

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM :EPD&C - MAIN PROP. FMEA NO 05-6J -2233 -1 REV:06/20/88

ASSEMBLY :AFT PCA-2 & 3
 P/N RI :JANTX1N1204RA
 P/N VENDOR:
 QUANTITY :2
 :TWO
 :

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

CRIT. FUNC: 1R
 CRIT. HDW: 3

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

PREPARED BY:	APPROVED BY:	APPROVED BY (NASA):
DES <u>J.B. J BROWN</u>	DES <u>[Signature]</u>	EPDC SSM <u>[Signature]</u>
REL <u>[Signature]</u>	REL <u>[Signature]</u>	MPS SSM <u>[Signature]</u>
QE <u>D.M. D MASAI</u>	QE <u>[Signature]</u>	EPDC REL <u>[Signature]</u>
		MPS REL <u>[Signature]</u>

ITEM:
 DIODE, BLOCKING (12 AMP), POINT SENSOR ELECTRONICS BUS NO. 4 RPC OUTPUT.

FUNCTION:
 ISOLATES REDUNDANT MAIN BUS POWER TO POINT SENSOR ELECTRONICS BUS NO. 4. 55V76A132A3CR1, 56V76A133A3CR9.

FAILURE MODE:
 OPEN, FAILS TO CONDUCT.

CAUSE(S):
 STRUCTURAL FAILURE (MECHANICAL STRESS, VIBRATION), ELECTRICAL STRESS, THERMAL STRESS, PROCESSING ANOMALY.

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

(A) LOSS OF ONE OF TWO POWER PATHS TO POINT SENSOR ELECTRONICS BUS NO. 4.

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

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- (E) 1R/3, 3 SUCCESS PATHS AFTER FIRST FAILURE.
TIME FRAME - PRELAUNCH AND ASCENT.
1) DIODE FAILS OPEN, RESULTING IN LOSS OF ONE OF TWO POWER PATHS TO LO2 AND LH2 ECO SENSORS NO. 4.
2) PARALLEL POWER PATH FAILS, RESULTING IN LOSS OF LO2 AND LH2 ECO SENSOR NO. 4 CAPABILITY.
3,4) TWO OTHER LO2 OR LH2 ECO SENSORS FAIL WET.

PROPELLANT DEPLETION MECO COMMAND CAPABILITY WILL BE LOST. SYSTEM REQUIRES 2 LO2 OR 2 LH2 DRY SIGNALS AFTER ARM COMMAND BEFORE A PROPELLANT DEPLETION SSME SHUTDOWN COMMAND CAN BE GIVEN. PROPELLANT STARVATION RESULTS IN SSME PUMP CAVITATION AND UNCONTAINED ENGINE DAMAGE. POSSIBLE LOSS OF CREW/VEHICLE.

FAILS B SCREEN BECAUSE PARALLEL POWER PATH MASKS FAILURE.

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 MOUNT.

(B) GROUND TURNAROUND TEST

MPS SIG COND PWR CONTROL VERIF V41A10.080B, C EVERY FLIGHT.

(E) OPERATIONAL USE

NO CREW ACTION CAN BE TAKEN.

05-6J-370