PAGE: 1 PRINT DATE: 05/17/90

FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CRITICAL HARDWARE
NUMBER: 05-6EB-2000-X

SUBSYSTEM NAME: EPD&C - PAYLOAD BAY DOORS
REVISION : 2 05/16/90

		PART NAME VENDOR NAME	PART NUMBER VENDOR NUMBER
LRU	:	PANEL R13A2	V070-730338
SRU	:	RESISTOR	RWR80S1211FR

PART DATA

- EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
  RESISTOR, WIRE WOUND (1.2K) - PAYLOAD BAY DOOR (PLBD) CONTROL

  REFERENCE DESIGNATORS: 32V73A13A2A1R1
  : 32V73A13A2A1R2
  : 32V73A13A2A1R3

- QUANTITY OF LIKE ITEMS: 3
  THREE, ONE PER CONTROL BUS (AB1, BC1, & BC2)

- FUNCTION:
  LIMITS CURRENT BETWEEN CONTROL BUSES AND MDM'S FOR CONTROL OF PAYLOAD BAY DOORS OPENING AND CLOSING FUNCTIONS.

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FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CRITICAL FAILURE MODE
NUMBER: 05-6EB-2000-01

REVISION# 2 05/16/90 R

SUBSYSTEM: EPD&C - PAYLOAD BAY DOORS
LRU :PANEL R13A2
ITEM NAME: RESISTOR

CRITICALITY OF THIS FAILURE MODE:1R3

■ FAILURE MODE:
OPEN

MISSION PHASE:
OO ON-ORBIT
DO DE-ORBIT

VEHICLE/PAYLOAD/KIT EFFECTIVITY: 102 COLUMBIA
: 103 DISCOVERY
: 104 ATLANTIS

■ CAUSE:
STRUCTURAL FAILURE (MECHANICAL STRESS, VIBRATION), ELECTRICAL STRESS, THERMAL STRESS, PROCESSING ANOMALY

CRITICALITY 1/1 DURING INTACT ABORT ONLY? NO

REDUNDANCY SCREEN A) PASS
B) FAIL
C) PASS

PASS/FAIL RATIONALE:
A)

B)
FIRST FAILURE NOT DETECTABLE IN FLIGHT SINCE: 1) OPERATIONAL STATUS OF THIS RESISTOR IS NOT MONITORED, AND 2) THERE WILL BE NO FUNCTIONAL EFFECT UNTIL SECOND FAILURE OCCURS AND CAUSES LOSS OF COMPUTER/MDM COMMANDS.

C)

- FAILURE EFFECTS -

(A) SUBSYSTEM:
FIRST FAILURE - LOSS OF POWER IN ONE OF THREE CONTROL CIRCUITS FOR PLBDS

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■ (B) INTERFACING SUBSYSTEM(S):
FIRST FAILURE - LOSS OF REDUNDANCY. TWO OF THREE POWER SOURCES ARE REQUIRED TO ENABLE COMPUTER/MDM COMMANDS FOR CONTROL OF PLBD OPERATIONS.

(C) MISSION:
FIRST FAILURE - NO EFFECT

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

■ (E) FUNCTIONAL CRITICALITY EFFECTS:
POSSIBLE LOSS OF MISSION AND/OR CREW/VEHICLE THROUGH LOSS OF ALL PLBD CONTROL CAPABILITY. FAILURE TO OPEN PLBD WOULD RESULT IN LOSS OF MISSION (2R3). FAILURE TO CLOSE PLBD WOULD RESULT IN UNSAFE CONFIGURATION FOR ENTRY (1R3). REQUIRES TWO OTHER FAILURES (REDUNDANT RESISTOR FAILS OPEN, LOSS OF KEYBOARD WORKAROUND CAPABILITY) BEFORE EFFECT IS MANIFESTED.

- DISPOSITION RATIONALE -

■ (A) DESIGN:
REFER TO APPENDIX E, ITEM NO. 3 - RESISTOR

■ (B) TEST:
REFER TO APPENDIX E, ITEM NO. 3 - RESISTOR

GROUND TURNAROUND TEST
VERIFY CONTROL BUS PATHS BY ACTIVATING ALL CONTROL BUSES, COMMANDING PAYLOAD BAY DOOR SWITCH, AND OBSERVING SWITCH SCAN DATA. TESTS ARE PERFORMED EVERY FLIGHT AND LRU RETEST PER TABLE V37Z00.000.

■ (C) INSPECTION:
REFER TO APPENDIX E, ITEM NO. 3 - RESISTOR

■ (D) FAILURE HISTORY:
REFER TO APPENDIX E, ITEM NO. 3 - RESISTOR

■ (E) OPERATIONAL USE:
NO ACTION IS REQUIRED FOR THE FIRST FAILURE. SOFTWARE BYPASS IS AVAILABLE IF HARDWARE SWITCH FAILS. EVA CAPABILITY EXISTS TO CLOSE PAYLOAD BAY DOORS AFTER MULTIPLE FAILURES.

FAILURE MODES EFFECTS ANALYSIS (FMEA) — CRITICAL FAILURE MODE
NUMBER: 05-6EB-2000-01

- APPROVALS -

RELIABILITY ENGINEERING	: T. AI	: TA 4/24/90
DESIGN ENGINEERING	: T. BANHIDY	:
QUALITY ENGINEERING	: W. R. HIGGINS	:
NASA RELIABILITY	:	:
NASA SUBSYSTEM MANAGER	:	: 8/23/90
NASA QUALITY ASSURANCE	:	: 8/20/90
NASA EPDC SUBSYS MGR		for E. Harris 24 Aug 90
NASA EPDC Reliability		8/20/90

for S. Undead