

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - MAIN PROP. FMEA NO 05-6J -2063 -2 REV:06/20/88

ASSEMBLY : AFT LCA - 1, 2, 3 CRIT. FUNC: 1R
P/N RI : MC477-0263-0002 CRIT. HDW: 2
P/N VENDOR: VEHICLE 102 103 104
QUANTITY : 3 EFFECTIVITY: X X X
:THREE PHASE(S): PL LO X OO DO LS
:

REDUNDANCY SCREEN: A-PASS B-PASS C-PASS
PREPARED BY: APPROVED BY: APPROVED BY (NASA):
DES J. Brown DES [Signature] EPDC SSM [Signature]
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ITEM:

CONTROLLER, HYBRID DRIVER (HDC), TYPE III, GO2 FLOW CONTROL VALVE (LV53, 54, 55), CLOSE SOLENOID.

FUNCTION:

CONDUCTS MAIN BUS POWER TO GO2 FLOW CONTROL VALVE CLOSE SOLENOID. 54V76A121ARJ1(111), 55V76A122ARJ1(111), 56V76A123ARJ1(111).

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 ACTUATION OF ONE GO2 FLOW CONTROL VALVE CLOSE SOLENOID.
- (B) INADVERTENT CLOSING OF ONE GO2 FLOW CONTROL VALVE.
- (C,D) NO EFFECT - FIRST FAILURE.

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- (E) 1R/2, 1 SUCCESS PATH AFTER FIRST FAILURE.
TIME FRAME - ASCENT.
1) HDC FAILS "ON" CAUSING ONE GO2 FLOW CONTROL VALVE TO CLOSE.
2) INADVERTENT ACTUATION OF SECOND GO2 FLOW CONTROL VALVE CLOSE SOLENOID.

LOSS OF ET LO2 ULLAGE PRESSURE WILL RESULT IN VIOLATION OF TANK MINIMUM STRUCTURAL CAPABILITY REQUIREMENTS. MASS OF LO2 AND VEHICLE ACCELERATION SHOULD BE SUFFICIENT TO MAINTAIN PROPER ENGINE NPSP, DELAYING UNCONTAINED SSME SHUTDOWN DUE TO LOW NPSP UNTIL LATE IN POWERED FLIGHT. POSSIBLE LOSS OF CREW/VEHICLE.

DISPOSITION & RATIONALE:

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

(A-D) DISPOSITION AND RATIONALE:

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

(B) GROUND TURNAROUND TEST

ULL PRESS CNTL W/CK OUT CMDS V41ADO.010C, V41ADO.020C, V41ADO.030C EVERY FLIGHT.

(E) OPERATIONAL USE

NO CREW ACTION CAN BE TAKEN.