PURIFICATION

MODEL: 707, 727, 737, 747, 757, 767 Series

APPLICABILITY: All Airplanes

PURPOSE:

This service letter is to advise operators of Boeing's concurrence with the use of a Pall Land and Marine (PLM) Portable Purifier as a means of recycling BMS 3-11 hydraulic fluid that has been contaminated with water and/or chlorinated solvents. Boeing has no objection to the use of the recycled fluid in hydraulic test benches and in all Boeing commercial airplanes, as long as the recycled fluid meets the contamination limit requirements listed in the appropriate model Chapter 29 Maintenance Manual.

BACKGROUND:

Several operators have expressed an interest in obtaining a BMS 3-11 fluid purification system for treating contaminated system fluids. In response to this interest, both Boeing and Monsanto Chemical Company have evaluated the use of a fluid purifier developed by the Pall Land and Marine Division. Two purifiers were evaluated; an earlier model PD 00226 and a more recently developed model PE 00440-1J. The latter model supersedes the earlier model. The fluid purifier is a self-contained portable unit designed to remove contaminants such as volatile solvents, water, air, and suspended particulate matter from BMS 3-11 hydraulic fluid. The purifier is also designed for direct connection into the airplane hydraulic system.

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DISCUSSION:

The Boeing performance evaluation of the fluid purifier consisted of tests for removal of methyl chloroform and water from BMS 3-11 fluid. The Monsanto evaluation consisted of analysis of used Skydrol 500B-4 fluid that had been contaminated with trichloroethane and water, then cleaned with the PLM purifier. No attempt was made in either test to remove other common contaminants of BMS 3-11 hydraulic fluid, such as MIL-H-5606 hydraulic fluid, airplane de-icing fluids, and other cleaners, since these cannot be removed by this method. Water and chlorinated cleaning solvents are the most common contaminants found in airplane hydraulic systems. These materials are volatile, which makes possible their removal by the application of vacuum and moderate heating. This is the basis of the PLM fluid purifier treatment.

Conclusions from the two studies are as follows:

- A. The fluid purifier removes water and volatile solvents from BMS 3-11 hydraulic fluid as advertised by Pall Land and Marine Division.
- B. The fluid purifier does not contaminate BMS 3-11 hydraulic fluid or remove any of the additives from the Type IV fluid formulations.
- C. BMS 3-11 hydraulic fluid is not made erosive during treatment by the fluid purifier. This was confirmed in the Boeing study by chemical examination and electrochemical measurements of BMS 3-11 Type IV hydraulic fluid mixtures after they had been subjected to this treatment.

RELATED INFORMATION:

The Monsanto study specifically evaluated the use of the purifier with Skydrol products. Chevron, manufacturer of Hyjet products, has indicated that they accept the Monsanto evaluation as appropriate for the Chevron Hyjet products also.

Ethylene propylene seals should be installed in fluid purifiers used to remove contaminants from BMS 3-11 hydraulic fluid. The PE 00440-1J purifier, as manufactured, has ethylene propylene seals installed. If seals are replaced, operators should ensure that the correct parts are installed.

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SUPPLIER:

Operators interested in further operational details or procurement information regarding the PLM fluid purification system should contact:

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