 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	V070-765360
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	: K.L. Preston 4/21/95
PRODUCT ASSURANCE ENGR	: N. HAFEZIZADEH	: N. Hafez
DESIGN ENGINEERING	: D. SOVEREIGN	: D. Sovereign
NASA EPD&C SUBSYS MGR	:	: F. Davis 3/1/96
NASA SUBSYS MGR	:	: N/A
NASA EPD&C SSMA	:	: 3-16-96
NASA SSMA	:	: N/A

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM :EPD&C - FWD-RCS FMEA NO 05-6KF-2183 -2 REV:11/03/87

ASSEMBLY :FWD PCA 3
P/N RI :MC450-0017-1050
P/N VENDOR:
QUANTITY :2
:TWO
:

CRIT. FUNC: 2R
CRIT. HDW: 3

VEHICLE EFFECTIVITY:	102	103	104
PHASE(S): PL LO OO X DO LS	X	X	X

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

PREPARED BY:
DES D SOVEREIGN
REL J BEEKMAN
QE

APPROVED BY:
DES
REL
QE

APPROVED BY (NASA):
SSM
REL
QE

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:
INADVERTENT OUTPUT, SHORTS, CONDUCTS PREMATURELY

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

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

(A) NO EFFECT - CIRCUIT IS PROTECTED BY SERIES REDUNDANCY.

(B) LOSS OF INTERFACE REDUNDANCY - FIRST FAILURE NO EFFECT. THE SECOND REMOTE POWER CONTROLLER IN SERIES PREVENTS INADVERTENT POWERING OF TWO OF THREE NECESSARY POWER INPUTS OF THE REACTION JET DRIVER BOX.

(C) NO EFFECT FIRST FAILURE - SECOND FAILURE ENERGIZES REACTION JET DRIVER BOX BUT THRUSTER IS NOT FIRED UNTIL COMMANDED.

(D) NO EFFECT REQUIRES MULTIPLE FAILURES.

(E) FUNCTIONAL CRITICALITY EFFECT - POSSIBLE LOSS OF MISSION OBJECTIVES AFTER PROPELLANT LOSS THROUGH UNCONTROLLED VERNIER THRUSTER OPERATION. REQUIRES 5 OTHER FAILURES (REDUNDANT REMOTE POWER CONTROLLER, RJD COMMAND ON, BOTH ISOLATION VALVES FAIL OPEN, MAIN BUS FAILS ON) BEFORE EFFECT IS MANIFESTED. FIRST FAILURE OF STRING NOT DETECTABLE IN FLIGHT DUE TO LACK OF MONITORING MEASUREMENTS.

SUBSYSTEM :EPD&C - FWD-RCS FMEA NO 05-6KF-2183 -2 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
NO ACTION FOR FIRST FAILURE - NOT DETECTABLE. IF JET FAILS ON, ISOLATE FAILURE BY CLOSING ASSOCIATED MANIFOLD VALVE.