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PRINT DATE: 04/13/95

FAILURE MODES EFFECTS ANALYSIS (FMEA) - CRITICAL HARDWARE
 NUMBER: 05-6KA-2184 -X

SUBSYSTEM NAME: EPD&C - AFT REACTION CONTROL (03-2A)

REVISION: 1 02/05/95

	PART NAME VENDOR NAME	PART NUMBER VENDOR NUMBER
LRU	: AFT PCA 1	V070-765310
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) - LEFT AFT RCS REACTION JET DRIVER 1,
 VERNIER JETS.

REFERENCE DESIGNATORS: 54V76A131RPC40
 54V76A131RPC41

QUANTITY OF LIKE ITEMS: 2
 TWO

FUNCTION:
 CONTROLS MAIN BUS "A" POWER TO REACTION JET DRIVER AFT 1. SERIES REMOTE
 POWER CONTROLLERS PROVIDE REDUNDANCY AGAINST INADVERTENT POWER TO
 THE AFT LEFT, RCS VERNIER JETS.

- 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 4/13/95
N. Hafezizadeh
D. Sovereign
3-16-96
 N/A
3-16-96
 N/A

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - AFT-RCS

FMEA NO 05-6KA-2184 -2

REV: 11/03/87

ASSEMBLY : AFT PCA-1
 P/N RI : MC450-0017-1050
 P/N VENDOR:
 QUANTITY : 2
 : TWO
 :

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

CRIT. FUNC: 1R
 CRIT. HDW: 3

PREPARED BY:
 DES D SOVEREIGN
 REL J BEEKMAN
 QE

REDUNDANCY SCREEN: A-PASS B-FAIL C-PASS
 APPROVED BY:
 DES *D. J. R. Burns*
 REL *Edward Clifton 11-14-87*
 QE P.S. *[Signature]*

APPROVED BY (NASA):
 SSM *[Signature]*
 REL *[Signature]*
 QE *[Signature]*
 EPD&C SSM *[Signature]*
 FMEA NO. 6-2184

ITEM:

REMOTE POWER CONTROLLER (RPC 5 AMP) - LEFT AFT RCS REACTION JET DRIVER 1, VERNIER JETS.

FUNCTION:

CONTROLS MAIN BUS "A" POWER TO REACTION JET DRIVER AFT 1. SERIES REMOTE POWER CONTROLLERS PROVIDE REDUNDANCY AGAINST INADVERTENT POWER TO THE AFT LEFT, RCS VERNIER JETS. 54V76A131RPC40,41.

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) DEGRADATION OF REDUNDANCY AGAINST INADVERTENT CIRCUIT POWERING.
- (B) LOSS OF INTERFACE REDUNDANCY - FIRST FAILURE NO EFFECT. THE SECOND REMOTE POWER CONTROLLER IN SERIES PREVENTS INADVERTENT POWERING OF THE REACTION JET DRIVER BOX.
- (C,D) NO EFFECT.
- (E) FUNCTIONAL CRITICALITY EFFECT - POSSIBLE LOSS OF CREW/VEHICLE DUE TO INADVERTENT VERNIER THRUSTER FIRING CAUSING LOSS OF PROPELLANT REQUIRED FOR ENTRY. REQUIRES 5 OTHER FAILURES (REDUNDANT REMOTE POWER CONTROLLER, REACTION JET DRIVER COMMAND, 2 ISOLATION VALVES FAIL OPEN, MAIN BUS) BEFORE EFFECT IS MANIFESTED. FIRST FAILURE OF STRING NOT DETECTABLE IN FLIGHT DUE TO LACK OF MONITORING MEASUREMENTS.

SHUTTLE CRITICAL ITEMS LIST - CREITER

SUBSYSTEM : EPD&C - AFT-RCS

FMEA NO 05-6KA-2184 -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'S (GN&C) OPERATIONAL 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.