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PRINT DATE: 03/10/95

FAILURE MODES EFFECTS ANALYSIS (FMEA) - CRITICAL HARDWARE

NUMBER: 05-6J-2355A -X

SUBSYSTEM NAME: EPD&C MAIN PROPULSION SYSTEM

REVISION:

03/03/95

	PART NAME VENDOR NAME	PART NUMBER VENDOR NUMBER
LRU	: DIODE BOX, AVIONICS BAY 5	VO70-765380-001
SRU	: DIODE	JANTXV1N5551

PART DATA

EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:

| DIODE, BLOCKING (3 AMP) - LH2 OUTBOARD FILL/DRAIN VALVE, MANUAL OPEN SWITCH COMMAND

REFERENCE DESIGNATORS: 55V76A208A2CR14

QUANTITY OF LIKE ITEMS: 1

| ONE PER LH2 OUTBOARD FILL/DRAIN VALVE

FUNCTION:

| ISOLATES GROUND OPEN COMMAND FROM MANUAL SWITCH OPEN COMMAND.
CONDUCTS MANUAL SWITCH OPEN COMMAND TO HDC FOR CONTROL OF POWER TO OPEN SOLENOID OF LH2 OUTBOARD FILL/DRAIN VALVE.

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - MAIN PROP. FMEA NO 05-6J -2355A -2 REV:11/20/87

ASSEMBLY : AV BAY 5 DIODE BOX CRIT. FUNC: 1R
 P/N RI : JANTXV1N5551 CRIT. HDW: 2
 P/N VENDOR: VEHICLE 102 103 104
 QUANTITY : 1 EFFECTIVITY: X X X
 : ONE PHASE(S): PL X LO OC DO LS
 : 1 PER LH2 OUTBOARD FILL/DRAIN VALVE

REDUNDANCY SCREEN: A-FAIL B-FAIL C-PASS
 PREPARED BY: APPROVED BY: APPROVED BY (NASA):
 DES JWB J BROWN DES [Signature] EPDC SSM [Signature]
 REL [Signature] F DEFENSOR REL [Signature] 12-5-87 MPS SSM [Signature]
 QE D MASAI QE [Signature] EPDC REL [Signature] MPS REL [Signature]

ITEM:

DIODE, BLOCKING (3 AMP), LH2 OUTBOARD FILL/DRAIN VALVE, MANUAL OPEN SWITCH COMMAND.

FUNCTION:

ISOLATES GROUND OPEN COMMAND FROM MANUAL SWITCH OPEN COMMAND, CONDUCTS MANUAL SWITCH OPEN COMMAND TO HDC FOR CONTROL OF POWER TO OPEN SOLENOID OF LH2 OUTBOARD FILL/DRAIN VALVE. 55V76A208A2CR14.

FAILURE MODE:

SHORT, INTERNAL SHORT, CURRENT LEAKAGE

CAUSE(S):

PIECE PART STRUCTURAL FAILURE, MECHANICAL SHOCK, VIBRATION, THERMAL SHOCK.

EFFECT(S) ON:

(A) SUBSYSTEM (B) INTERFACES (C) MISSION (D) CREW/VEHICLE

(A) LOSS OF COMMAND ISOLATION. DEGRADATION OF REDUNDANCY AGAINST PREMATURE DEACTUATION OF OPEN SOLENOID.

(B,C,D) FIRST FAILURE - NO EFFECT. POSSIBLE LOSS OF CREW AND VEHICLE AFTER SECOND FAILURE (ROLLER/SRING BREAKS. ONE PARTICLE BRIDGES CLOSE CONTACTS. SECOND PARTICLE-SHORTS OPEN CONTACT TO GROUND. THIS RESULTS IN INADVERTENT CLOSE COMMAND AND OPEN INHIBIT COMMAND, AND LOSS OF GROUND OPEN COMMAND, RESPECTIVELY) RESULTING IN PREMATURE CLOSURE OF LH2 OUTBOARD FILL/DRAIN VALVE. TERMINATION OF PROPELLANT LOADING WHICH MAY CAUSE A PRESSURE SPIKE AND POSSIBLE RUPTURE OF ORBITER FILL LINE AND/OR GSE INTERFACE/FACILITY LINES. POSSIBLE AFT COMPARTMENT OVERPRESSURIZATION AND FIRE/EXPLOSION HAZARD. POSSIBLE LOSS OF ADJACENT CRITICAL FUNCTIONS DUE TO CRYO EXPOSURE. FAILS A AND B SCREENS BECAUSE NO INSTRUMENTATION IS AVAILABLE TO DETECT FAILURE.

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - MAIN PROP.

FMEA NO 05-6J -2355A -2

REV: 11/20/87

DISPOSITION & RATIONALE:

(A) DESIGN (B) TEST (C) INSPECTION (D) FAILURE HISTORY (E) OPERATIONAL USE

(A-D) DISPOSITION AND RATIONALE:

REFER TO APPENDIX F, ITEM NUMBER 4 - DIODE.

(B) GROUND TURNAROUND TEST

UNDETECTABLE - REQUIRES INVASIVE TESTING.

(E) OPERATIONAL USE

NO CREW ACTION CAN BE TAKEN.