

PAGE: 1

PRINT DATE: 04/23/92

FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CRITICAL HARDWARE -
 NUMBER: 05-6DS-2018-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, HYBRID DRIVER	MC477-0262-0002

 PART DATA

- EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
 HYBRID DRIVER CONTROLLER (HCC), TYPE II - SECOND STAGE JETTISON FIRE 2
 COMMAND
- REFERENCE DESIGNATORS: 50V76A214AR8
 : 50V76A215AR8
- QUANTITY OF LIKE ITEMS: 2
 TWO, ONE PER ASSEMBLY NO. 1 & NO. 2
- FUNCTION:
 UPON RECEIPT OF 28VDC SIGNAL FROM FIRST STAGE FIRE 2 COMMAND DRIVER,
 THE SECOND STAGE DRIVER CAUSES A ONE SECOND DELAY OF THE FIRE 2 COMMAND
 TO THE ASSOCIATED PIC. ONE SECOND DELAY IS REQUIRED TO CHARGE UP THE
 OUTPUT CAPACITORS.

FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CRITICAL FAILURE MODE

NUMBER: 05-60S-2018-01

REVISION# 1 04/23/92 R

SUBSYSTEM: EPO&C-DRAG CHUTE
 LRU :DRAG CHUTE CONTROLLER ASSY
 ITEM NAME: CONTROLLER, HYBRID DRIVER

CRITICALITY OF THIS
 FAILURE MODE:1R3

- FAILURE MODE:
 FAILS "ON", INADVERTENT OUTPUT

MISSION PHASE:
 00 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 I/1 DURING INTACT ABORT ONLY? NO

- REDUNDANCY SCREEN A) PASS
 ■ B) FAIL
 ■ C) PASS

PASS/FAIL RATIONALE:

- A)
- B)
 FAILS SCREEN "B" SINCE THERE ARE NO DIRECT MEASUREMENTS ON HDC OUTPUT
 TO DETECT THIS FAILURE.
- C)

- FAILURE EFFECTS -

- (A) SUBSYSTEM:
 UNABLE TO INITIATE A ONE SECOND DELAY REQUIRED TO CHARGE ASSOCIATED PIC
- (B) INTERFACING SUBSYSTEM(S):
 UNABLE 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 (REDUNDANT FIRE 2
HDC FAILS "ON" 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 B, ITEM NO. 1 - HYBRID DRIVER CONTROLLER
- (B) TEST:
REFER TO APPENDIX B, ITEM NO. 1 - HYBRID DRIVER CONTROLLER

GROUND TURNAROUND TEST
VERIFY THAT SECOND STAGE F2 HDC DOES NOT FAIL "ON" BY VERIFYING THE
DIFFERENCE OF PIC VOLTAGES BETWEEN BOTH SYSTEM DURING THE DEPLOY &
JETTISON FUNCTIONAL TEST AND THE DEPLOY & JETTISON OUT OF SEQUENCE
SWITCH VERIFICATION. TESTS ARE PERFORMED EVERY FLOW IF DRAG CHUTE IS
INSTALLED AND FOR LRU RETEST PER TABLE V55Z00.000.
- (C) INSPECTION:
REFER TO APPENDIX B, ITEM NO. 1 - HYBRID DRIVER CONTROLLER
- (D) FAILURE HISTORY:
REFER TO APPENDIX B, ITEM NO. 1 - HYBRID DRIVER CONTROLLER
- (E) OPERATIONAL USE:
NONE

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NUMBER: 05-6DS-2018-01

- 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 :

: *T. J. E. [unclear] 4/29/92*
 : *[unclear] 4-24-92*
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 : *[unclear] 5/19/92*
 : *[unclear] 5/16/92*
 : *[unclear] 5/11/92*
 : *KO [unclear] 5/6/92*
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