

FAILURE MODES EFFECTS ANALYSIS (FMEA) — CRITICAL HARDWARE
 NUMBER: 05-6ED-2255-X

1464

SUBSYSTEM NAME: EPD&C - ET UMBILICAL DOORS

REVISION : 2 08/06/90

	PART NAME VENDOR NAME	PART NUMBER VENDOR NUMBER
LRU :	AFT MCA-1	V070-765410
LRU :	AFT MCA-2	V070-765420
LRU :	AFT MCA-3	V070-765430
LRU :	AFT MCA-3	V070-765600
LRU :	AFT MCA-2	V070-765620
LRU :	AFT MCA-1	V070-765630
SRU :	DIODE	JANTXVIN4246

 PART DATA

EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:

DIODE, ISOLATION, LEFT AND RIGHT CLOSE LATCH POSITION INDICATION CIRCUIT
 ISOLATION

REFERENCE DESIGNATORS: 54V76A114A1CR9
 : 54V76A114A1CR60
 : 55V76A115A1CR64
 : 55V76A115A1CR69
 : 55V76A115A2CR5
 : 55V76A115A2CR18
 : 56V76A116A1CR72
 : 56V76A116A1CR119

QUANTITY OF LIKE ITEMS: 8
 EIGHT

FUNCTION:

ISOLATES POSITION INDICATION SIGNALS (LATCH OR RELEASE) FROM TWO
 REDUNDANT LATCH MOTOR LIMIT SWITCHES WHICH INPUT TO A COMMON POSITION
 INDICATOR (TALK BACK). LEFT AND RIGHT DOOR LATCH POSITION INDICATIONS
 ARE DISPLAYED ON SEPARATE METERS.

FAILURE MODES EFFECTS ANALYSIS (FMEA) — CRITICAL FAILURE MODE
 NUMBER: 05-6ED-2255-02

REVISION# 2 09/07/90 R

SUBSYSTEM: EPD&C - ET UMBILICAL DOORS
 LRU :AFT MCA-1
 ITEM NAME: DIODE

CRITICALITY OF THIS
 FAILURE MODE:1R2

■ FAILURE MODE:
 SHORT (END TO END)

MISSION PHASE:
 DD DE-ORBIT

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

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

CRITICALITY I/1 DURING INTACT ABORT ONLY? NO

REDUNDANCY SCREEN A) PASS
 B) FAIL
 C) PASS

PASS/FAIL RATIONALE:
 A)

■ B)
 FAILS "B" SCREEN BECAUSE DIODE SHORT (END TO END) IS NOT READILY
 DETECTABLE INFIGHT.

C)

- FAILURE EFFECTS -

■ (A) SUBSYSTEM:
 FIRST FAILURE - LOSS OF ISOLATION BETWEEN THE TWO ASSOCIATED LEFT OR
 RIGHT EXTERNAL TANK DOOR CLOSE "LATCH" OR "RELEASE" HYBRID RELAY
 CIRCUITS

FAILURE MODES EFFECTS ANALYSIS (FMEA) — CRITICAL FAILURE MODE
 NUMBER: 05-6ED-2255-02

1436

- (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:
POSSIBLE LOSS OF CREW/VEHICLE DUE TO INABILITY TO CLOSE ET DOOR LATCH
RESULTING IN STRUCTURAL DAMAGE CAUSED BY THERMAL EFFECTS DURING ENTRY.
REQUIRES ONE ADDITIONAL FAILURE (LIMIT SWITCH IN THE REDUNDANT CIRCUIT
FAILS CLOSED IN THE "LATCH" POSITION) BEFORE EFFECT IS MANIFESTED.

 - DISPOSITION RATIONALE -

- (A) DESIGN:
REFER TO APPENDIX F, ITEM NO. 3 - DIODE
- (B) TEST:
REFER TO APPENDIX F, ITEM NO. 3 - DIODE

GROUND TURNAROUND TEST
VERIFY ISOLATION DIODE FUNCTION BY REMOVING POWER TO LIMIT SWITCH AND
VERIFYING THAT ASSOCIATED SWITCH SCAN RESPONDS PROPERLY. TESTS ARE
PERFORMED FOR EVERY FLIGHT AND LRU RETEST PER TABLE V56Z00.000.
- (C) INSPECTION:
REFER TO APPENDIX F, ITEM NO. 3 - DIODE
- (D) FAILURE HISTORY:
REFER TO APPENDIX F, ITEM NO. 3 - DIODE
- (E) OPERATIONAL USE:
NONE AFTER FIRST FAILURE. AFTER SECOND FAILURE, CAPABILITY EXISTS TO
REMOVE INHIBIT BY TURNING OFF MCA LOGIC SWITCH.

FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CRITICAL FAILURE MODE
NUMBER: 05-6ED-2255-02

1467

- APPROVALS -

RELIABILITY ENGINEERING:	T. AI	:	<i>T. AI</i>
DESIGN ENGINEERING	: J. KRAGER	:	<i>J. Krager</i>
QUALITY ENGINEERING	: W. R. HIGGINS	:	<i>W. R. Higgins</i>
NASA RELIABILITY	:	:	<i>W. R. Higgins</i>
NASA SUBSYSTEM MANAGER	:	:	<i>W. R. Higgins</i>
NASA EP&C RELIABILITY	:	:	<i>W. R. Higgins</i>
NASA QUALITY ASSURANCE	:	:	<i>W. R. Higgins</i>
NASA EP&C SUBSYS MGR	:	:	<i>W. R. Higgins</i>