

FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CIL HARDWARE
NUMBER: 05-6BA-2584-IM -X

SUBSYSTEM NAME: EPD&C - LANDING GEAR CONTROL

REVISION: 6 08/16/00

PART DATA

	PART NAME	PART NUMBER
	VENDOR NAME	VENDOR NUMBER
LRU	: FWD PCA 1	VO70-763320
SRU	: RELAY, LATCHING	MC455-0128-0001

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

REFERENCE DESIGNATORS: 81V76A22K8

QUANTITY OF LIKE ITEMS: 1
ONE, FPCA-1

FUNCTION:
THE DOWN RELAY (K8) WITH TWO ARM RELAYS (K6 AND K7) ACTUATES THE CIRCUIT FOR THE LANDING GEAR EXTEND VALVE 1. PROTECTION AGAINST PREMATURES AND REDUNDANCY PROVIDED WITHIN LANDING GEAR CIRCUITS. COMMON RESET TO ALL LANDING GEAR DOWN AND ARM RELAYS.

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SUBSYSTEM NAME: EPD&C - LANDING GEAR CONTROL

LRU: FWD PCA 1

**CRITICALITY OF THIS
FAILURE MODE: 1R2**

ITEM NAME: RELAY, LATCHING, K8

FAILURE MODE:

OPEN, FAILS TO CONDUCT (ONE CONTACT SET), FAILS TO TRANSFER (TO SET POSITION)

MISSION PHASE: LS LANDING/SAFING

VEHICLE/PAYLOAD/KIT EFFECTIVITY: 103 DISCOVERY
104 ATLANTIS
EFFECTIVE FOR PRE LANDING GEAR MOD -
(K6 RELAY NOT CHG'D TO DOWN FUNCTION)

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 SINGLE CONTACT STATUS CANNOT BE MONITORED IN FLIGHT.

C)

- FAILURE EFFECTS -

(A) SUBSYSTEM:

LOSS OF CAPABILITY TO CLOSE K8 RELAY (DOWN) WHEN COMMANDED.

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(B) INTERFACING SUBSYSTEM(S):

LOSS OF CAPABILITY TO DEPLOY LANDING GEAR HYDRAULICALLY.

(C) MISSION:

FIRST FAILURE - NO EFFECT

(D) CREW, VEHICLE, AND ELEMENT(S):

FIRST FAILURE - NO EFFECT

(E) FUNCTIONAL CRITICALITY EFFECTS:

POSSIBLE LOSS OF CREW/VEHICLE DUE TO LOSS OF CAPABILITY TO EXTEND LANDING GEAR AFTER SECOND FAILURE (LOSS OF BACKUP PYRO RELEASE OF LANDING GEAR, I.E. FAILURE OF UPLOCK RELEASE THRUSTER OR PYRO-PRESSURE CARTRIDGE).

-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

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- APPROVALS -

S & R ENGINEERING	:	M. D. DUMETZ / G. T. TATE:	<i>Mary D. Tate 9/19/00</i>
S & R ENGINEERING ITM	:	P. A. STENGER	<i>P. A. Stenger 9/19/00</i>
DESIGN ENGINEERING	:	J. L. PECK	<i>J. L. Peck 9/21/00</i>
EPD&C SUBSYSTEM MANAGER:	R. L. PHAN		<i>R. L. Phan 9/27/00</i>
SR&QA	:		<i>9/27/00</i>
NASA DCE	:		<i>9/27/00</i>
MOD	:		<i>9/27/00</i>
USA SAM	:		<i>9/27/00</i>
USA ORBITER ELEMENT	:		<i>9/28/00</i>

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- APPROVALS -

S & R ENGINEERING	: M. D. DUMETZ / G. T. TATE :	<u>M. D. Dumetz</u> 9/29/00
S & R ENGINEERING ITM	: P. A. STENGER	<u>P. A. Stenger</u> 9/29/00
DESIGN ENGINEERING	: J. L. PECK	<u>J. L. Peck</u> 9/27/00
EPD&C SUBSYSTEM MANAGER	: R. L. PHAN	<u>R. L. Phan</u> 9/27/00
SR&QA	:	<u>L. H. ...</u> 9/27/00
NASA DCE	:	<u>T. P. ...</u> 9/27/00
MOD	:	<u>S. Norris</u> 28 Sep 00
USA SAM	:	<u>J. Guell</u>
USA ORBITER ELEMENT	:	

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S & R ENGINEERING	:	M. D. DUMETZ / G. T. TATE	:	<i>M. Dumetz 9/27/00</i>
S & R ENGINEERING ITM	:	P. A. STENGER	:	<i>P.A. Stenger 9/27/00</i>
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