SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM :EPD&C - MAIN PROP. FMEA NO 05-6J -2393 -2 REV:11/04/87

ASSEMBLY :AFT PCA-4, 5, 6 CRIT. FUNC: 1R
P/N RI :JANTX1N1204RA CRIT. HDW: 3
P/N VENDOR: VEHICLE 102 103 104
QUANTITY :3 EFFECTIVITY: X X X
:THREE PHASE(S): PL X LO X OO DO LS
:1 PER LH2 PREVALVE 1, 2, 3

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

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

ITEM:
DIODE, BLOCKING (12 AMP), LH2 PREVALVE 1, 2,& 3, CLOSE COMMAND B RPC OUTPUT.

FUNCTION:
USED TO ISOLATE REDUNDANT MAIN BUS POWER TO A COMMON CLOSE SOLENOID. LOCATED AT RPC OUTPUT AHEAD OF CLOSE COMMAND C HDC. 54V76A134A4CR31, 55V76A135A4CR31, 56V76A136A4CR31.

FAILURE MODE:
SHORT, INTERNAL SHORT, CURRENT LEAKAGE

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

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

(A) LOSS OF BUS ISOLATION. NORMAL BUS IMBALANCE WILL CAUSE ONE RPC TO TRIP.

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

(E) POSSIBLE LOSS OF CREW/VEHICLE AFTER THIRD FAILURE (SECOND FAILURE - LOSS OF SECOND POWER PATH TO CLOSE SOLENOID. THIRD FAILURE - SSME SHUTDOWN WITH UNCONTAINED ENGINE DAMAGE REQUIRING LH2 PROPELLANT SUPPLY ISOLATION) DUE TO INABILITY TO CLOSE LH2 PREVALVE. FAILURE IS NOT READILY DETECTABLE IN FLIGHT DUE TO SERIES/PARALLEL CIRCUIT CONFIGURATION.

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM :EPD&C - MAIN PROP. FMEA NO 05-6J -2393 -2 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. 2 - DIODE, POWER-STUD MOUNTED.

(B) GROUND TURNAROUND TEST
MDM COMMAND REDUNDANCY, V41AEO.180G, 200G, 220G EVERY FLIGHT.

(E) OPERATIONAL USE
FLIGHT - NO CREW ACTION CAN BE TAKEN.
GROUND - IF A MAJOR LEAK IS DETECTED, CLOSE PREVALVES (PV4, 5, 6), LH2 17-INCH DISCONNECT (PD2), LH2 4-INCH RECIRC DISCONNECT (PD3), LH2 RECIRC VALVES (PV14-16); DRAIN MANIFOLD.