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PRINT DATE: 05/22/91

FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CRITICAL HARDWARE

NUMBER: 05-6ED-2251A-X

SUBSYSTEM NAME: EPD&C - ET UMBILICAL DOORS

REVISION : 4 05/21/91

	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	JANTXV1N4246

PART DATA

EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
DIODE, ISOLATION

REFERENCE DESIGNATORS: 54V76A114A2CR38
 : 54V76A114A2CR39
 : 54V76A114A2CR51
 : 54V76A114A2CR52
 : 55V76A115A1CR80
 : 55V76A115A1CR81
 : 56V76A116A2CR39
 : 56V76A116A2CR40

QUANTITY OF LIKE ITEMS: 8
 EIGHT

FUNCTION:

PROVIDES AND ISOLATES REDUNDANT POWER PATH TO CENTERLINE LATCH HYBRID RELAY (STOW) FOR USE DURING MANUAL MODE OPERATION. ALSO, ISOLATES THE LOGIC POWER FROM THE CONTROL POWER, WHICH IS CONTINUOUSLY SUPPLIED BY A DC BUS, TO PREVENT AN INADVERTENT STOW OPERATION OF THE CENTERLINE LATCH.

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

CRITICALITY OF THIS
FAILURE MODE:1R3

- FAILURE MODE:
OPEN, FAILS TO CONDUCT

MISSION PHASE:
DO OE-ORBIT

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

- 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)
FAILS "B" SCREEN BECAUSE OF REDUNDANCY IN POWER SUPPLY TO RELAY.
- C)

- FAILURE EFFECTS -

- (A) SUBSYSTEM:
FIRST FAILURE - NO EFFECT
- (B) INTERFACING SUBSYSTEM(S):
FIRST FAILURE - NO EFFECT

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- (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 THROUGH LOSS OF ALL CENTERLINE LATCH CONTROL CAPABILITY PREVENTING DOOR CLOSURE FOR RE-ENTRY, RESULTING IN STRUCTURAL DAMAGE CAUSED BY THERMAL EFFECTS. REQUIRES TWO ADDITIONAL FAILURES (FAILURE OF REDUNDANT CONTROL POWER TO RELAY AND FAILURE OF REDUNDANT MOTOR CIRCUIT) 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
NO OMRSD TEST AVAILABLE
- (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

- APPROVALS -

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

: JA Wilson Clifton 8-20-90
 : J. Krager 8-21-90
 : W. R. Higgins 8-25-90
 : J. M. Bales 10/25/90
 : R. David 10-24-90
 : RO David 9/28/90
 : J. P. Higgins for E. Higgins 10-20-90