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PRINT DATE: 02/24/95

FAILURE MODES EFFECTS ANALYSIS (FMEA) - CRITICAL HARDWARE
 NUMBER: 05-6J-2113 -X

SUBSYSTEM NAME: EPD&C MAIN PROPULSION SYSTEM

REVISION: 1 02/06/95

	PART NAME VENDOR NAME	PART NUMBER VENDOR NUMBER
LRU	: AFT PCA 4 5, 6	V070-765280
SRU	: CONTROLLER, REMOTE POWER	MC450-0017-1030
SRU	: CONTROLLER, REMOTE POWER	MC450-0017-2030
SRU	: CONTROLLER, REMOTE POWER	MC450-0017-3030
SRU	: CONTROLLER, REMOTE POWER	MC450-0017-4030

PART DATA

EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:

CONTROLLER, REMOTE POWER (RPC), 3 AMP, HELIUM SUPPLY ISOLATION VALVE B (LV 2'4'6).

REFERENCE DESIGNATORS: 54V76A134RPC33
 54V76A134RPC34
 55V76A135RPC33
 55V76A135RPC34
 55V76A136RPC33
 55V76A136RPC34

QUANTITY OF LIKE ITEMS: 6
 SIX

FUNCTION:

CONDUCTS MAIN BUS POWER TO HELIUM SUPPLY ISOLATION VALVE B. RPC IS IN SERIES WITH DIODE AND HDC.

- APPROVALS -

PRODUCT ASSURANCE MGR : K. L. PRESTON
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 DESIGN ENGINEERING : J. PECK
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K.L. Preston 4/21/95
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J. Peck 4/21/95
John B. Faloutsos 3/14/96
 N/A
John B. Faloutsos 3-19-96
 N/A

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - MAIN PROP. FMEA NO 05-6J -2113 -2 REV: 06/14/88

ASSEMBLY : AFT PCA-4,5,6	CRIT. FUNC: 1R
P/N RI : MC450-0017-1030	CRIT. HDW: 2
P/N VENDOR:	VEHICLE 102 103 104
QUANTITY : 6	EFFECTIVITY: X X X
: SIX	PHASE(S): PL LO X OO DO IS

REDUNDANCY SCREEN: A-PASS B-FAIL C-PASS

PREPARED BY:	APPROVED BY:	APPROVED BY (NASA):
DES <i>WB</i> J BROWN	DES <i>D. Brown</i>	EPDC SSM <i>[Signature]</i>
REL <i>GF</i> DEFENSOR	REL <i>J. Kenna 6/27/88</i>	MPS SSM <i>[Signature]</i>
QE <i>Don D MASAI</i>	QE <i>J. D. [Signature]</i>	EPOC REL <i>[Signature]</i>
		MPS REL <i>[Signature]</i>

ITEM:

CONTROLLER, REMOTE POWER (RPC), 3 AMP, HELIUM SUPPLY ISOLATION VALVE B (LV2/4/6).

FUNCTION:

CONDUCTS MAIN BUS POWER TO HELIUM SUPPLY ISOLATION VALVE B. RPC IS IN SERIES WITH DIODE AND HDC.
54V76A134RPC33, 34. 55V76A136RPC33, 34. 55V76A135RPC33, 34.

FAILURE MODE:

INADVERTENT OUTPUT, FAILS "ON", FAILS TO TURN "OFF".

CAUSE(S):

PIECE PART FAILURE, CONTAMINATION, VIBRATION, MECHANICAL SHOCK, PROCESSING ANOMALY, THERMAL STRESS.

EFFECT(S) ON:

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

- (A) CONTINUOUS POWER TO HELIUM SUPPLY ISOLATION VALVE B.
- (B) INABILITY TO DEACTUATE HELIUM SUPPLY ISOLATION VALVE B.
- (C-D) FIRST FAILURE - NO EFFECT.

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM :EPD&C - MAIN PROP. FMEA NO. 05-6J -2113 -2 REV:06/14/88

(E) 1R/2, 1 SUCCESS PATH AFTER FIRST FAILURE.
TIME FRAME - ASCENT.

- 1) HELIUM LEAK BETWEEN ISOLATION VALVE AND DOWNSTREAM CHECK VALVE
(ASSUMES LEAK RATE IS NOT LARGE ENOUGH TO OVERPRESSURIZE AFT
COMPARTMENT BEFORE CREW CAN RESPOND).
- 2) RPC FAILS "ON".

RESULTS IN NON-ISOLATABLE LEAKAGE FROM THE HELIUM ENGINE SUPPLY.
POSSIBLE OVERPRESSURIZATION OF AFT COMPARTMENT SINCE ISOLATION OF THE
LINE CANNOT BE ACHIEVED WITHIN THE AVAILABLE RESPONSE TIME. POSSIBLE
LOSS OF CREW/VEHICLE.

FAILS B SCREEN BECAUSE FAILURE IS NOT DETECTABLE DURING CRITICAL PERIOD
(ENGINE OPERATION) WHILE RPC IS COMMANDED "ON".

DISPOSITION & RATIONALE:

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

(A-D) FOR DISPOSITION AND RATIONALE:

REFER TO APPENDIX B, ITEM NO. 2 - REMOTE POWER CONTROLLER.

(B) GROUND TURNAROUND TEST

COMPLETE ELECTRICAL VERIFICATION, V41AAO.015A, V41AAO.035A, V41AAO.055A
EVERY FLIGHT.

(E) OPERATIONAL USE

NO CREW ACTION CAN BE TAKEN.