

**FAILURE MODES EFFECTS ANALYSIS (FMEA) - CIL HARDWARE**  
**NUMBER: 05-6BA-2413 -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 | MC477-0262-0002      |

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

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

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

**FUNCTION:**  
WITH NOSE LANDING GEAR ARM AND DOWN STIMULI, THE HDC DELAYS ITS OUTPUT BY ONE SECOND TO THE FIRE 1 CIRCUIT AND SIGNALS SERIES HDC WHICH DELAYS FIRE 2 COMMAND ANOTHER SECOND TO THE ASSOCIATED PIC FOR NOSE LANDING GEAR EXTENSION POWERED ASSIST FUNCTION.

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

**NUMBER: 05-6BA-2413-01**

**REVISION#: 1 06/26/99**

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

**LRU: FWD LCA 2**

**ITEM NAME: CONTROLLER, HYBRID DRIVER**

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

**FAILURE MODE:  
LOSS OF 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, CONTAMINATION, THERMAL STRESS, 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 - LOSS OF CAPABILITY TO CONDUCT FIRE 1 OR FIRE 2 COMMANDS TO ASSOCIATED PIC.

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

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

**NUMBER: 05-6BA-2413-01**

FIRST FAILURE - LOSS OF ONE OF TWO PICS FOR NOSE LANDING GEAR EXTENSION PYRO POWERED ASSIST SUBSYSTEM.

**(C) MISSION:**

FIRST FAILURE - NO EFFECT. SECOND FAILURE (HYBRID DRIVER IN REMAINING REDUNDANT NOSE GEAR EXTENSION POWERED ASSIST FUNCTION) - NOSE LANDING GEAR MAY FAIL TO EXTEND IN REQUIRED TIME CAUSING POSSIBLE LOSS OF CREW/VEHICLE.

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

FIRST FAILURE - NO EFFECT. SECOND FAILURE (HYBRID DRIVER IN REMAINING REDUNDANT NOSE GEAR EXTENSION POWERED ASSIST FUNCTION) - NOSE LANDING GEAR MAY FAIL TO EXTEND IN REQUIRED TIME CAUSING POSSIBLE LOSS OF CREW/VEHICLE.

**(E) FUNCTIONAL CRITICALITY EFFECTS:**

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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.

**(E) OPERATIONAL USE:**

FAILURE MODES EFFECTS ANALYSIS (FMEA) - CIL FAILURE MODE  
NUMBER: 05-6BA-2413- 01

NONE

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- APPROVALS -

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