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PRINT DATE: 04/13/95

FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CRITICAL HARDWARE
 NUMBER: 05-6KF-2177 -X

SUBSYSTEM NAME: EPD&C - FORWARD REACTION CONTROL (03-2A)
 REVISION: 1 02/06/95

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

PART DATA

EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
 REMOTE POWER CONTROLLER (5 AMP) - FORWARD RCS FUEL AND OXIDIZER
 MANIFOLD 5 ISOLATION VALVES "CLOSE" SERIES POWER CIRCUIT.

REFERENCE DESIGNATORS: 83V76A24RPC28

QUANTITY OF LIKE ITEMS: 1
 ONE

FUNCTION:
 UPON ST.MULUS FROM THE ASSOCIATED COMMAND DRIVER, THE REMOTE POWER
 CONTROLLER CONDUCTS "CLOSE" COIL CURRENT IN SERIES WITH OTHER CIRCUIT
 ELEMENTS TO THE FUEL AND OXIDIZER MANIFOLD 5 ISOLATION VALVE SOLENOIDS.

- APPROVALS -

P&E MANAGER	: K. L. PRESTON	<u>K.L. Preston 4/21/95</u>
PRODUCT ASSURANCE ENGR	: N. HAFEZIZADEH	<u>N. Hafezizadeh</u>
DESIGN ENGINEERING	: D. SOVEREIGN	<u>D. Sovereign</u>
NASA EPD&C SUBSYS MGR	:	<u>D. S. S. S. S. F. ACACIS 3/16/95</u>
NASA SUBSYS MGR	:	<u>N/A</u>
NASA EPD&C SSMA	:	<u>John Bridges 3-16-95</u>
NASA SSMA	:	<u>N/A</u>

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - FWD-RCS FMEA NO 05-6KF-2177 -2 REV: 11/02/87

ASSEMBLY : FWD PCA 3 CRIT. FUNC: 1R
 P/N RI : MC450-0017-1050 CRIT. HDW: 3
 P/N VENDOR: VEHICLE 102 103 104
 QUANTITY : 1 EFFECTIVITY: X X X
 : ONE PHASE(S): PL X LO X OO X DO X LS X
 :

REDUNDANCY SCREEN: A-PASS B-FAIL C-PASS
 PREPARED BY: DES D SOVEREIGN APPROVED BY: DES P. S. R. Burns APPROVED BY (NASA):
 REL J BEEKMAN REL M. C. [Signature] 11-16-87 SSM [Signature]
 QE QE [Signature] 11/17/87 REL [Signature] 11-16-87
 220/1111 [Signature] 11-16-87

ITEM:
 REMOTE POWER CONTROLLER (5 AMP) - FORWARD RCS FUEL AND OXIDIZER MANIFOLD
 5 ISOLATION VALVES "CLOSE" SERIES POWER CIRCUIT.

FUNCTION:
 UPON STIMULUS FROM THE ASSOCIATED COMMAND DRIVER, THE REMOTE POWER
 CONTROLLER CONDUCTS "CLOSE" COIL CURRENT IN SERIES WITH OTHER CIRCUIT
 ELEMENTS TO THE FUEL AND OXIDIZER MANIFOLD 5 ISOLATION VALVE SOLENOIDS.
 83V76A24RPC28.

FAILURE MODE:
 INADVERTENT OPERATION, SHORT, INADVERTENTLY CONDUCTS.

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

EFFECT(S) ON:
 (A) SUBSYSTEM (B) INTERFACES (C) MISSION (D) CREW/VEHICLE
 (A) DEGRADATION OF REDUNDANCY AGAINST INADVERTENT SOLENOID COIL POWERING.
 (B,C,D) NO EFFECT.
 (E) FUNCTIONAL CRITICALITY EFFECT - POSSIBLE LOSS OF CREW/VEHICLE DUE TO
 VALVE OVERHEATING AND PROPELLANT DECOMPOSITION BY CONTINUOUS SOLENOID
 COIL POWERING LEADING TO VALVE RUPTURE AND PROPELLANT RELEASE. REQUIRES
 2 OTHER FAILURES (TYPE III CLOSE DRIVER ON, TYPE IV OPEN/CLOSE DRIVER ON)
 BEFORE EFFECT IS MANIFESTED. THE FAILURE STRINC COULD BE UNDETECTABLE
 AFTER THE FIRST FAILURE DUE TO LACK OF MEASUREMENT INDICATIONS FOR THE
 TYPE III AND TYPE IV HYBRID DRIVERS.

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM :EPD&C - FWD-RCS

FMEA NO 05-6KF-2177 -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. THE TESTING
CONSISTS OF CYCLING VALVE MANUAL SWITCHES AND/OR SENDING GENERAL PURPOSE
COMPUTER (GPC) COMMANDS TO CYCLE VALVES OR HEATERS WHILE MONITORING
VEHICLE INSTRUMENTATION TO DETERMINE IF COMPONENTS HAVE FAILED.

(E) OPERATIONAL USE

NO ACTION FOR FIRST FAILURE - NOT DETECTABLE. IF SERIES "CLOSE" DRIVER
FAILS ON, MINIMIZE POSSIBILITY OF CONTINUOUS POWER BY PULLING CIRCUIT
BREAKER. CIRCUIT BREAKER WILL BE RESET WHEN THE VALVE IS TO BE MOVED.