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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 -1 REV:03/06/88

ASSEMBLY :AFT PCA-1 CRIT. FUNC: 2  
P/N RI :MC450-0017-1050 CRIT. HDW: 2  
P/N VENDOR:  
QUANTITY :2 VEHICLE 102 103 104  
EFFECTIVITY: X X X  
PHASE(S): PL LO OO X DO LS  
:TWO  
:

PREPARED BY: DES D SOVEREIGN  
REL J BEEKMAN  
QE J T COURSEN  
REUNDANCY SCREEN: A- B- C-  
APPROVED BY: DES D.S. Quinn APPROVED BY (NASA): SSM J.R. [unclear] 3/10/88  
REL James [unclear] 2/23/88  
QE [unclear] 2/23/88  
LTRAC REL [unclear] 2/10/88  
EPD&C SON [unclear] 2/10/88

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 APT 1. SERIES REMOTE POWER CONTROLLERS PROVIDE REDUNDANCY AGAINST INADVERTENT POWER TO THE AFT LEFT, RCS VERNIER JETS. 54V76A131RPC40,41.

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

CAUSE(S):  
PIECE PART STRUCTURAL 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 THE ASSOCIATED REACTION JET DRIVER APT 1, APT LEFT RCS VERNIER JETS.  
(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 - AFT-RCS                      FMEA NO 05-6KA-2184 -1                      REV: 03/08/88

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

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.