FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CIL HARDWARE
NUMBER: M5-6MB-2257-G -X

SUBSYSTEM NAME: ELECTRICAL POWER GENERATION - CRYO, GENERIC
REVISION: 9 09/09/92

PART DATA

	PART NAME VENDOR NAME	PART NUMBER VENDOR NUMBER
LRU	: H2/O2 CONTROL BOXES	V070-764470
SRU	: DIODE	JANTXV1N4246

EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
DIODE, ISOLATION, 1 AMP - LO2 TANKS 1 THRU 9 HEATER - CURRENT LEVEL DETECTOR "TEST" CIRCUIT

REFERENCE DESIGNATORS:
40V76A141CR39
40V76A142CR39
40V76A143CR39
40V76A144CR39
40V76A217CR39
40V76A218A1CR39
40V76A218A2CR39
40V76A218A3CR39
40V76A218A4CR39

QUANTITY OF LIKE ITEMS:
ONE PER H2/O2 CONTROL BOX
8 - OV102 TANKS 1-4/5, 6-9
4 - OV103 TANKS 1-4
4 - OV104 TANKS 1-4
5 - OV105 TANKS 1-5

FUNCTION:
PROVIDES CIRCUIT ISOLATION FROM INITIATED COMMANDS AND CONDUCTS GROUND MDM COMMAND FOR THE "TEST" FUNCTION OF THE CURRENT LEVEL DETECTORS (CLD) IN THE LO2 TANK HEATER CIRCUITS.

FAILURE MODES EFFECTS ANALYSIS FMEA – CIL FAILURE MODE

NUMBER: M5-6MB-2257-G- 02

REVISION#: 10 08/09/96

SUBSYSTEM NAME: ELECTRICAL POWER GENERATION - CRYO, GENERIC

LRU: H2/O2 CONTROL BOXES **CRITICALITY OF THIS**

ITEM NAME: DIODE **FAILURE MODE:** 2R3

FAILURE MODE:
SHORT (END TO END)

MISSION PHASE:
OO ON-ORBIT
DO DE-ORBIT

VEHICLE/PAYLOAD/KIT EFFECTIVITY:
102 COLUMBIA
103 DISCOVERY
104 ATLANTIS
105 ENDEAVOUR

CAUSE:
STRUCTURAL FAILURE (MECHANICAL STRESS, VIBRATION), CONTAMINATION, ELECTRICAL STRESS, THERMAL STRESS, PROCESSING ANOMALY

CRITICALITY 1/1 DURING INTACT ABORT ONLY? NO

REDUNDANCY SCREEN
A) PASS
B) FAIL
C) PASS

PASS/FAIL RATIONALE:
A)

B)
REDUNDANCY SCREEN "B" FAILS BECAUSE COMMAND AND MONITOR CIRCUIT UPSTREAM OF DIODE IS NOT ACTIVE DURING FLIGHT (GROUND FUNCTION ONLY).

C)

- FAILURE EFFECTS -

(A) SUBSYSTEM:
LOSS OF ISOLATION FOR GROUND MDM CIRCUITS.

FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CIL FAILURE MODE
NUMBER: M5-6MB-2257-G- 02

(B) INTERFACING SUBSYSTEM(S):
NO EFFECT - FIRST FAILURE

(C) MISSION:
POSSIBLE EARLY MISSION TERMINATION. AFFECTED LO2 TANK HEATER CIRCUIT CANNOT BE TESTED - AFFECTED HEATERS MUST BE TURNED OFF. LOSS OF USE OF REACTANT IN AFFECTED TANK.

(D) CREW, VEHICLE, AND ELEMENT(S):
NO EFFECT - FIRST FAILURE

(E) FUNCTIONAL CRITICALITY EFFECTS:
POSSIBLE EARLY MISSION TERMINATION. AFFECTED LO2 TANK HEATER CIRCUIT CANNOT BE TESTED - AFFECTED HEATERS MUST BE TURNED OFF. LOSS OF USE OF REACTANT IN AFFECTED TANK.

DESIGN CRITICALITY (PRIOR TO DOWNGRADE, DESCRIBED IN (F)): 1R3

(F) RATIONALE FOR CRITICALITY DOWNGRADE:
FUNCTIONAL LOSS OF LO2 TANK 1 REQUIRED FOR LOSS OF CREW/VEHICLE (E.G. A LEAK). THEREFORE, CIL IS NOT UNIQUE.

-DISPOSITION RATIONALE-

(A) DESIGN:
REFER TO APPENDIX F, ITEM NO. 3 - DIODE

(B) TEST:
REFER TO APPENDIX F, ITEM NO. 3 - DIODE

GROUND TURNAROUND TEST
NONE

(C) INSPECTION:
REFER TO APPENDIX F, ITEM NO. 3 - DIODE

FAILURE MODES EFFECTS ANALYSIS (FMEA) – CIL FAILURE MODE
NUMBER: M5-6MB-2257-G- 02

(D) FAILURE HISTORY:
REFER TO APPENDIX F, ITEM NO. 3 - DIODE

(E) OPERATIONAL USE:
NO CREW ACTION AFTER FIRST FAILURE.

- APPROVALS -

EDITORIALLY APPROVED	: RI	: Laura G. Lemus 8/12/96
EDITORIALLY APPROVED	: JSC	: Sam Searcy 9-3-96
TECHNICAL APPROVAL	: VIA JSC	:96-CIL-012