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.

FAILURE MODES EFFECTS ANALYSIS (FMEA) – CRITICAL FAILURE MODE
NUMBER: 05-6BA-2502-IM - 03

REVISION# 5 05/18/94

SUBSYSTEM NAME: EPD&C - LANDING GEAR CONTROL
LRU: FWD PCA 2 **CRITICALITY OF THIS**
ITEM NAME: RELAY, LATCHING **FAILURE MODE:** 1R2

FAILURE MODE:
PREMATURELY CLOSES (SET POSITION)

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 CANNOT BE MONITORED INFLIGHT.
C)

- FAILURE EFFECTS -

(A) SUBSYSTEM:
FIRST FAILURE - NO EFFECT

(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 - 03

(E) FUNCTIONAL CRITICALITY EFFECTS:
AFTER SECOND FAILURE (DOWN RELAY ON THE SAME PIC CIRCUIT PREMATURELY CLOSES), INADVERTENT DEPLOYMENT OF THE LANDING GEAR WILL OCCUR WHEN THE ARM SWITCH IS ACTIVATED AS PART OF NORMAL PROCEDURE. POSSIBLE LOSS OF CREW/VEHICLE DUE TO INADVERTENT DEPLOYMENT OF THE LANDING GEAR WHEN THERE IS A LIGHT VEHICLE, LOW ON ENERGY AND STRONG HEAD WINDS WHICH CAUSES THE VEHICLE TO LAND SHORT OF RUNWAY.

-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	: R K McGinnis
DESIGN ENGINEERING	: G. M. ANDERSON	: G.M. Anderson
NASA SSMA	:	: 6/2/94
NASA SUBSYSTEM MANAGER	:	: 6/27/94
NASA EPD&C SUBSYS MGR	:	: Mark Trujillo 6/23/94
NASA EPDC SSMA		for P. ALANIS David Cope 6/30/94