FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CRITICAL HARDWARE
NUMBER: 05-6BA-2502-IM -X

SUBSYSTEM NAME: EPD&C - LANDING GEAR CONTROL
REVISION: 4 05/17/94

		PART NAME VENDOR NAME	PART NUMBER VENDOR NUMBER
LRU	:	FWD PCA 2	V070-763340
LRU	:	FWD PCA 3	V070-763360
SRU	:	RELAY, LATCHING	MC455-0128-0001

PART DATA

EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
RELAY, LATCHING, LANDING GEAR DOWN CONTROLS (4P2P)

REFERENCE DESIGNATORS: 82V76A23K6
82V76A23K8
83V76A24K7

QUANTITY OF LIKE ITEMS: 3
THREE, TWO IN FPCA-2, ONE IN FPCA-3

FUNCTION:
THE LANDING GEAR DOWN RELAYS WITH THE ARM RELAYS ACTIVATE THE CIRCUITS FOR THE PYRO BACKUP UPLOCK RELEASE CIRCUITS, NOSE LANDING GEAR EXTEND PYRO ASSIST CIRCUITS, AND LANDING GEAR EXTEND VALVE 2 (K6, K8). PROTECTION AGAINST PREMATURES AND REDUNDANCY PROVIDED WITHIN LANDING GEAR CIRCUITS. COMMON RESET TO ALL LANDING GEAR DOWN AND ARM RELAYS.

PRINT DATE: 05/18/94

FAILURE MODES EFFECTS ANALYSIS (FMEA) – CRITICAL FAILURE MODE
NUMBER: 05-6BA-2502-IM - 01

REVISION# 5 05/17/94

SUBSYSTEM NAME: EPD&C - LANDING GEAR CONTROL
LRU: FWD PCA 2
ITEM NAME: RELAY, LATCHING

CRITICALITY OF THIS FAILURE MODE: 1R2

FAILURE MODE:
OPEN, FAILS TO CONDUCT, INADVERTENTLY OPENS, FAILS TO TRANSFER, SHORT TO STRUCTURE (GROUND)

MISSION PHASE:
DO DE-ORBIT

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

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

CRITICALITY 1/1 DURING INTACT ABORT ONLY? NO

REDUNDANCY SCREEN
A) PASS
B) FAIL
C) PASS

PASS/FAIL RATIONALE:
A)

B)
FAILS "B" SCREEN BECAUSE RELAY FAILURE IS MASKED BY PARALLEL CIRCUIT.
C)

- FAILURE EFFECTS -

(A) SUBSYSTEM:
FIRST FAILURE - LOSS OF ONE RELAY FUNCTION IN LANDING GEAR CONTROL CIRCUIT.

(B) INTERFACING SUBSYSTEM(S):
FIRST FAILURE - NO EFFECT

(C) MISSION:
FIRST FAILURE - NO EFFECT

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

FAILURE MODES EFFECTS ANALYSIS (FMEA) – CRITICAL FAILURE MODE
NUMBER: 05-6BA-2502-IM - 01

(E) FUNCTIONAL CRITICALITY EFFECTS:
POSSIBLE LOSS OF CREW/VEHICLE AFTER SECOND FAILURE (RELAY IN REDUNDANT CIRCUIT) DUE TO INABILITY TO EXTEND NOSE LANDING GEAR WITHIN THE REQUIRED TIME.

-DISPOSITION RATIONALE-

(A) DESIGN:
REFER TO APPENDIX C, ITEM NO. 3 - LATCHING RELAY

(B) TEST:
REFER TO APPENDIX C, ITEM NO. 3 - LATCHING RELAY

GROUND TURNAROUND TEST
ANY TURNAROUND CHECKOUT TESTING IS ACCOMPLISHED IN ACCORDANCE WITH OMRSD.

(C) INSPECTION:
REFER TO APPENDIX C, ITEM NO. 3 - LATCHING RELAY

(D) FAILURE HISTORY:
CURRENT DATA ON TEST FAILURES, FLIGHT FAILURES, UNEXPLAINED ANOMALIES, AND OTHER FAILURES EXPERIENCED DURING GROUND PROCESSING ACTIVITY CAN BE FOUND IN THE PRACA DATABASE.

(E) OPERATIONAL USE:
NONE

- APPROVALS -

PAE MANAGER	: K. L. PRESTON	K.L. Preston 5/24/94
PRODUCT ASSURANCE ENGR	: R. K. MCGINNIS	RK McGinnis
DESIGN ENGINEERING	: G. M. ANDERSON	DS G.M. Anderson
NASA SSMA	:	D.L. [illegible] 6/21/94
NASA SUBSYSTEM MANAGER	:	[illegible]
NASA EPD&C SUBSYS MGR	:	Mark Fraser 6/23/94

NASA EPDC SSMA

for F. Adams
David Cayo 6/20/94