DLA L&M, in an effort to make sure all affected parties have access to this information, requested and obtained Amphenol Aerospace's permission on 09 May to post the following on our public website. Since this data was excerpted from GIDEP document NX4-P-09, we also requested and obtained the GIDEP Program Manager's permission to take this special and urgent action in accordance with GIDEP Distribution Policy.

1. TITLE ***(Class, Function, Type, etc.)***

Type MIL-DTL-38999 Series III

2. DOCUMENT NUMBER

NX4-A-16-01

3. DATE ***(DD-MMM-YY)***

03-MAR-16

4. MANUFACTURER AND ADDRESS

Amphenol Aerospace Operations
191 Delaware Ave
Sidney, NY 13838-1304

5. PART NUMBER

See Table 1

6. NATIONAL STOCK NUMBER

Not Available

7. SPECIFICATION

MIL-DTL-38999

8. GOVERNMENT PART NUMBER

Not Available

9. LOT DATE CODE START

2011

10. LOT DATE CODE END

2013

11. MANUFACTURER'S POINT OF CONTACT

Ron Williams

12. CAGE

77820

13. MANUFACTURER'S FAX

Not Available

14. MFR. POC PHONE

(607) 563-5344

15. MANUFACTURER'S E-MAIL

rwilli@amphenol-aerospace.com

16. SUPPLIER - Not Applicable

17. SUPPLIER ADDRESS -Not Applicable

18. SUPPLIER CAGE - Not Applicable

19. PROBLEM DESCRIPTION / DISCUSSION / EFFECT

Amphenol received notification from a customer of an anomaly involving a broken insert which allowed multiple recessed contacts in a harness assembly to back off far enough to lose continuity. The MIL-DTL-38999 Series III Connector employed a 25-61 S insert arrangement. The leg of the harness for this 25-61 S plug connector was approximately eleven inches long and composed entirely of shielded-twisted pairs. Visual inspection indicated this leg had been sharply bent directly behind the straight backshell accessory. Disturbed tape wrap on the adapter suggests cable flexure very close to the adapter. Torque stripe on the adapter showed no evidence of adapter loosening. Continuity check of all 56 wires in the connector passed at 0.1 ohms, there were no broken wires. The cable flexing caused visible contact axial movement. After loosening the adapter coupling nut and attempting to slide the adapter back, the connector insert separated and the rear half with captive contacts pulled out the connector body. The connector was assembled at one of Amphenol's certified value-added distributors in early 2014. Analysis on the returned part showed the plastic to plastic (P-P) bond was completely compromised and the dielectric retention strip (TPRS) was fractured. A second failure (21-41 S arrangement) from a connector on the same harness was identified with this failure mode. This 21-41S plug connector was also on a short leg of the harness, directly adjacent to the leg of the harness with the 25-61 S connector.

Block 19 continued.

20. ACTION TAKEN/PLANNED

Amphenol has issued (2) internal corrective actions: LG10279 for revision of LO-6000, IP165 (P-P Test Procedure) and LG10280 to address P-P bond line failure RCCA. Though the risk of failure is extremely low, Amphenol has performed lot traceability for the product identified in table 1 if case-specific applications employing this product are questioned. Amphenol recommends that concerned customers compare their insert arrangements against those identified in table 1. Only product deriving from the 15 identified manufacturing lots of table 1 are impacted. Please reach out to the Amphenol POC provided to discuss the details of impacted product performance in specific applications and RCCA.

21. DATE MFR. NOTIFIED/ SUPPLIER NOTIFIED - Not Applicable

22. MFR./SUPPLIER RESPONSE - Not Applicable

☐ **REPLY ATTACHED**

☐ **NO REPLY**

23. ORIGINATOR ADDRESS/POINT OF CONTACT

Lori Shaw, Amphenol Aerospace
191 Delaware Ave
Sidney, NY 13838-1304
lshaw@amphenol-aao.com (607) 563-5144

24. GIDEP REPRESENTATIVE

Lori Shaw

25. SIGNATURE

Signature on File

26. DATE

03-MAR-16

Block 19 Continued:

Subsequent destructive testing done by Amphenol's customer indicates some connectors produced in this same time period employing these two insert assemblies fail to meet the insert retention requirement laid out in MIL-DTL-38999 paragraph 3.16. Connectors produced from all other insert patterns passed the required 100 PSI retention test of MIL-DTL-38999. Before testing insert retention at the connector level, Amphenol performed an analysis on insert assembly test results designed to verify the P-P bond strength in-process.

Internal research at Amphenol found in-process check (IPC) test failures in the data for the 2 suspect lots of insert assemblies. The IPC allows for two methods of verification; the first utilizes an automated tensile testing machine that measures the load to break P-P bond and compares it against the 100 PSI requirement. The second method requires a lesser load to be applied to individual contacts to verify compliance; documentation instructs operators to apply an independent load to a minimum of 20% of each size contact cavity with the specific lbf requirement defined by contact size. Process documentation requires all insert assemblies to be tested first with the automated primary test for data acquisition purposes and defaults operators to the second test if any insert assembly fails the first method. Assemblies tested through the second method are identified with a P-P destructive force value below internal test limits and a passed operation sign-off.

In reviewing the retained tensile test data starting in 2011 , the first year variable data retention replaced pass/fail criteria, Amphenol has identified 19 lots of 7,988 (0.2%) tested over that time span that have failed to meet the test requirements and were subsequently processed per the second verification method. This indicates that this is not a systemic problem but rather discrete manufacturing events in the 2011-2013 timeframe.

Size 9-13 inserts were eliminated from the 19 lots identified as the second test method requires a load on individual size 22D cavities to be 52% of what would normally be put on the entire insert evenly. The load put on individual size 20 contacts would have required 80% of what would normally be introduced on the entire insert evenly. This point loading of method two was considered adequate to test the P-P bond compliance to the 100 PSI (25 lb min force). The specifics of the remaining 15 lots including arrangement, quantity and date of manufacture are attached in table 1:

Table 1

Insert Arrangement	Quantity	Manufacture Date	AAO Lot Code	AAO Part No.
21-41S	237	2013	132152850	10-578267-41S
25-61S	1592	2013	132167920	10-578269-61S
16-55S	2911	2013	132284430	10-578275-55S
18-32S	208	2013	132202740	10-578276-32S
18-32S	962	2013	132219150	10-578276-32S
20-41S	426	2013	132247450	10-578277-41S
24-4p	194	2013	132191240	10-578279-04P
21-41S	960	2013	131550980	10-578267-41S
25-61S	354	2012	126431580	10-578269-61S
25-187P	24	2011	113841470	10-690669-187P
23-151 P	31	2012	125201750	10-640668-151P
21-121 P	88	2012	125423020	10-640667-121P
12-121 P	28	2011	115483270	10-640667-121P
15-55S	39	2011	112832210	10-640664-55S
15-55S	20	2011	113263020	10-640664-55S

Amphenol believes the risk of failure in the field of any connectors identified in table 1 with recorded P-P bond failure to be extremely low based on redundancies in the design for insert retention. In a cumulative effort the RTV backfill, TPRS stake and P-P bond contribute to the retention of insert assemblies. Testing indicates that, for the size 25, contribution to insert retention by only the TPRS and RTV is 138 lbs average; this exceeds the 100 PSI requirement. In addition to robust design, connector application plays a critical role in contributing to this failure mode. Integration with PCB tails, right-angle backshells and backend potting are known to minimize risk of insert retention failure.