

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - MAIN PROP. FMEA NO 05-6J -2112 -2 REV:06/15/88

ASSEMBLY : APT LCA-1, 2, 3 CRIT. FUNC: 1R
 P/N RI : MC477-0261-0002 CRIT. HDW: 2
 P/N VENDOR: VEHICLE 102 103 104
 QUANTITY : 6 EFFECTIVITY: X X X
 : SIX PHASE(S): PL LO X OO DO LS
 :

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

PREPARED BY:	APPROVED BY:	APPROVED BY (NASA):
DES <i>JWB</i> J BROWN	DES <u><i>R. Brown</i></u>	EPDC SSM <u><i>Level 2/3/4/5/6/7/8/9/10/11/12/13/14/15/16/17/18/19/20/21/22/23/24/25/26/27/28/29/30/31/32/33/34/35/36/37/38/39/40/41/42/43/44/45/46/47/48/49/50/51/52/53/54/55/56/57/58/59/60/61/62/63/64/65/66/67/68/69/70/71/72/73/74/75/76/77/78/79/80/81/82/83/84/85/86/87/88/89/90/91/92/93/94/95/96/97/98/99/100</i></u>
REL <i>gdf</i> DEFENSOR	REL <u><i>J. Kenna 6/21/88</i></u>	MPS SSM <u><i>Level 2/3/4/5/6/7/8/9/10/11/12/13/14/15/16/17/18/19/20/21/22/23/24/25/26/27/28/29/30/31/32/33/34/35/36/37/38/39/40/41/42/43/44/45/46/47/48/49/50/51/52/53/54/55/56/57/58/59/60/61/62/63/64/65/66/67/68/69/70/71/72/73/74/75/76/77/78/79/80/81/82/83/84/85/86/87/88/89/90/91/92/93/94/95/96/97/98/99/100</i></u>
QE <i>DW</i> D MASAI	QE <u><i>J. Conner 6/21/88</i></u>	EPDC REX <u><i>Level 2/3/4/5/6/7/8/9/10/11/12/13/14/15/16/17/18/19/20/21/22/23/24/25/26/27/28/29/30/31/32/33/34/35/36/37/38/39/40/41/42/43/44/45/46/47/48/49/50/51/52/53/54/55/56/57/58/59/60/61/62/63/64/65/66/67/68/69/70/71/72/73/74/75/76/77/78/79/80/81/82/83/84/85/86/87/88/89/90/91/92/93/94/95/96/97/98/99/100</i></u>
		MPS REX <u><i>Level 2/3/4/5/6/7/8/9/10/11/12/13/14/15/16/17/18/19/20/21/22/23/24/25/26/27/28/29/30/31/32/33/34/35/36/37/38/39/40/41/42/43/44/45/46/47/48/49/50/51/52/53/54/55/56/57/58/59/60/61/62/63/64/65/66/67/68/69/70/71/72/73/74/75/76/77/78/79/80/81/82/83/84/85/86/87/88/89/90/91/92/93/94/95/96/97/98/99/100</i></u>
		QE <u><i>J. Conner 6/21/88</i></u>

ITEM:
 CONTROLLER, HYBRID DRIVER (HDC), TYPE I, HELIUM ISOLATION VALVE B (LV2/4/6).

FUNCTION:
 CONDUCTS POWER TO HELIUM SUPPLY ISOLATION VALVE B (LV2/4/6).
 54V76A121J3(77)-J7(117), J3(78)-J7(118).
 55V76A122J3(77)-J7(117), J3(78)-J7(118).
 56V76A123J3(77)-J7(117), J3(78)-J7(118).

FAILURE MODE:
 UNADVERTENT 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) INABILITY TO REMOVE CONTROL SIGNAL TO RPC.
- (B) INABILITY TO DEACTUATE HELIUM SUPPLY ISOLATION VALVE B.
- (C,D) FIRST FAILURE - NO EFFECT.

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(E) 1R/2, 1 SUCCESS PATH AFTER FIRST FAILURE.

TIME FRAME - ASCENT.

- 1) HELIUM LEAK BETWEEN ISOLATION VALVE AND DOWNSTREAM CHECK VALVE (ASSUMES LEAK RATE IS NOT LARGE ENOUGH TO OVERPRESSURIZE AFT COMPARTMENT BEFORE CREW CAN RESPOND).
- 2) HDC FAILS "ON".

RESULTS IN NON-ISOLATABLE LEAKAGE FROM THE HELIUM ENGINE SUPPLY. POSSIBLE OVERPRESSURIZATION OF AFT COMPARTMENT SINCE ISOLATION OF THE LINE CANNOT BE ACHIEVED WITHIN THE AVAILABLE RESPONSE TIME. POSSIBLE LOSS OF CREW/VEHICLE.

FAILS B SCREEN BECAUSE FAILURE IS NOT DETECTABLE DURING CRITICAL PERIOD (ENGINE OPERATION) WHILE HDC IS COMMANDED "ON".

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

COMPLETE ELECTRICAL VERIFICATION, V41AAO.015B,C; V41AAO.035B,C; V41AAO.055B,C EVERY FLIGHT.

(E) OPERATIONAL USE

NO CREW ACTION CAN BE TAKEN.