 PRINT DATE: 03/31/92

FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CRITICAL HARDWARE
NUMBER: 05-6B3-2096-TM-X

SUBSYSTEM NAME: EPO&C - BRAKE/ANTI SKID
REVISION : 5 03/30/92

		PART NAME VENDOR NAME	PART NUMBER VENDOR NUMBER
■ LRU	:	FWD PCA 1	V070-763320
■ LRU	:	FWD PCA 2	V070-763340
■ SRU	:	RELAY, GENERAL PURPOSE	MC455-0129-0001

PART DATA

■ EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
RELAY, GENERAL PURPOSE (4P2P) - BRAKE SUB-BUS/WEIGHT-ON-WHEEL CIRCUIT POWER

■ REFERENCE DESIGNATORS: 81V76A22K9
: 81V76A22K12
: 81V76A22K13
: 82V76A23K11
: 82V76A23K16
: 82V76A23K17

■ QUANTITY OF LIKE ITEMS: 6
THREE PER CONTROL BOX, SIX PER VEHICLE

■ FUNCTION:
PROVIDES THE CAPABILITY TO INHIBIT THE APPLICATION OF BRAKES PRIOR TO WEIGHT-ON-WHEEL BEING SENSED.

FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CRITICAL FAILURE MODE
NUMBER: 05-6BB-2096-IM-03

REVISION# 5 03/30/92 R

SUBSYSTEM: EPD&C - BRAKE/ANTI SKID
LRU :FWD PCA 1
ITEM NAME: RELAY, GENERAL PURPOSE

CRITICALITY OF THIS FAILURE MODE:1R3

■ FAILURE MODE:
OPEN, FAILS TO CONDUCT, FAILS TO TRANSFER (INDICATES FALSE MAIN LANDING GEAR WEIGHT-ON-WHEEL)

MISSION PHASE:
OO 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 RELAY STATUS CANNOT BE MONITORED IN FLIGHT.

■ C)

- FAILURE EFFECTS -

■ (A) SUBSYSTEM:
CONTINUOUS WEIGHT-ON-WHEEL SIGNAL TO BRAKE/SKID CONTROL BOX

■ (B) INTERFACING SUBSYSTEM(S):
FIFTY PERCENT OF BRAKING CAPABILITY IS ENABLED PRIOR TO WEIGHT-ON-

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NUMBER: 05-688-2096-IM-03

WHEEL

■ (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 DAMAGE 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 C, ITEM NO. 2 - GENERAL PURPOSE RELAY

■ (B) TEST:
REFER TO APPENDIX C, ITEM NO. 2 - GENERAL PURPOSE RELAY

GROUND TURNAROUND TEST
VERIFY RELAY CAPABILITY TO INHIBIT THE APPLICATION OF BRAKES PRIOR TO WEIGHT-ON-WHEEL BEING SENSED BY PERFORMING VERIFICATION OF INBOARD AND OUTBOARD BRAKES 1, 2, 3 AND 4 FOR BOXES A AND B WHEN COMMANDER OR PILOT BRAKE PEDAL IS FULLY DEPRESSED. TEST IS PERFORMED PER PARAGRAPH V51AF0.045 "BRK/SKID NO WOW/WONG BRK LOCKOUT TEST" EVERY FLIGHT, AND LRU RETEST PER TABLE V51Z00.000.

■ (C) INSPECTION:
REFER TO APPENDIX C, ITEM NO. 2 - GENERAL PURPOSE RELAY

■ (D) FAILURE HISTORY:
REFER TO APPENDIX C, ITEM NO. 2 - GENERAL PURPOSE RELAY

■ (E) OPERATIONAL USE:
~~NONE~~ CORRECTIVE ACTION TIME POINT FOR A FAILURE IS NONE.

FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CRITICAL FAILURE MODE
NUMBER: 05-6BB-2096-IM-03

- 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		