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PRINT DATE: 03/31/92

FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CRITICAL HARDWARE

NUMBER: 05-6BB-2262-IM-X

SUBSYSTEM NAME: EPD&C - BRAKE/ANTI SKID

REVISION : 5 03/30/92

	PART NAME VENDOR NAME	PART NUMBER VENDOR NUMBER
■ LRU :	FWD LCA 1	MC450-0054-0001
■ LRU :	FWD LCA 1	MC450-0054-0002
■ LRU :	FWD LCA 2	MC450-0055-0001
■ LRU :	FWD LCA 2	MC450-0055-0002
■ SRU :	CONTROLLER, HYBRID DRIVER	MC477-0261-0002
■ SRU :	CONTROLLER, HYBRID DRIVER	MC477-0263-0002

PART DATA

- EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
CONTROLLER, HYBRID DRIVER (HDC), TYPE I & III, MAIN LANDING GEAR NO
WEIGHT-ON-WHEEL CIRCUIT/BRAKE-SKID CONTROL BOXES, A AND B
- REFERENCE DESIGNATORS: 81V76A16AR(2)
: 81V76A17AR(2)
- QUANTITY OF LIKE ITEMS: 4
TWO PER RELAY INPUT, FOUR PER VEHICLE
- FUNCTION:
PROVIDES THE CAPABILITY TO MONITOR THE WEIGHT-ON-WHEELS SENSORS AND
PRODUCE A BRAKE INHIBIT SIGNAL VIA RELAYS (K9, K12, K13 FOR BOX A, AND
K11, K16, K17 FOR BOX B) AND INHIBITING BRAKE APPLICATION UNTIL WEIGHT
IS SENSED ON EITHER LEFT OR RIGHT MAIN LANDING GEAR WHEELS. 81V76A16-
AR(2) (MC477-0261-0002), 81V76A17-AR(2) (MC477-0263-0002)

FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CRITICAL FAILURE MODE
NUMBER: 05-6BB-2262-IM-01

SUBSYSTEM: EPO&C - BRAKE/ANTI SKID
LRU :FWD LCA 1
ITEM NAME: CONTROLLER, HYBRID DRIVER

REVISION# 5 03/30/92 R

CRITICALITY OF THIS
FAILURE MODE:IR3

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

MISSION PHASE:
00 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 HDC STATUS CANNOT BE MONITORED IN FLIGHT.
- C)

- FAILURE EFFECTS -

- (A) SUBSYSTEM:
LOSS OF SKID AND LOCKED WHEEL PROTECTION ON HALF OF ALL BRAKES
- (B) INTERFACING SUBSYSTEM(S):
FIRST FAILURE - NO EFFECT

FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CRITICAL FAILURE MODE
NUMBER: 05-688-2262-IM-01

- (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 TIRE FAILURE AT TOUCHDOWN.
REQUIRES TWO ADDITIONAL FAILURES ("HYD SYS BRAKE ISOL VALVE" SWITCH AND
CHECK VALVE FAIL CLOSED RESULTING IN UNCOMMANDED BRAKE PRESSURE) 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
VERIFY HYBRID DRIVER OPERATION PER PARAGRAPH VS1AFD.045 "BRAKE/SKID NO
WEIGHT-ON-WHEELS BRAKE LOCKOUT TEST" EVERY FLIGHT, AND LRU RETEST PER
TABLE VS1Z00.000.

- (C) INSPECTION:
REFER TO APPENDIX B, ITEM NO. 1 - HYBRID DRIVER CONTROLLER

- (D) FAILURE HISTORY:
REFER TO APPENDIX B, ITEM NO. 1 - HYBRID DRIVER CONTROLLER

- (E) OPERATIONAL USE:

~~NONE~~ CORRECTIVE ACTION IS THE EVENT TO A FAILURE OF THIS

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- APPROVALS -

RELIABILITY ENGINEERING: T. AI
DESIGN ENGINEERING : G. A. FINNEMAN
QUALITY ENGINEERING : W. R. HIGGINS
NASA RELIABILITY :
NASA SUBSYSTEM MANAGER :
NASA EPD&C RELIABILITY :
NASA QUALITY ASSURANCE :
NASA EPD&C SUBSYS MGR :

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