FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CRITICAL HARDWARE
NUMBER: 05-60S-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 (HDC), 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: 05-6DS-2018-02

REVISION# 1 04/23/92 R

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

CRITICALITY OF THIS FAILURE MODE:1R3

■ FAILURE MODE:
LOSS OF OUTPUT, FAILS TO CONDUCT, FAILS TO TURN "ON"

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 HDC FAILURE IS NOT READILY DETECTABLE UNLESS THE MSID MEASUREMENT(PIC VOLTAGE) IS BEING RETRIEVED.

■ C)

- FAILURE EFFECTS -

■ (A) SUBSYSTEM:
LOSS OF JETTISON COMMAND CAPABILITY

■ (B) INTERFACING SUBSYSTEM(S):
UNABLE TO JETTISON 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 REDUNDANT HDC 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 HAVE LOSS OF OUTPUT CONDITION BY VERIFYING PIC VOLTAGES DURING JETTISON FUNCTIONAL TEST AND JETTISON OUT OF SEQUENCE 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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- APPROVALS -

RELIABILITY ENGINEERING	T. AI	T. J. Cavenom 4/29/92
DESIGN ENGINEERING	T. POCKLINGTON	4-24-92
QUALITY ENGINEERING	W. R. HIGGINS	
NASA RELIABILITY		5/19/92
NASA SUBSYSTEM MANAGER		5/19/92
NASA EPD&C RELIABILITY		5/11/92
NASA QUALITY ASSURANCE		5/6/92
NASA EPD&C SUBSYS MGR		5-18-92