1. Advisory Number
NA-GSFC-2004-05

2. Subject
Cable Failure Attributable to Workmanship Error During Assembly of COTS Connector.

3. Manufacturer
Trompeter Electronics, Inc.
5550 E. McDowell Road
Mesa, Arizona 85215

4. Manufacturer CAGE Code
60637

5. Federal Stock Code
N/A

6. Part/Material/Process Number
PL3155-47

7. Lot Date Code/Batch Code/Serial Number
Unknown

8. Controlling Spec/Document Number
N/A

9. References
N/A

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11. Problem Description and Details:

A GSFC project had cable assembly failures due to shorted connectors. Trompeter Electronics, Inc. manufactured these COTS connectors per catalog p/n PL3155-47. A GSFC failure analysis determined that the connector failures were caused by a solder bump on the ring ferrule, which wore through the insulation sheath and shorted to the connector case. This solder bump protrusion is illustrated in Figures 1 and 2 on page 2.

The root cause failure mechanism was attributable to poor GSFC workmanship during the connector assembly operation. Step 4B of the Trompeter Assembly Instruction TAI-125 requires the following: “Solder white conductor to inner shield, between ridges, being careful not to allow solder to extend above ridges”. As illustrated in Figure 3, the solder extended beyond the ridge line, thereby causing a solder protrusion into the insulation and a resultant shorting condition to case.

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12. Action Recommended:

1) When appropriate, it is recommended that the projects use crimped connectors, rather than relying on a cable design that uses soldered connectors.

2) If this style of Trompeter connector is assembled to cables, ensure that the manufacturer instructions are followed, especially assuring that neither solder nor conductor extends beyond the ridge of the ring ferrule.

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14. Date Prepared
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16. Released by: (Signature)  
GSFC NASA Advisory Coordinator  
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17. Date Released
March 16, 2004
11. Problem Description and Details: (Continued from page 1)

Figure 1: Solder Bump on the ring ferrule shorting through the insulation to the case.

Figure 2: After connector disassembly, the same solder bump protruding through the insulation sheath.
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Figure 3: Workmanship error regarding step 4B of the Trompeter Assembly Instruction TAI-125, which requires “Solder white conductor to inner shield, between ridges, being careful not to allow solder to extend above ridges”. In this shorted connector failure, the solder bump protrudes above the ridge line, which is indicated by the white indicator line.