

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM :EPD&C - MAIN PROP. FMEA NO 05-6J -2262 -2 REV:04/25/88

ASSEMBLY :AFT LCA-1 CRIT. FUNC: 1R
 P/N RI :MC477-0263-0002 CRIT. HDW: 2
 P/N VENDOR: VEHICLE 102 103 104
 QUANTITY :1 EFFECTIVITY: X X X
 :ONE PHASE(S): PL LO X OO DO LS
 :

REDUNDANCY SCREEN: A-PASS B-PASS C-PASS

PREPARED BY:	APPROVED BY:	APPROVED BY (NASA):
DES <i>JW</i> J BROWN	DES <i>[Signature]</i>	EPDC SSM <i>Essential for W.S. Stay</i>
REL F DEFENSOR <i>[Signature]</i>	REL <i>[Signature] 5-6-88</i>	MPS SSM <i>5-17-88</i>
QE <i>[Signature]</i> D MASAI	QE <i>[Signature] 5-6-88</i>	EPDC REL <i>[Signature] 5/16/88</i>
		MPS REL <i>[Signature] 5/18/88</i>
		QE <i>[Signature]</i>

ITEM:
 CONTROLLER, HYBRID DRIVER (HDC), TYPE III, LH2 TOPPING VALVE OPEN SOLENOID CONTROL POWER (LV 39).

FUNCTION:
 CONDUCTS MAIN BUS A POWER TO OPEN SOLENOID OF LH2 TOPPING VALVE. 54V76A121J10(U).

FAILURE MODE:
 INADVERTENT OUTPUT, FAILS "ON", FAILS TO TURN "OFF".

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 (E)FUNCTIONAL CRITICALITY

- (A) INADVERTENT OPEN COMMAND TO LH2 TOPPING VALVE OPEN SOLENOID.
- (B) INADVERTENT OPENING OF THE TOPPING VALVE. LH2 WILL ENTER FILL LINE. LOSS OF REDUNDANCY FOR OVERBOARD LEAKAGE WITH OUTBOARD FILL/DRAIN VALVE (PV11).
- (C,D) FIRST FAILURE - NO EFFECT.

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- (E) 1R/2, 1 SUCCESS PATH AFTER FIRST FAILURE. TIME FRAME - ASCENT.
1) HDC FAILS ON.
2) OUTBOARD FILL/DRAIN VALVE (PV11) FAILS TO REMAIN CLOSED.

IH2 WILL DUMP OVERBOARD RESULTING IN LOSS OF PROPELLANT AND PREMATURE ENGINE SHUTDOWN. FIRE/EXPLOSION HAZARD INTERIOR AND EXTERIOR TO THE VEHICLE. POSSIBLE VIOLATION OF ET MINIMUM STRUCTURAL REQUIREMENTS DUE TO REDUCED ULLAGE PRESSURE. POSSIBLE LOSS OF CREW/VEHICLE.

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/COPPER PATH VERIFICATION, V41AB0.131A EVERY FLIGHT.

(E) OPERATIONAL USE

NO CREW ACTION CAN BE TAKEN.

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