

PAGE: 1

PRINT DATE: 04/23/92

FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CRITICAL HARDWARE
 NUMBER: 05-6DS-2011-X

SUBSYSTEM NAME: EPD&C-DRAG CHUTE

REVISION : 1 04/23/92

| | PART NAME VENDOR NAME | PART NUMBER VENDOR NUMBER |
|---------|----------------------------|------------------------------|
| ■ LRU : | DRAG CHUTE CONTROLLER ASSY | V070-765440 |
| ■ SRU : | CONTROLLER, PIC | MC450-0018-0008 |

 PART DATA

- EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
CONTROLLER, PYROTECHNIC INITIATOR - JETTISON
- REFERENCE DESIGNATORS: 50V76A214(NO.2)
: 50V76A215(NO.2)
- QUANTITY OF LIKE ITEMS: 2
TWO,
ONE PER ASSEMBLY
- FUNCTION:
PROVIDES POWER TO NSI FOR JETTISON DRAG CHUTE. REQUIRES ARM, FIRE 1, AND
FIRE 2 FOR INITIATION.

FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CRITICAL FAILURE MODE
 NUMBER: 05-6DS-2011-01

SUBSYSTEM: EPD&C-DRAG CHUTE
 LRU :DRAG CHUTE CONTROLLER ASSY
 ITEM NAME: CONTROLLER, PIC

REVISION# 1 04/23/92 R

CRITICALITY OF THIS
 FAILURE MODE:1R3

- FAILURE MODE:
 LOSS OF OUTPUT

MISSION PHASE:
 DO 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 SCREEN "B" BECAUSE PIC IS NOT READILY DETECTABLE UNLESS THE MSID
 MEASUREMENT (PIC VOLTAGE) IS BEING RETRIEVED.

- C)

- FAILURE EFFECTS -

- (A) SUBSYSTEM:
 LOSS OF ASSOCIATED PIC
- (B) INTERFACING SUBSYSTEM(S):
 INABILITY TO JETTISON DRAG CHUTE VIA ASSOCIATED PIC

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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 IF UNABLE TO JETTISON A PREMATURE
DEPLOYED DRAG CHUTE. REQUIRES TWO ADDITIONAL FAILURES (LOSS OF
REMAINING PIC AND PILOT MORTAR CARTRIDGE PREMATURELY OPERATED CAUSING
PREMATURE DEPLOYMENT OF DRAG CHUTE) BEFORE EFFECT IS MANIFESTED.
- | NOTE: FAILURE SCENARIO IS CREDIBLE ONLY AT ALTITUDES OF 40 TO 135 FEET.

 - DISPOSITION RATIONALE -

- (A) DESIGN:
REFER TO APPENDIX H, ITEM NO. 1 - PYROTECHNIC INITIATOR CONTROLLER
- (B) TEST:
REFER TO APPENDIX H, ITEM NO. 1 - PYROTECHNIC INITIATOR CONTROLLER

GROUND TURNAROUND TEST
VERIFY JETTISON PIC'S FOR LOSS OF OUTPUT CONDITION BY VERIFYING
JETTISON PIC FIRING FROM EACH OF THE COMMANDER AND PILOT SWITCHES VIA
FUNCTIONAL AND/OR OUT OF SEQUENCE TESTS, AND THE GO/NO GO RESISTANCE
LOAD TESTS ARE SATISFIED. TESTS ARE PERFORMED EVERY FLOW IF DRAG CHUTE
IS INSTALLED AND FOR LRU RETEST PER TABLE V55Z00.000. ADDITIONAL TESTS
TO VERIFY JETTISON PIC FOR LOSS OF OUTPUT CONDITION ARE DONE EVERY
FIFTH FLOW THROUGH THE PIC BITE CIRCUITRY VERIFICATION.
- (C) INSPECTION:
REFER TO APPENDIX H, ITEM NO. 1 - PYROTECHNIC INITIATOR CONTROLLER
- (D) FAILURE HISTORY:
REFER TO APPENDIX H, ITEM NO. 1 - PYROTECHNIC INITIATOR CONTROLLER
- (E) OPERATIONAL USE:
NONE

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NUMBER: 05-6DS-2011-01

- APPROVALS -

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

: TA T.J. Edelman 4/29/92
: ~~W.R. Higgins~~
: ~~W.R. Higgins~~
: ~~W.R. Higgins~~ 5/11/92
: ~~W.R. Higgins~~ 5/11/92
: ~~W.R. Higgins~~ 5/11/92
: ~~W.R. Higgins~~ 5-18-92