

**FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CIL HARDWARE**  
**NUMBER: 05-6BA-2415 -X**

**SUBSYSTEM NAME: EPD&C - LANDING GEAR CONTROL**

**REVISION: 0 02/25/88**

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**PART DATA**

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<b>PART NAME</b>	<b>PART NUMBER</b>
<b>VENDOR NAME</b>	<b>VENDOR NUMBER</b>
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

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**EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:**  
CONTROLLER, HYBRID DRIVER (HDC), TYPE I, NOSE LANDING GEAR EXTENTION  
POWER ASSIST NO. 1 AND NO. 2

**REFERENCE DESIGNATORS:** 82V76A17AR(2)  
83V76A18AR(2)

**QUANTITY OF LIKE ITEMS:** 4  
FOUR, 2/FLCA - 2 & 3

**FUNCTION:**  
AFTER TWO 1-SECOND TIME DELAYS OF NOSE LANDING GEAR DOWN STIMULI, THE  
HDC'S CONDUCT FIRE COMMANDS TO THE ASSOCIATED PIC FIRE 1 AND THE FIRE 2  
CIRCUITS (IF NOSE LANDING GEAR UPLOCK AND NOSE LANDING GEAR DOOR UPLOCK  
DO NOT INHIBIT) FOR CHARGE INITIATION OF NOSE LANDING GEAR EXTENSION  
POWERED ASSIST SUBSYSTEM.

**FAILURE MODES EFFECTS ANALYSIS FMEA - CIL FAILURE MODE**

**NUMBER: 05-6BA-2415-02**

**REVISION#: 1 07/01/99**

**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**

**MISSION PHASE: DO DE-ORBIT**

**VEHICLE/PAYLOAD/KIT EFFECTIVITY:**

102	COLUMBIA
103	DISCOVERY
104	ATLANTIS
105	ENDEAVOUR

**CAUSE:**

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

**CRITICALITY 1/1 DURING INTACT ABORT ONLY? NO**

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**REDUNDANCY SCREEN**

A) PASS
B) FAIL
C) PASS

**PASS/FAIL RATIONALE:**

**A)**

**B)**

**FAILS "B" SCREEN BECAUSE HYBRID DRIVER FAILURE IS NOT FLIGHT DETECTABLE.**

**C)**

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**- FAILURE EFFECTS -**

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**(A) SUBSYSTEM:**

**FIRST FAILURE - CONDUCTS COMMANDS AND/OR POWER PREMATURELY TO ONE OF  
TWO FIRING CIRCUITS IN PIC.**

**(B) INTERFACING SUBSYSTEM(S):**

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FIRST FAILURE - LOSS OF SERIES SWITCH EFFECT IN FIRING CIRCUITS.

**(C) MISSION:**

FIRST FAILURE - NO EFFECT. SERIES SWITCHES, COMMANDS AND INHIBITS PROTECT AGAINST PREMATURES.

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

FIRST FAILURE - NO EFFECT. SERIES SWITCHES, COMMANDS AND INHIBITS PROTECT AGAINST PREMATURES.

**(E) FUNCTIONAL CRITICALITY EFFECTS:**

POSSIBLE LOSS OF CREW/VEHICLE DUE TO FAILURE OF NOSE LANDING GEAR EXTENSION POWERED ASSIST PYRO AFTER MULTIPLE FAILURES (FAIL ON OF SERIES TYPE II HDC AND TYPE I HDC ASSOCIATED WITH THE FIRE 2 COMMAND FOR REDUNDANT PIC'S). THIS PREVENTS ARMING OF THE PIC'S BECAUSE ARM AND F2 COMMANDS NOW OCCUR AT THE SAME TIME WHEREAS F2 COMMAND SHOULD COME APPROXIMATELY 1 SECOND AFTER ARM COMMAND. LOSS OF PIC'S PREVENTS NOSE LANDING GEAR EXTENSION IN REQUIRED TIME.

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**-DISPOSITION RATIONALE-**

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**(A) DESIGN:**

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

**(B) TEST:**

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

**GROUND TURNAROUND TEST**

ANY TURNAROUND CHECKOUT TESTING IS ACCOMPLISHED IN ACCORDANCE WITH OMRSD.

**(C) INSPECTION:**

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

**(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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NUMBER: 05-6BA-2415-02

(E) OPERATIONAL USE:  
NONE

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- APPROVALS -

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