FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CRITICAL HARDWARE
NUMBER: 05-6X-2394-X

SUBSYSTEM NAME: EPD&C - PAYLOAD INTERFACE
REVISION: 1 02/06/96

		PART NAME VENDOR NAME	PART NUMBER VENDOR NUMBER
LRU	:	MID PCA 1	V070-764400
LRU	:	MID PCA 2	V070-764430
SRU	:	CONTROLLER, REMOTE POWER	MC450-0017-1100
SRU	:	CONTROLLER, REMOTE POWER	MC450-0017-2200
SRU	:	CONTROLLER, REMOTE POWER	MC450-0017-3200
SRU	:	CONTROLLER, REMOTE POWER	MC450-0017-4200

PART DATA

EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
CONTROLLER, REMOTE POWER, 20 AMP - PAYLOAD AUXILIARY POWER

REFERENCE DESIGNATORS: 40V76A25RPC20
40V76A26RPC18

QUANTITY OF LIKE ITEMS: 2
ONE PER MID PCA 1 & 2

FUNCTION:
UPON MANUAL COMMAND FROM THE PAYLOAD AUXILIARY POWER SWITCH, THE RPC CONNECTS MAIN DC BUS A(B) TO THE PAYLOAD AUXILIARY BUS A(B) AND THE PAYLOAD EMERGENCY BUS.

- APPROVALS -

PRODUCT ASSURANCE MGR	: K. L. PRESTON	: K. L. Preston 4/4/96
PRODUCT ASSURANCE ENGR	: N. HAFEZIZADEH	:
DESIGN ENGINEERING	: R. L. PHAN	:
NASA EPD&C SUBSYS MGR	:	: N/A
NASA SUBSYS MGR	:	:
NASA EPD&C SSMA	:	: N/A
NASA SSMA	:	:

U.S. Gov't

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM :EPD&C/PAYLOAD INTERFACE FMEA NO 05-6X -2094 -1 REV:12 22 88

ASSEMBLY :MID PCA 1 & 2
P/N RI :MC450-0017-2200
P/N VENDOR:
QUANTITY :2
:ONE PER MID
:PCA 1 & 2

CRIT.FUNC: 1R
CRIT. HDW: 2

VEHICLE	102	103	104
EFFECTIVITY:	X	X	X
PHASE(S):	PL LO	OO X DO	L2

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

PREPARED BY:
DES R PHILLIPS
REL T KIMURA
QE J COURSEN

APPROVED BY:
DES
REL
QE 12-22-88

APPROVED BY (NASA):
SSM
REL
QE
DEC
SSM

ITEM:
CONTROLLER, REMOTE POWER, 20 AMP - PAYLOAD AUXILIARY POWER

FUNCTION:
UPON MANUAL COMMAND FROM THE PAYLOAD AUXILIARY POWER SWITCH, THE RPC CONNECTS MAIN DC BUS A(B) TO THE PAYLOAD AUXILIARY BUS A(B) AND THE PAYLOAD EMERGENCY BUS. 40V76A25RPC20, 40V76A26RPC18

FAILURE MODE:
LOSS OF OUTPUT, FAILS TO CONDUCT, FAILS TO TURN "ON"

CAUSE(S):
PIECE PART FAILURE, CONTAMINATION, VIBRATION, MECHANICAL SHOCK PROCESSING ANOMALY, THERMAL STRESS

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

(A) LOSS OF MAIN DC BUS A OR B POWER TO ITS ASSOCIATED PAYLOAD AUXILIARY BUS.

(B) LOSS OF REDUNDANCY. THE PAYLOAD REMAINS POWERED BY THE REDUNDANT PAYLOAD AUXILIARY BUS.

(C) FIRST FAILURE - NO EFFECT

(D,2) POSSIBLE LOSS OF CREW/VEHICLE WHEN SECOND FAILURE (LOSS OF OTHER RPC) OCCURS DURING HAZARDOUS PAYLOAD OPERATIONS.

NOTE: FAILURE EFFECTS AND CRITICALITY OF RPC ARE USER DEPENDENT. EFFECTS AND CRITICALITY WILL CHANGE ON A FLIGHT-BY-FLIGHT BASIS AND ARE DEPENDENT UPON THE PAYLOAD AND THE METHOD IN WHICH THE PAYLOAD WERING IS DESIGNED TO TAKE ADVANTAGE OF THE REDUNDANCY OF PAYLOAD POWER CIRCUITS AVAILABLE ON THE ORBITER.

Gov't

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C/PAYLOAD INTERFACE FMEA NO 05-6X -2394 -1 REV: 12.10.11

THE WORSE-CASE CRITICALITY WILL BE 1R/2 FOR HAZARDOUS AND/OR CLASSIFIED PAYLOADS WHICH MAY BE DOWNGRADED TO 1R/3 WITH THE APPROPRIATE PAYLOAD POWER UTILIZATION WIRING DESIGN.

DISPOSITION & RATIONALE:
(A)DESIGN (B)TEST (C)INSPECTION (D)FAILURE HISTORY (E)OPERATIONAL USE:
(A,B,C,D) DISPOSITION AND RATIONALE
REFER TO APPENDIX B, ITEM NO. 2 - REMOTE POWER CONTROLLER

(B) GROUND TURNAROUND TEST
VERIFY MAIN DC BUS A AND B VOLTAGE AT PAYLOAD STATION DISTRIBUTION PANEL AND PAYLOAD INTERFACE. CYCLE PAYLOAD AUXILIARY ON/OFF SWITCH AND MONITOR STIMULI COMMANDS, DISCRETE EVENTS, AND BUS VOLTAGE. APPLICABLE FOR ALL FLIGHTS CONTINGENT ON MISSION REQUIREMENTS.

(E) OPERATIONAL USE
FOR SOME PAYLOADS, CONTINGENCY IN-FLIGHT MAINTENANCE AND EXTRA-VEHICULAR ACTIVITY PROCEDURES HAVE BEEN DEVELOPED TO SUPPORT CRITICAL FUNCTIONS e.g. PAYLOAD RE-STOW OR DEPLOY COMPLETION, IF SWITCH FAILS.