SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM :EPD&C - MAIN PROP. FMEA NO 05-6J -2077 -1 REV:11/04/87

ASSEMBLY :AFT PCA-4, 5,& 6 CRIT. FUNC: 1R
P/N RI :JANTX1N1204RA CRIT. HDW: 3
P/N VENDOR:
QUANTITY :12
:TWELVE
:4 PER PREVALVE

VEHICLE EFFECTIVITY:	102 X	103 X	104 X
PHASE(S):	PL X LO X OO	DO	LS

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

PREPARED BY:
DES J BROWN
REL F DEFENSOR
QE D MASAI

APPROVED BY:
DES
REL 12-5-87
QE

APPROVED BY (NASA):
EPDC SSM
MPS SSM
EPDC REL
MPS REL
QE

ITEM:
DIODE, ISOLATION (12 AMP), LO2 PREVALVE 1, 2,& 3, OPEN SOLENOID POWER, REMOTE POWER CONTROLLER OUTPUT.

FUNCTION:
DIODES USED TO ISOLATE REDUNDANT MAIN BUS POWER TO AN OPEN SOLENOID. LOCATED AT REMOTE POWER CONTROLLER OUTPUT AHEAD OF HYBRID DRIVER CONTROLLER IN EACH OF TWO OPEN SOLENOID CIRCUITS.
LO2 PREVALVE 1 - 54V76A134A4CR30, A4CR36, & 55V76A135A4CR34, A4CR35,
LO2 PREVALVE 2 - 55V76A135A4CR30, A4CR36, & 56V76A136A4CR34, A4CR35,
LO2 PREVALVE 3 - 54V76A134A4CR34, A4CR35, & 56V76A136A4CR30, A4CR36.

FAILURE MODE:
OPENS, FAILS OPEN, FAILS TO CONDUCT POWER.

CAUSE(S):
PIECE PART STRUCTURAL FAILURE, 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 THE 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.

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, V41AE0.380B,F,H,J; 400B,F,H,J; 420B,F,H,J
EVERY FLIGHT.

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