

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - MAN ARM S&RL JETT FMEA NO 05-6ID-2500 -1 REV:08/17/88

ASSEMBLY : MID JTSN CONT ASSY NO. 1 CRIT. FUNC: 1R
 P/N RI : MC450-0018-0004 CRIT. HDW: 2
 P/N VENDOR: VEHICLE 102 103 104
 QUANTITY : 8 EFFECTIVITY: X X X
 : EIGHT PHASE(S): PL LO OO X DO LS
 :

REDUNDANCY SCREEN: A-PASS B-FAIL C-PASS
 PREPARED BY: APPROVED BY: APPROVED BY (NASA): 9-12-88
 DES C STRONG DES 641 R. Brown SSM Paul Thomas Johnson
 REL T KIMURA REL Dr. Richard A. Hines REL See Approval Note 9-10-88
 QE J COURSEN QE John J. Courson QE See Approval Note 9-12-88
 EXECUTION of this FMEA for 10/17/88
 FPD Rel. See Approval Note 9/30

ITEM:
 PYRO INITIATOR CONTROLLER (PIC) - PORT MANIPULATOR RETENTION FORWARD LATCH, MID LATCH, AFT LATCH, AND SHOULDER RETRACTOR SYSTEMS A AND B

FUNCTION:
 EMERGENCY SYSTEM - UPON SEPARATELY INITIATED ARM AND JETTISON SWITCH COMMANDS, THE PIC'S DELIVER AN ELECTRICAL CHARGE TO INITIATE THE PORT MANIPULATOR RETENTION LATCH AND SHOULDER RETRACTOR SYSTEMS A AND B. IT IS USED ONLY IN THE EVENT THAT THE RMS MUST BE JETTISONED WHEN IT CANNOT BE RETURNED TO ITS STOWAGE POSITION. 40V76A137PIC2, 7, 9, 11, 13, 18, 20, 22

FAILURE MODE:
 LOSS OF OUTPUT

CAUSE(S):
 PIECE PART FAILURE, CONTAMINATION, VIBRATION, MECHANICAL SHOCK, PROCESSING ANOMALY, THERMAL STRESS

EFFECT(S) ON:
 (A) SUBSYSTEM (B) INTERFACES (C) MISSION (D) CREW/VEHICLE:
 (A) LOSS OF REDUNDANCY - LOSS OF INPUT TO ASSOCIATED NASA STANDARD INITIATORS (NSI'S)
 (B) LOSS OF INTERFACE REDUNDANCY - NO EFFECT FIRST FAILURE. THE REDUNDANT CIRCUIT COMPLETES FUNCTION.
 (C,D) NO EFFECT FIRST FAILURE. SECOND ASSOCIATED FAILURE (LOSS OF OUTPUT OF SECOND PIC) IN REDUNDANT SYSTEM PRECLUDES JETTISON OPERATION OF MANIPULATOR WITH PROBABLE LOSS OF CREW/VEHICLE.

FIRST FAILURE IS NOT DETECTABLE IN FLIGHT SINCE THE ASSOCIATED UPSTREAM CIRCUIT BREAKER AND ARMING SWITCH ARE NOT CLOSED UNTIL THE PIC IS USED WHEN THE RMS IS TO BE JETTISONED.

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DISPOSITION & RATIONALE:

(A)DESIGN (B)TEST (C)INSPECTION (D)FAILURE HISTORY (E)OPERATIONAL USE:

(A-D) DISPOSITION AND RATIONALE

REFER TO APPENDIX H, ITEM NO. 1 - PIC

(B) GROUND TURNAROUND TEST

"RMS JETTISON VERIFICATION", VERIFIES THAT THE PYRO INITIATOR CONTROLLER (PIC) ARM, FIRE, AND SWITCH SCAN CIRCUITS ARE OPERATIONAL. TESTS ARE PERFORMED FOR ALL FLIGHTS WHEN THE RMS IS FLOWN AND WITH ALL PYROS SAFED AND NSI NO-GO SIMULATORS INSTALLED.

(E) OPERATIONAL USE

NONE