

FAILURE MODES EFFECTS ANALYSIS (FMEA) - CIL HARDWARE
NUMBER: 05-6BA-2400 -X

SUBSYSTEM NAME: EPD&C - LANDING GEAR CONTROL

REVISION: 0 03/21/89

PART DATA

PART NAME	PART NUMBER
VENDOR NAME	VENDOR NUMBER
LRU : FWD LCA 2	MC450-0055-0001
LRU : FWD LCA 2	MC450-0055-0002
LRU : FWD LCA 3	MC450-0056-0001
LRU : FWD LCA 3	MC450-0056-0002
SRU : CONTROLLER, HYBRID DRIVER	MC477-0261-0002

EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
CONTROLLER, HYBRID DRIVER (HDC), TYPE I - NOSE LANDING GEAR NO WEIGHT-ON-WHEEL NO. 1 & NO. 2, AND MDM POWER INPUT

REFERENCE DESIGNATORS: 82V76A17AR
83V76A18AR

QUANTITY OF LIKE ITEMS: 2
TWO PER VEHICLE, ONE PER FLCA - 2 & 3

FUNCTION:
WHEN EITHER NOSE LANDING GEAR NO WEIGHT-ON-WHEELS SIGNAL, THROUGH A PROXIMITY SENSOR ELECT. PACKAGE, DROPS LOW, THE HDC REMOVES BRAKE INHIBIT INPUTS TO THE BRAKE/SKID CONTROL BOX AND ENABLES ANTI-SKID BRAKING.

FAILURE MODES EFFECTS ANALYSIS FMEA -- CIL FAILURE MODE

NUMBER: 05-6BA-2400- 02

REVISION#: 1 05/28/99

SUBSYSTEM NAME: EPD&C - LANDING GEAR CONTROL

LRU: FWD LCA 2

CRITICALITY OF THIS

ITEM NAME: CONTROLLER, HYBRID DRIVER

FAILURE MODE: 1R3

FAILURE MODE:

INADVERTENT OUTPUT, FAILS "ON", FAILS TO TURN "OFF" (INDICATES FALSE NO WEIGHT-ON-WHEEL)

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 FAILURE IS NOT DETECTABLE DURING FLIGHT.

C)

- FAILURE EFFECTS -

(A) SUBSYSTEM:

FIRST FAILURE - ASSOCIATED RELAY WOULD BE CLOSED BUT NO BRAKE INHIBIT SIGNAL IS APPLIED UNTIL TWO ADDITIONAL RELAYS ARE CLOSED.

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(B) INTERFACING SUBSYSTEM(S):

FIRST FAILURE - ASSOCIATED RELAY WOULD BE CLOSED BUT NO BRAKE INHIBIT SIGNAL IS APPLIED UNTIL TWO ADDITIONAL RELAYS ARE CLOSED.

(C) MISSION:

FIRST, SECOND AND THIRD FAILURE - BRAKE INHIBIT IS APPLIED TO ONE OF TWO ANTI-SKID/BRAKE BOXES AND IT CAUSES LOSS OF FIFTY PERCENT BRAKING CAPABILITY. NO EFFECT TO NORMAL LANDING.

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

FIRST, SECOND AND THIRD FAILURE - BRAKE INHIBIT IS APPLIED TO ONE OF TWO ANTI-SKID/BRAKE BOXES AND IT CAUSES LOSS OF FIFTY PERCENT BRAKING CAPABILITY. NO EFFECT TO NORMAL LANDING.

(E) FUNCTIONAL CRITICALITY EFFECTS:

POSSIBLE LOSS OF CREW/VEHICLE IF VEHICLE BRAKING CAPABILITY IS LOST. REQUIRES FIVE FAILURES (THREE HDCS IN SERIES PLUS MAIN AND BACKUP HYDRAULIC SYSTEMS) BEFORE EFFECT IS MANIFESTED.

-DISPOSITION RATIONALE-

(A) DESIGN:

REFER TO APPENDIX B, ITEM NO. 1 - HYBRID DRIVER CONTROLLER

(B) TEST:

REFER TO APPENDIX B, ITEM NO. 1 - HYBRID DRIVER CONTROLLER

GROUND TURNAROUND TEST

ANY TURNAROUND CHECKOUT TESTING IS ACCOMPLISHED IN ACCORDANCE WITH OMRSD.

(C) INSPECTION:

REFER TO APPENDIX B, ITEM NO. 1 - HYBRID DRIVER CONTROLLER

(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 DATA BASE.

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(E) OPERATIONAL USE:

AFTER ANTI-SKID/BRAKE FAILURE (LOSS OF BRAKES WITH ANTI-SKID ON) COMMANDER CAN SWITCH ANTI-SWITCH OFF TO OBTAIN ONE HUNDRED PERCENT MANUAL BRAKING WITHOUT ANTI-SKID PROTECTION.

- APPROVALS -

EDITORIALLY APPROVED : BNA : J. Kimura 7/6/99
TECHNICAL APPROVAL : VIA APPROVAL FORM : 96-CIL-011_05-6BA(2)