

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - MAIN PROP. FMEA NO 05-6J -2057A -1 REV: 11/20/87

ASSEMBLY : AFT LCA-2				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 X LO	OO	DO LS
: 1 PER LH2 OUTBOARD FILL/DRAIN VALVE					

		REDUNDANCY SCREEN: A-PASS B-PASS C-PASS		
PREPARED BY:	APPROVED BY:	APPROVED BY (NASA):		
DES <i>J Brown</i>	DES <i>J Brown</i>	EPDC SSM	<i>OK'd in 10/10/87</i>	
REL <i>F DEFENSOR</i>	REL <i>W. O. Cl. for 12-5-87</i>	MPS SSM	<i>OK'd in 10/10/87</i>	
QE D MASAI	QE <i>PP [Signature]</i>	EPDC REL	<i>OK'd in 10/10/87</i>	
		MPS REL	<i>OK'd in 10/10/87</i>	

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

FUNCTION:  
CONDUCTS MAIN BUS POWER TO OPEN SOLENOID OF THE LH2 OUTBOARD FILL/DRAIN VALVE. 55V76A122AR J10(R).

FAILURE MODE:  
LOSS OF OUTPUT, OPENS, INADVERTENTLY OPENS, FAILS TO CONDUCT.

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

EFFECT(S) ON:  
(A) SUBSYSTEM (B) INTERFACES (C) MISSION (D) CREW/VEHICLE

(A) LOSS OF POWER TO OPEN SOLENOID.

(B) NO EFFECT - FIRST FAILURE. BISTABLE FEATURE MAINTAINS FILL/DRAIN VALVE IN OPEN POSITION.

(C,D) NO EFFECT - FIRST FAILURE. POSSIBLE LOSS OF CREW AND VEHICLE AFTER SECOND FAILURE (PREMATURE ACTUATION OF CLOSE SOLENOID) RESULTING IN PREMATURE CLOSURE OF LH2 OUTBOARD FILL/ DRAIN VALVE. TERMINATION OF PROPELLANT LOADING WHICH MAY CAUSE A PRESSURE SPIKE AND POSSIBLE RUPTURE OF ORBITER FILL LINE AND/OR GSE INTERFACE/FACILITY LINES. POSSIBLE AFT COMPARTMENT OVERPRESSURIZATION AND FIRE/EXPLOSION HAZARD. POSSIBLE LOSS OF ADJACENT CRITICAL FUNCTIONS DUE TO CRYO EXPOSURE.

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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 B, ITEM NUMBER 1 - HYBRID DRIVER CONTROLLER.

(B) GROUND TURNAROUND TEST

COPPER PATH VERIFICATION, V41ABO.111B EVERY FLIGHT

(E) OPERATIONAL USE

FLIGHT - NO CREW ACTION CAN BE TAKEN.

GROUND - TERMINATE LOADING.