NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
PRESSURE TRANSDUCER, ITEM 215 SV770473-6 (1)	2/1RB	215FM08A: Electrical short. CAUSE: Contamination of connection, failure of leads or strain gages.	END ITEM: Loss of transducer output, or noisy output. GFE INTERFACE: Increase in battery power consumption. The current is limited in the DC/DC converter to 1.8 +/- 0.25 amps. Shutdown of DC/DC converter. Loss of CWS, fans and DCM display. MISSION: Terminate EVA with loss of DCM display, CWS and ability to monitor EMU. CREW/VEHICLE: None for single failure. Possible loss of crewman with subsequent external leak of SOP bottles.	A. Design - The internal lead wires to the electronic assembly are held in place with potting material to prevent abrasion through chafing. Also the wire is #24 AWG with insulation that provides adequate resistance against shorting. B. Test - Component Acceptance Test - The pressure transducer output is checked at the vendor (Kulite Semiconductor, Inc.) per section 10.7 (Error Band Test) of Acceptance Test Procedure ATP 2541. This test consists of checking the transducer output at increments from 0 psig to 7400 psig and back to 0 psig at temperature of 70 degrees F, 0 degrees F, and 100 degrees F. An electrical short would be detected by a failure of this test. Component Functional Calibration Test per AT-E-215 - The item is pressurized with a known pressure over the ranges of 0-7400 psig and 7400-0 psig. The output of the transducer when compared to the known pressure must be within 259 psig, except at 0 psig it shall be within 185 psig. An electrical short would be detected by a failure of this test. C/I PDA Testing per SEMU-88-007 - The item is checked for proper operation by pressurizing the end item (SOP) to a known pressure of 7200-7500 psig. The SOP is then allowed to blowdown at the rate of 5.26 - 5.46 lbs/hr GO2. The item pressure is compared to the known pressure at the start of blowdown and at 1 minute intervals. The output of the transducer when compared to the known pressure must be within 259 psig, except at 0 psig it shall be within 185 psig. Upon completion of PDA testing the item is visually final inspected for damage to external surfaces, and mounting points. Certification Testing - The item completed the 15 yr. structural vibration and shock certification requirement during 10/85. Engineering changes 42804-149 (preclude the possibility of a cable entry failure), 42806-301 (eliminate a potential interference between transducer with the SOP), 42806-381 (added weld inspection requirements and a more stringent leakage test) and 42806-490 (added a voltage conditioning requirement and a more stringent screening procedure) have been incorporated and verified since this configuration was certified. However, these changes do not pertain to this failure mode. A test specimen survived 4000

CIL
CRITICAL ITEMS LIST
TITLE: CIL-SOP/2

NAME P/N QNTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
PRESSURE TRANSDUCER ITEM 215 SV78475-4 (1)	2/1R4 EVA (IN SOP)	215FM06A: ELECTRICAL SHORT.		CERTIFICATION TESTING (CONTINUED) - 41806-103 ADDED HELD INSPECTION REQUIREMENTS AND A MORE STRINGENT LEAKAGE TEST AND 41806-450 ADDED A VOLTAGE CONDITIONING REQUIREMENT AND A MORE STRINGENT SCREENING PROCEDURE! HAVE BEEN INCORPORATED AND VERIFIED SINCE THIS CONFIGURATION WAS CERTIFIED. HOWEVER, THESE CHANGES DO NOT PERTAIN TO THIS FAILURE MODE. A TEST SPECIMEN SURVIVED 500 OPERATING PRESSURE CYCLES AND 12 PROOF PRESSURE CYCLES AND STILL OPERATED WITH AN ACCEPTABLE BURPING. THE HAS A PROOF CYCLE REQUIREMENT OF 40 PROOF PRESSURE EXCURSION - 81,600 PSI. IT PRESENTLY HAS ONLY BEEN CERTIFIED FOR 12 CYCLES OR 24 HOURS. C. INSPECTION - THE PRESSURE TRANSDUCER IS FABRICATED AND INSPECTED TO THE KULITE SEMICONDUCTOR INC. DOCUMENT NUMBER KSP2054 #SOLDERING PROCEDURE AND REQUIREMENTS). THIS DOCUMENT CONTROLS SOLVENTS USED FOR CLEANING, CLEANLINESS REQUIREMENTS AND PREPARATION OF CONNECTOR SURFACES PRIOR TO SOLDERING THE WIRES BETWEEN THE SENSING ELEMENT AND THE ELECTRONICS AND THE ELECTRONICS AND THE CABLE ARE VISUALLY INSPECTED DURING ASSEMBLY TO INSURE THEY HAVE PROPER STRAIN RELIEF. D. FAILURE HISTORY - NONE. E. GROUND TURNAROUND - TESTED PER TEMU-M-001, TRANSDUCER AND DCM GAGE CALIBRATION CHECK. F. OPERATIONAL USE - CREW RESPONSE - EVA : DIRECT EVA TERMINATION SHOULD BEGIN AS SOON AS SOP IS FLOWING, CREW RESPONSE TO THIS ABORT FAILURE IS TO ABORT EVA. TRAINING - STANDARD EMU TRAINING COVERS THIS FAILURE MODE. OPERATIONAL CONSIDERATIONS - REFERENCE LOSS/FAILURE FLIGHT RULES; DEFINE AN EMU AS LOST ONCE SOP IS FLOWING. EVA CHECKLIST AND IOF PROCEDURES VERIFY HARDWARE INTEGRITY AND SYSTEMS OPERATIONAL STATUS PRIOR TO EVA. REAL TIME DATA SYSTEM ALLOWS GROUND MONITORING OF EMU SYSTEMS.

1844-2
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SEE
FMEA/CIL
FOR
FAILURE
GROUND
SUMMARY