

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - MAIN PROP. FMEA NO 05-6J -2184 -1 REV:11/04/8

ASSEMBLY : AFT LCA-1, 2, & 3, AV BAY-4, 5, & 6 DIODE BOX CRIT. FUNC: 15
P/N RI : JANTXVIN5551 CRIT. HDW: 3
P/N VENDOR: VEHICLE 102 103 104
QUANTITY : 12 EFFECTIVITY: X X X
: TWELVE PHASE(S): PL X LO X OO DO LS
: 4 PER PREVALVE 1, 2, & 3

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

PREPARED BY: APPROVED BY: APPROVED BY (NASA):
DES J BROWN DES *[Signature]* EPDC SSM *[Signature]*
REL F DEFENSOR REL *[Signature]* MPS SSM *[Signature]*
QE D MASAI QE *[Signature]* EPDC REL *[Signature]*
MPS REL *[Signature]*

ITEM:

DIODE BLOCKING (3 AMP), MAINSTAGE MDM TO SWITCH COMMAND, LO2 PREVALVE 1, 2, & 3.

FUNCTION:

DIODE ISOLATES MANUAL SWITCH COMMAND FROM MDM, CONDUCTS MDM COMMAND TO INHIBIT HYBRID DRIVER CONTROLLER FOR CONTROL OF REDUNDANT POWER TO CLOSE SOLENOIDS FOR LO2 PREVALVE OPERATION. ALSO ISOLATES LO2 MANUAL SWITCH COMMAND FROM LH2 CIRCUIT. ALCA1 - J1(27), J1(31). ALCA2 - J1(27), J1(31). ALCA3 - J1(27), J1(31). 54V76A207 - J1(83), J1(111). 55V76A208-J1(83), J1(100). 56V76A209-J1(87), J1(92).

FAILURE MODE:

OPENS, FAILS OPEN, FAILS TO CONDUCT

CAUSE(S):

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 CLOSURE OF LO2 PREVALVE

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

(E) POSSIBLE LOSS OF CREW/VEHICLE AFTER THIRD FAILURE (SECOND AND THIRD FAILURES - TWO POLES OF MANUAL SWITCH CONTACT-TO-CONTACT SHORT DUE TO DUAL PIECE PART STRUCTURAL FAILURES. B AND C ROLLERS MOVE FROM GPC TO CLOSE) RESULTING IN PREMATURE LO2 PREVALVE CLOSURE WHILE ENGINE IS RUNNING. UNCONTAINED ENGINE DAMAGE DUE TO STARVATION CUTOFF. FAILS B SCREEN BECAUSE MAINSTAGE COMMANDS ARE NOT INSTRUMENTED.

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SUBSYSTEM :EPD&C - MAIN PROP. FMEA NO 05-6J -2184 -1 REV:11/04/87

DISPOSITION & RATIONALE:

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

(A-D) FOR DISPOSITION AND RATIONALE

REFER TO APPENDIX F, ITEM NO. 4 - DIODE.

(B) GROUND TURNAROUND TEST

PREVALVE CLOSE INHIBIT REDUNDANCY VERIFICATION AGO-070A-D, 80A-D,
90A-D EVERY FLIGHT.

(E) OPERATIONAL USE

NO CREW ACTION CAN BE TAKEN.

05-6J-288