SUBSYSTEM NAME: EPD&C - LANDING GEAR CONTROL
REVISION: 6 04/09/92

PART DATA

	PART NAME VENDOR NAME	PART NUMBER 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 - LEFT/RIGHT MAIN GEAR NO WEIGHT-ON-WHEEL

REFERENCE DESIGNATORS: 82V76A17(J1-39)
83V76A18(J1-39)

QUANTITY OF LIKE ITEMS: 2
TWO, ONE PER FLCA - 2 & 3 FOR EACH LEFT/RIGHT MAIN LANDING GEAR

FUNCTION:
WHEN EITHER LEFT/RIGHT MAIN GEAR NO WEIGHT-ON-WHEEL SIGNAL DROPS LOW, THE HDC ENABLES THE ASSOCIATED BRAKE/SKID CONTROL BOX WHICH PROVIDES FIFTY PERCENT OF BRAKING CAPABILITY. THIS HDC ALSO PROVIDES PROPER SIGNAL TO LANDING SOP FOR INITIATION OF NOSE WHEEL STEERING, HUD ROLLOUT , AND GROUND SPEED ENABLE.

FAILURE MODES EFFECTS ANALYSIS FMEA – CIL FAILURE MODE

NUMBER: 05-6BA-2407-IM- 01

REVISION#: 7 07/01/99

SUBSYSTEM NAME: EPD&C - LANDING GEAR CONTROL

LRU: FWD LCA 2 **CRITICALITY OF THIS**

ITEM NAME: CONTROLLER, HYBRID DRIVER **FAILURE MODE:** 1R2

FAILURE MODE:
LOSS OF OUTPUT, FAILS TO CONDUCT, FAILS TO TURN ON (INDICATES FALSE WEIGHT-ON-WHEELS)

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

REDUNDANCY SCREEN

A) PASS
B) PASS
C) PASS

PASS/FAIL RATIONALE:
A)

B)

C)

- FAILURE EFFECTS -

(A) SUBSYSTEM:
FIRST FAILURE - NO EFFECT

(B) INTERFACING SUBSYSTEM(S):

FIRST FAILURE - NO EFFECT

(C) MISSION:
FIRST FAILURE - NO EFFECT

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

(E) FUNCTIONAL CRITICALITY EFFECTS:
CASE 1: 1R2, PPP

POSSIBLE LOSS OF CRE/VEHICLE DUE TO DEGRADATION OF AEROSURFACE CONTROL. TESTING AT AMES LABORATORY HAS FOUND THAT FLIGHT CONTROL WILL BE AFFECTED IF WEIGHT-ON-WHEELS IS ERRONEOUSLY CONFIRMED. REQUIRES TWO FAILURES (ANTI-SKID SWITCH FAILS FOLLOWED BY THIS HDC FAILS OFF AFTER APPROACH/LANDING INTERFACE) BEFORE EFFECT IS MANIFESTED.

CASE 2: 1R3, PPP

FIRST FAILURE - ASSOCIATED ANTI-SKID/BRAKE BOX IS ACTIVATED, NO EFFECT SINCE BRAKE HYDRAULIC PRESSURE IS NOT PRESENT UNTIL BRAKE ISOLATION VALVE IS OPENED. SECOND AND THIRD FAILURES ("HYD SYS BRAKE ISOL VALVE" SWITCH AND CHECK VALVE FAIL CLOSED RESULTING IN UNCOMMANDED BRAKE PRESSURE) - POSSIBLE LOSS OF CREW/VEHICLE DUE TO TIRE FAILURE RESULTING IN UNCONTROLLABLE YAWING FORCES THAT CAUSES VEHICLE TO DEPART FROM RUNWAY (CRITICALITY 1R/3).

-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:

FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CIL FAILURE MODE
NUMBER: 05-6BA-2407-IM- 01

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.

(E) OPERATIONAL USE:
CORRECTIVE ACTION IN THE EVENT OF A FAILURE IS NONE

- APPROVALS -

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