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PRINT DATE 02/24/95

FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CRITICAL HARDWARE

NUMBER: 05-6KF-2183 -X

SUBSYSTEM NAME: EPD&C FWD RCS

REVISION: 1 02/06/95

	PART NAME VENDOR NAME	PART NUMBER VENDOR NUMBER
LRU	FWD PCA 3	V070-763360
SRU	CONTROLLER, REMOTE POWER	MC450-0017-1050
SRU	CONTROLLER, REMOTE POWER	MC450-0017-2050
SRU	CONTROLLER, REMOTE POWER	MC450-0017-3050
SRU	CONTROLLER, REMOTE POWER	MC450-0017-4050

PART DATA

EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
 REMOTE POWER CONTROLLER (RPC 5 AMP) - FORWARD RCS REACTION JET DRIVER 2,
 VERNIER JETS

REFERENCE DESIGNATORS: 83V76A24RPC47
 83V76A24RPC51

QUANTITY OF LIKE ITEMS: 2
 TWO

FUNCTION:
 CONDUCTS MAIN BUS C POWER TO REACTION JET DRIVER FORWARD (RJDF) 2 FOR
 VERNIER JET OPERATION.

- APPROVALS -

PAE MANAGER : K L PRESTON
 PRODUCT ASSURANCE ENGR : N. HAFEZIZADEH
 DESIGN ENGINEERING : D. SOVEREIGN
 NASA EPD&C SUBSYS MGR :
 NASA SUBSYS MGR :
 NASA EPD&C SSMA :
 NASA SSMA :

K.L. Preston 4/24/95
N. Hafezizadeh
D. Sovereign
Results in F. Plans 3/16/95
 W/A
John Bridges 3-16-95
 N/A

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - FWD-RCS FMEA NO 05-6KF-2183 -1 REV: 12/03/87

ASSEMBLY : FWD PCA 3				CRIT. FUNC:	2
P/N RI : MC450-0017-1050				CRIT. HDW:	2
P/N VENDOR:		VEHICLE	102	103	104
QUANTITY : 2		EFFECTIVITY:	X	X	X
: TWO		PHASE(S):	PL	LO	CO X DO LS

PREPARED BY:		REDUNDANCY SCREEN:	A-	B-	C-
DES : D SOVEREIGN		APPROVED BY:	APPROVED BY (NASA):		
REL : J BEERMAN		DES : <u>D. S. Beerman</u>	SSM	<u>[Signature]</u>	
QE		REL : <u>[Signature]</u>	REL : <u>[Signature]</u>	<u>[Signature]</u>	
		QE : <u>[Signature]</u>	QE : <u>[Signature]</u>	<u>[Signature]</u>	

ITEM:
 REMOTE POWER CONTROLLER (RPC 5 AMP) - FORWARD RCS REACTION JET DRIVER 2, VERNIER JETS.

FUNCTION:
 CONDUCTS MAIN BUS C POWER TO REACTION JET DRIVER FORWARD (RJDF) 2 FOR VERNIER JET OPERATION. 83V76A24RPC47, RPC51.

FAILURE MODE:
 LOSS OF OUTPUT, FAILS TO CONDUCT, INADVERTENTLY OPENS.

CAUSE(S):
 PIECE-PART FAILURE, MECHANICAL SHOCK, THERMAL SHOCK, VIBRATION.

EFFECT(S) ON:
 (A) SUBSYSTEM (B) INTERFACES (C) MISSION (D) CREW/VEHICLE

(A) LOSS OF FUNCTION

(B) LOSS OF INTERFACE FUNCTION - LOSS OF DRIVER POWER TO RJDF 2 FOR VERNIER JETS F5.

(C) POSSIBLE MISSION MODIFICATION OR EARLY MISSION TERMINATION DUE TO LOSS OF VERNIER THRUSTERS. NO OTHER REDUNDANT VERNIER THRUSTERS ARE AVAILABLE TO COMPLETE THE REQUIRED FUNCTIONS. PRIMARY THRUSTER USAGE WILL RESULT IN HIGHER PROPELLANT CONSUMPTION RATE RESULTING IN EARLY MISSION TERMINATION.

(D) NO EFFECT.

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - FWD-RCS

FMEA NO 05-6KF-2183 -1

REV: 11/03/87

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

COMPONENT CHECKED OUT EVERY FLIGHT DURING GROUND TURNAROUND VIA THE GUIDANCE, NAVIGATION, AND CONTROL (GN&C) ORBITER MAINTENANCE REQUIREMENTS AND SPECIFICATIONS DOCUMENT (OMRSD) REQUIREMENTS FOR CHECKING THE PRIMARY AND VERNIER REACTION JET DRIVER POWER. THE TESTING CONSISTS OF CYCLING THRUSTER REACTION JET DRIVER LOGIC AND DRIVER SWITCHES WHILE MONITORING VEHICLE INSTRUMENTATION TO DETERMINE IF COMPONENTS HAVE FAILED.

(E) OPERATIONAL USE

PRIMARY THRUSTERS CAN BE USED FOR THE VERNIER FUNCTION. SOME MISSION OBJECTIVES MAY NOT BE MET DUE TO HIGHER PROPELLANT CONSUMPTION RATE ON PRIMARY THRUSTERS. MICROGRAVITY EXPERIMENTS WILL BE DISRUPTED DUE TO HIGHER ACCELERATION RATE OF PRIMARY THRUSTERS.