



**Commercial
Aviation
Services**

MAINTENANCE TIP

SERVICE ENGINEERING • BOEING COMMERCIAL AIRPLANES • P.O. BOX 3707 • SEATTLE • WASHINGTON 98124-2207

777 MT 34-023

8 September 2003

- SUBJECT** APPLICATION OF HYDROPHOBIC COATING ON THE LOW RANGE RADIO ALTIMETER ANTENNAS TO REDUCE NUISANCE TCAS EICAS STATUS MESSAGES ON THE GROUND DURING HEAVY RAINFALL
- APPLICABILITY** All 777 airplanes with Honeywell P/N 066-50000-0XXX (TPA-81A) TCAS
- CONDITION** Water on the surface of the LRRA antennas in certain conditions may cause the LRRA transceiver output status to no computed data (NCD), resulting in a nuisance TCAS status message.
- RECOMMENDED ACTION** Apply the hydrophobic coating, FluoroPel PFC 1604A, on the LRRA antennas as necessary. The hydrophobic coating will help repel water from covering the antenna during heavy rainfall. Prior to applying the FluoroPel, clean the surface of the LRRA antennas per BSOMP 20-30-03. The hydrophobic coating can be reapplied as needed when the hydrophobic coating wears off. To determine if reapplication of the hydrophobic coating is needed, use a spray bottle and spray water on the surface of the LRRA antenna. If tiny water droplets form on the antenna surface, the hydrophobic coating is still intact. If not, clean the antenna and reapply the hydrophobic coating. The FluoroPel hydrophobic coating is a fluoropolymer solution and can be applied either by spray or manually by blotting.
- BACKGROUND** During heavy rainfall the Low Range Radio Altimeter (LRRA) antennas can be inundated with a large volume of water running down the sides of the airplane and may cause the LRRA to lose track of the return signal being reflected from the ground. This condition is similar to an out of range condition at high altitudes resulting in the LRRA

system setting its output status to no computed data (NCD). While the airplane is on the ground, the NCD LRRRA output status causes an air-ground disagreement within TCAS that result in a nuisance TCAS EICAS status message.

TCAS uses inputs from the airplane air/ground system logic and the LRRRA system to determine if the airplane is on the ground or in the air. If these inputs disagree, TCAS cannot determine the air/ground status of the airplane and TCAS sets a fault message as in the case above when the LRRRA output to TCAS is NCD while on the ground.

The FluoroPel PFC 1604A is a product of Cytonix Corporation. Contact information for the Cytonix Corporation is as follows:

Cytonix Corporation
8000 Virginia Manor Road
Beltsville, MD 20705
Tel: (301) 470-6267
Fax: (301) 470-6269
URL: <http://www.cytonix.com/>

**MAINTENANCE
MANUAL ACTION**

The information from this Maintenance Tip will be added to the 777 Fault Isolation Manual, ATA 34-45 Task 801 in the January 5, 2004 revision.

**CENTRAL
MAINTENANCE
COMPUTER
MESSAGE**

Maintenance message 34-45010, TCAS computer has an internal fault