

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - MAIN PROP. FMEA NO 05-6J -2182 -1 REV: 11/04/8

ASSEMBLY : APT LCA-1, 2, & 3, AV BAY 4, 5, & 6 DIODE BOX CRIT. FUNC: 1R
P/N RI : JANTXVLN3551 CRIT. HDW: 3
P/N VENDOR: VEHICLE 102 103 104
QUANTITY : 9 EFFECTIVITY: X X X
:NINE PHASE(S): PL X LO X OO DO LS
: 3 PER PREVALVE 1, 2, & 3

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

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] MPS REL [Signature]

ITEM:

DIODE, BLOCKING (3 AMP), OPEN MDM, HYBRID DRIVER CONTROLLER COMMAND, LO2 PREVALVE 1, 2, & 3.

FUNCTION:

DIODE ISOLATES MANUAL SWITCH COMMAND FROM MDM, CONDUCTS MDM COMMAND TO HYBRID DRIVER CONTROLLER FOR CONTROL OF REDUNDANT POWER TO OPEN SOLENOIDS FOR LO2 PREVALVE OPERATION. AV BAY 4, P140(81) & (95); BAY 5, P140(64) & (108); BAY 6, P140(78) & (64); 56V76A123-J1(37), 54V76A121-J1(37), 55V76A122-J1(37).

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) LOSS OF ONE OF TWO POWER PATHS TO OPEN SOLENOID.

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

(E) POSSIBLE LOSS OF CREW/VEHICLE AFTER THIRD FAILURE (SECOND FAILURE - LOSS OF SECOND POWER PATH TO OPEN SOLENOID, BISTABLE FEATURE MAINTAINS PREVALVE IN OPEN POSITION. THIRD FAILURE - PREMATURE ACTUATION OF CLOSE SOLENOID) RESULTING IN PREMATURE LO2 PREVALVE CLOSURE WHILE ENGINE IS RUNNING. UNCONTAINED ENGINE DAMAGE DUE TO STARVATION CUTOFF. FAILS B SCREEN BECAUSE REDUNDANT POWER PATH MASKS FAILURE. NOTE - BISTABLE FEATURE NOT DEMONSTRATED BY TEST (CERTIFIED BY ANALYSIS). A FULL FLOW DETENT VERIFICATION TEST IS SCHEDULED FOR GFY 1988.

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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
MDM COMMAND REDUNDANCY, V41AEO.380B,F,H,J; 400B,F,H,J; 420B,F,H,J
EVERY FLIGHT.

(E) OPERATIONAL USE
NO CREW ACTION CAN BE TAKEN.

05-6J-284