FAILURE MODES EFFECTS ANALYSIS (FMEA) – CRITICAL HARDWARE
NUMBER: 05-6KA-2178 -X

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

REVISION: 1   02/06/95

PART NAME VENDOR NAME		PART NUMBER VENDOR NUMBER
LRU	AFT PCA 3	VC70-765240
LRU	AFT PCA 3	VC70-765330
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 AND RIGHT AFT RCS - FUEL AND OXIDIZER MANIFOLD 5 ISOLATION VALVES 'OPEN' SERIES POWER CIRCUITS.

REFERENCE DESIGNATORS: 56V76A133RPC12
                              56V76A133RPC14

QUANTITY OF LIKE ITEMS: 2
TWO

FUNCTION:
UPON RECEIVING A STIMULUS FROM THE ASSOCIATED HDC, THE REMOTE POWER CONTROLLER, IN CONJUNCTION WITH OTHER SERIES ELEMENTS CONDUCTS AND CONTROLS 'OPEN' COIL CURRENT TO THE FUEL AND OXIDIZER MANIFOLD 5 ISOLATION VALVE SOLENOIDS. THE COILS CAN BE ENERGIZED THROUGH SEPARATE CIRCUITS COMMANDED FROM THE GENERAL PURPOSE COMPUTER (GPC) OR A MANUAL SWITCH.

- APPROVALS -

PAE MANAGER	: K. L. PRESTON	K.L. Preston 4/2/95
PRODUCT ASSURANCE ENGR	: N. HAFEZIZADEH	N. Hafe...
DESIGN ENGINEERING	: D. SOVEREIGN	D. Sovereign
NASA EPD&C SUBSYS MGR	:	F. Lawois 3/10/6
NASA MPS SUBSYS MGR	:	N/A
NASA EPD&C SSMA	:	...B... 3-10-96
NASA MPS SSMA	:	N/A

SUBSYSTEM :EPD&C - AFT-RCS   FMEA NO 05-6KA-2178 -2   REV:11/03/87

ASSEMBLY :AFT PCA 3   CRIT. FUNC: 1R
P/N RI   :MC450-0017-1050   CRIT. HDW: 3
P/N VENDOR:.   VEHICLE   102   103   104
QUANTITY :2   EFFECTIVITY: X   X   X
         :TWO   PHASE(S): PL X LO X OO X DO X LS X
         :

                           REDUNDANCY SCREEN: A-PASS B-FAIL C-PASS
PREPARED BY: APPROVED BY: APPROVED BY (NASA):
DES   D SOVEREIGN   DES   SSM
REL   J BEEKMAN   REL   REL
QE   QE   QE
                                                    EPD/C

ITEM:
   REMOTE POWER CONTROLLER (RPC 5 AMP) - LEFT AND RIGHT AFT RCS - FUEL AND
   OXIDIZER MANIFOLD 5 ISOLATION VALVES "OPEN" SERIES POWER CIRCUITS.

FUNCTION:
   UPON RECEIVING A STIMULUS FROM THE ASSOCIATED HDC, THE REMOTE POWER
   CONTROLLER, IN CONJUNCTION WITH OTHER SERIES ELEMENTS CONDUCTS AND
   CONTROLS "OPEN" COIL CURRENT TO THE FUEL AND OXIDIZER MANIFOLD 5
   ISOLATION VALVE SOLENOIDS. THE COILS CAN BE ENERGIZED THROUGH SEPARATE
   CIRCUITS COMMANDED FROM THE GENERAL PURPOSE COMPUTER (GPC) OR A MANUAL
   SWITCH.
   56V76A30RPC12,14.

FAILURE MODE:
   INADVERTENT OUTPUT, 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 - FIRST FAILURE.

   (E) FUNCTION CRITICALITY EFFECT - POSSIBLE LOSS OF CREW/VEHICLE DUE TO
   VALVE OVER- HEATING AND PROPELLANT DECOMPOSITION BY CONTINUOUS SOLENOID
   COIL POWERING LEADING TO VALVE RUPTURE AND PROPELLANT RELEASE. REQUIRES
   TWO OTHER FAILURES (TYPE III OPEN DRIVER ON, TYPE IV OPEN/CLOSE DRIVER
   ON) BEFORE EFFECT IS MANIFESTED. THE FAILURE STRING COULD BE UNDETECT-
   ABLE AFTER THE FIRST FAILURE DUE TO LACK OF MEASUREMENT INDICATIONS FOR
   THE TYPE III AND TYPE IV HYBRID DRIVERS.

SUBSYSTEM :EPD&C - AFT-RCS   FMEA NO 05-6KA-2178 -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 "OPEN" DRIVER
  FAILS ON, MINIMIZE POSSIBILITY OF CONTINUOUS POWER BY PULLING CIRCUIT
  BREAKER. CIRCUIT BREAKER WILL BE RESET WHEN THE VALVE IS TO BE MOVED.