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PRINT DATE: 05/24/94

**FAILURE MODES EFFECTS ANALYSIS (FMEA) - CRITICAL HARDWARE
NUMBER: 05-6BA-2501-IM -X**

SUBSYSTEM NAME: EPD&C - LANDING GEAR CONTROL

REVISION: 7 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	MC455-0129-0001

PART DATA

**EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
RELAY, LATCHING, LANDING GEAR ARM CONTROL CIRCUIT (4P2P)**

**REFERENCE DESIGNATORS: 82V76A23K7
83V76A24K8**

**QUANTITY OF LIKE ITEMS: 2
TWO, ONE PER FWD PCA-2, 3**

**FUNCTION:
THE RELAY ARMS THE PYRO UPLOCK RELEASE CIRCUITS, NOSE LANDING GEAR
EXTENSION PYRO ASSIST CIRCUITS, AND LANDING GEAR EXTEND VALVE 2 (K7). THE
ASSOCIATED LANDING GEAR DOWN RELAYS, WHEN COMMANDED, COMPLETE THE
SERIES CIRCUIT FOR COMPLETION OF END FUNCTION AND ALLOWS PROTECTION
AGAINST PREMATURE FAILURES. REDUNDANCY IS PROVIDED FOR LANDING GEAR
OPERATION, COMMON RESET PROVIDED.**

FAILURE MODES EFFECTS ANALYSIS (FMEA) - CRITICAL FAILURE MODE

NUMBER: 05-6BA-2501-4M - 01

REVISION# 7 06/18/84

SUBSYSTEM NAME: EPD&C - LANDING GEAR CONTROL

LRU: FWD PCA 2

CRITICALITY OF THIS

ITEM NAME: RELAY, LATCHING

FAILURE MODE: 1R2

FAILURE MODE:

OPEN, FAILS TO CONDUCT, INADVERTENTLY OPENS, FAILS TO TRANSFER, SHORTS 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) PASS
C) PASS

PASS/FAIL RATIONALE:

A)

B)

C)

- FAILURE EFFECTS -

(A) SUBSYSTEM:

LOSS OF ONE RELAY FUNCTION IN LANDING GEAR CONTROL CIRCUIT

(B) INTERFACING SUBSYSTEM(S):

LOSS OF ONE OF THREE REDUNDANT LANDING GEAR EXTEND CIRCUITS AND LOSS OF ONE OF TWO CIRCUITS FEEDING THE NOSE LANDING GEAR EXTENSION PYRO POWERED ASSIST.

(C) MISSION:

FIRST FAILURE - NO EFFECT

FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CRITICAL FAILURE MODE
NUMBER: 05-6BA-2501-IM - 01

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

(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
PRODUCT ASSURANCE ENGR	:	R. K. MCGINNIS
DESIGN ENGINEERING	:	G. M. ANDERSON
NASA SSMA	:	
NASA SUBSYSTEM MANAGER	:	
NASA EPD&C SUBSYS MGR	:	
NASA EPD&C SSMA	:	

K.L. Preston 5/24/94
R.K. McGinnis
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Paul K. ... 6/21/94
Charles Campbell 6/21/94
Mark ... 6/23/94
 #2 FACAMS
David Coyle 6/21/94