

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - MAIN PROP. FMEA NO 05-6J -2260 -2 REV:11/19/87

ASSEMBLY : AFT LCA-1 CRIT. FUNC: 12
 P/N RI : MC477-0263-0002 CRIT. HDW: 3
 P/N VENDOR: VEHICLE 102 103 104
 QUANTITY : 2 EFFECTIVITY: X X X
 : TWO PHASE(S): PL X LO X OO DO LS
 : 2 PER LH2 INBOARD FILL/DRAIN VALVE

REDUNDANCY SCREEN: A-PASS B-FAIL C-PASS
 PREPARED BY: APPROVED BY: APPROVED BY (NASA):
 DES *JWB* J BROWN DES *[Signature]* EPDC SSM *[Signature]*
 REL *[Signature]* DEFENSOR REL *[Signature]* 11-7-87 EPDC REL *[Signature]*
 QE D MASAI QE *[Signature]* MPS REL *[Signature]*
 11/19/87

ITEM:

CONTROLLER, HYBRID DRIVER (HDC), TYPE III, LH2 INBOARD FILL/DRAIN VALVE OPEN SOLENOID CONTROL POWER.

FUNCTION:

CONDUCTS MAIN BUS POWER TO OPEN SOLENOID OF LH2 INBOARD FILL/DRAIN VALVE. THE TWO HDCs ARE IN SERIES. 54V76A121 J3 (59), (60).

FAILURE MODE:

INADVERTENT OUTPUT, FAILS ON, CONDUCTS PREMATURELY.

CAUSE(S):

PIECE PART FAILURE, CONTAMINATION, MECHANICAL SHOCK, VIBRATION, THERMAL STRESS.

EFFECT(S) ON:

(A) SUBSYSTEM (B) INTERFACES (C) MISSION (D) CREW/VEHICLE (E) FUNCTIONAL CRITICALITY

(A) DEGRADATION OF REDUNDANCY AGAINST PREMATURE ACTUATION OF OPEN SOLENOID.

(B,C,D) FIRST FAILURE - NO EFFECT.

(E) FIRST FAILURE - NO EFFECT. POSSIBLE LOSS OF CREW AND VEHICLE AFTER THIRD FAILURE (SECOND FAILURE - SERIES HDC FAILS ON PREMATURELY ACTUATING OPEN SOLENOID, BISTABLE FEATURE MAINTAINS FILL/DRAIN VALVE IN CLOSE POSITION. THIRD FAILURE - PREMATURE DEACTUATION OF CLOSE SOLENOID) RESULTING IN PREMATURE OPENING OF FILL/DRAIN VALVE. DISPLACED GAS MAY ENTER ONE OR MORE SSMEs. POSSIBLE SHUTDOWN OF ONE OR MORE SSMEs. FAILS B SCREEN DUE TO SERIES CIRCUIT CONFIGURATION.

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DISPOSITION & RATIONALE:

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

(A-D) FOR DISPOSITION AND RATIONALE:

REFER TO APPENDIX B, ITEM NO. 1 - HYBRID DRIVER CONTROLLER

(B) GROUND TURNAROUND TEST

MDM COMMAND REDUNDANCY, V41AEO.081A, B EVERY FLIGHT.

(E) OPERATIONAL USE

NO CREW ACTION CAN BE TAKEN.

05-6J-422