FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CRITICAL HARDWARE
NUMBER: 05-6N-2017 -X

SUBSYSTEM NAME: EPD&C - AUXILIARY POWER UNIT (04-2)
REVISION: 1 02/06/95

		PART NAME VENDOR NAME	PART NUMBER VENDOR NUMBER
LRU	:	AFT PCA 4, 5, 6	V070-765280
SRU	:	CONTROLLER, REMOTE POWER	MC450-0017-1075
SRU	:	CONTROLLER, REMOTE POWER	MC450-0017-2075
SRU	:	CONTROLLER, REMOTE POWER	MC450-0017-3075
SRU	:	CONTROLLER, REMOTE POWER	MC450-0017-4075

PART DATA

EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
CONTROLLER, REMOTE POWER, RPC (7.5 AMP) - AUXILIARY POWER UNIT (APU) CONTROLLER 1, 2, AND 3 POWER

REFERENCE DESIGNATORS: 54V76A134RPC29
54V76A134RPC30
55V76A135RPC29
55V76A135RPC30
56V76A136RPC29
56V76A136RPC30

QUANTITY OF LIKE ITEMS: 6
SIX

FUNCTION:
UPON RECEIVING A STIMULUS FROM A CREW-INITIATED SWITCH COMMAND OR A LAUNCH SITE MDM, THE RPC'S WILL CONDUCT AND ENERGIZE THE ASSOCIATED APU CONTROLLER. THE RELATED RPC'S ARE FED FROM SEPARATE MAIN DC BUSES.

- APPROVALS -

PAE MANAGER	: K. L. PRESTON	: K. L. Preston 5/19/95
PRODUCT ASSURANCE ENGR	: N. HAFEZIZADEH	:
DESIGN ENGINEERING	: T. NGUYEN	: for F. ALVOLS 3/14/96
NASA EPD&C SUBSYS MGR	:	: N/A
NASA SUBSYS MGR	:	: 3-19-96
NASA EPD&C SSMA	:	: N/A
NASA SSMA	:	

 PRINT DATE: 09/01/93

FAILURE MODES EFFECTS ANALYSIS (FMEA) – CRITICAL FAILURE MODE
NUMBER: 05-6N-2017-02

REVISION# 1 08/30/93 R

SUBSYSTEM NAME: EPD&C - AUXILIARY POWER UNIT
LRU: AFT PCA 4, 5, 6
ITEM NAME: CONTROLLER, REMOTE POWER

CRITICALITY OF THIS FAILURE MODE: 1R2

FAILURE MODE:
FAILS "ON", INADVERTENT OUTPUT, FAILS TO TURN "OFF"

MISSION PHASE:
OO ON-ORBIT

VEHICLE/PAYLOAD/KIT EFFECTIVITY:
102 COLUMBIA
103 DISCOVERY
104 ATLANTIS
105 ENDEAVOUR

CAUSE:
PIECE PART FAILURE, CONTAMINIATION, VIBRATION, MECHANICAL SHOCK, PROCESSING ANOMALY, THERMAL STRESS

CRITICALITY 1/1 DURING INTACT ABORT ONLY? NO

REDUNDANCY SCREEN
A) PASS
B) PASS
C) PASS

PASS/FAIL RATIONALE:
A)

B)

C)

- FAILURE EFFECTS -

(A) SUBSYSTEM:
CONTINUOUS POWER APPLIED TO APU CONTROLLER

(B) INTERFACING SUBSYSTEM(S):
DEGRADATION OF INTERFACE FUNCTION. THE SHORTED RPC WILL ENERGIZE THE ASSOCIATED APU CONTROLLER CONTINUOUSLY - NORMAL OPERATION NO EFFECT. WHEN THE APU IS NORMALLY NOT OPERATING AND IF THE CONTROLLER FAILS INTERNALLY, THE PULSE CONTROL VALVE COIL COULD BE ENERGIZED "ON" CONTINUOUSLY AND OVERHEAT NONFLOWING HYDRAZINE INDUCING DECOMPOSITION AND VALVE/LINE RUPTURE.

(C) MISSION:
FIRST FAILURE - NO EFFECT

FAILURE MODES EFFECTS ANALYSIS (FMEA) – CRITICAL FAILURE MODE
NUMBER: 05-6N-2017-02

(D) CREW, VEHICLE, AND ELEMENT(S):
FIRST FAILURE - NO EFFECT

(E) FUNCTIONAL CRITICALITY EFFECTS:
POSSIBLE LOSS OF CREW/VEHICLE AFTER SECOND FAILURE (APU CONTROLLER FAILS INTERNALLY) DUE TO FUEL (HYDRAZINE) DECOMPOSITION AND VALVE/LINE RUPTURE.

-DISPOSITION RATIONALE-

(A) DESIGN:
REFER TO APPENDIX B, ITEM NO. 2 - REMOTE POWER CONTROLLER

(B) TEST:
REFER TO APPENDIX B, ITEM NO. 2 - REMOTE POWER CONTROLLER

GROUND TURNAROUND TEST - APU 1/2/3 CONTROLLER TEST THROUGH GROUND CONNECTION PERFORMED EVERY FLOW OR AFTER LRU RETEST OF APU ASSEMBLY, AFTER LRU RETEST OF CONTROLLER ASSEMBLY OR AFTER CIG RETEST.

(C) INSPECTION:
REFER TO APPENDIX B, ITEM NO. 2 - REMOTE POWER CONTROLLER

(D) FAILURE HISTORY:
REFER TO APPENDIX B, ITEM NO. 2 - REMOTE POWER CONTROLLER

(E) OPERATIONAL USE:
NONE

- APPROVALS -

EDITORIALLY APPROVED : RI
EDITORIALLY APPROVED : JSC
TECHNICAL APPROVAL : VIA CR :S[illegible]70L