SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM :EPD&C - AFT-RCS FMEA NO 05-6KA-2252 -2 REV:11/03/87

ASSEMBLY :AFT PCA 1,2,3
P/N RI :JANTX1N1204RA
P/N VENDOR:
QUANTITY :8
:EIGHT
:

CRIT. FUNC: 1R
CRIT. HDW: 3

VEHICLE EFFECTIVITY:	102	103	104
	X	X	X

PHASE(S): PL LO X OO X DO X LS

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

PREPARED BY:		APPROVED BY:	APPROVED BY (NASA):
DES	D SOVEREIGN	DES	SSM
REL	J BEEKMAN	REL	REL
QE		QE	QE

ITEM:
ISOLATION DIODE (12 AMP) - LEFT AND RIGHT AFT RCS HELIUM ISOLATION VALVE A AND B SOLENOID POWER CIRCUIT.

FUNCTION:
PROVIDES ISOLATION BETWEEN TWO POWER INPUT CIRCUITS TO THE "OPEN" SOLENOID COIL OF HELIUM ISOLATION VALVES A AND B FOR THE LEFT AND RIGHT AFT RCS PRESSURIZATION SYSTEMS.
OV-102 - 54V76A131A2CR5,6. 54V76A131A3CR4,5.
55V76A132A3CR22,23. 56V76A133A2CR15,16.
OV-103 & SUBS - 54V76A131A2CR14,15. 54V76A131A3CR4,5.
55V76A132A2CR22,A3CR23. 56V76A133CR15,16.

FAILURE MODE:
SHORT, INTERNAL SHORT, LOW BACK RESISTANCE.

CAUSE(S):
CONTAMINATION, THERMAL STRESS.

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

(A) SYSTEM DEGRADATION.

(B) LOSS OF REDUNDANT CIRCUIT ISOLATION WHEN VALVE SOLENOID IS ENERGIZED FROM THE ALTERNATE SOURCE. POSSIBLE LOSS OF REDUNDANCY IF SAME DIODE SHOULD SHORT TO GROUND AND PRECLUDE POWERING OF THE "OPENING" SOLENOID COIL. NO EFFECT, REDUNDANT PRESSURIZATION PATH (LEG B) WILL COMPLETE THE FUNCTION WHEN REQUIRED.

(C) NO EFFECT.

(D) NO EFFECT.

(E) FUNCTIONAL CRITICALITY EFFECT - POSSIBLE LOSS OF CREW/VEHICLE DUE TO LACK OF PRESSURIZATION TO PERFORM NOMINAL ENTRY. TWO OTHER FAILURES (SAME DIODE SHORT TO GROUND, "B" LEG REGULATOR CLOSES) ARE REQUIRED BEFORE TANK PRESSURIZATION FUNCTION IS LOST AND A NOMINAL ENTRY CANNOT BE PERFORMED. FAILURE IS NOT DETECTABLE IN-FLIGHT DUE TO LACK OF MONITORING MEASUREMENTS.

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 - STUD MOUNTED POWER DIODE

(B) GROUND TURNAROUND TEST
CANNOT CHECK OUT ON THE GROUND WITHOUT A MAJOR IMPACT ON THE TURNAROUND FLOW.

(E) OPERATIONAL USE
NO ACTION FOR FIRST FAILURE - NOT DETECTABLE. IF VALVE FAILS TO OPEN, USE REDUNDANT FLOW PATH.