SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM :EPD&C - ET UMBIL DOORS FMEA NO 05-6ED-2252C -2 REV:02/19/88

ASSEMBLY :AFT MCA 1,2,3
P/N RI :JANTXV1N4246
P/N VENDOR:
QUANTITY :4
:FOUR
:

CRIT. FUNC: 1R
CRIT. HDW: 3

VEHICLE EFFECTIVITY:	102	103	104
	X	X	X

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

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

PREPARED BY:		APPROVED BY:		APPROVED BY (NASA):	
DES	T BANHIDY	DES		SSM	
REL	H YEW	REL		REL	
QE	W HIGGINS	QE		QE	

EPDC Sec 3/8/98

EPDC REL 3/8/98

ITEM:
DIODE, BLOCKING LEFT/RIGHT DOOR CLOSE DRIVE CONTROL STIMULI CIRCUIT ISOLATION.

FUNCTION:
CONDUCTS REDUNDANT SIGNAL POWER TO THE HYBRID RELAY AND ISOLATES THE MANUAL SWITCH "CLOSE" LOGIC-SIGNAL FROM GPC "CLOSE" COMMAND LOGIC SIGNAL TO PREVENT INADVERTENT OPERATION OF THE RELAY. 54V76A114A2CR63, 55V76A115A1CR88 56V76A116A2CR8,52.

FAILURE MODE:
FAILS SHORTED, CONDUCTS IN REVERSE DIRECTION.

CAUSE(S):
MECHANICAL SHOCK, VIBRATION, THERMAL STRESS, ELECTRICAL STRESS, PROCESSING ANOMALY

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

(A,B) FIRST FAILURE - NO EFFECT. ISOLATION IS LOST BETWEEN RELAY STIMULI CIRCUITS FROM MDM'S AND MANUAL PANEL SWITCHES. UPON GPC COMMAND, SHORT OF DIODE CAUSES INADVERTENT ENERGIZING OF THE CLOSE RELAY WITHOUT THE ARM COMMAND. NO PREMATURE DOOR DRIVE OPERATION OCCURS SINCE EITHER C/L LATCHES OR CLOSE LATCHES MUST BE UNLATCHED BEFORE THE DOORS CAN BE MOVED. HOWEVER, CONTINUOUS MOTOR SPINNING WILL EVENTUALLY CAUSE DAMAGE TO THE MOTOR.

(C,D) FIRST FAILURE - NO EFFECT ON MISSION, CREW/VEHICLE.

(E) POSSIBLE LOSS OF CREW/VEHICLE THROUGH INADVERTENT ET DOOR OPERATION RESULTING IN STRUCTURAL DAMAGE CAUSED BY THERMAL EFFECTS DURING FLIGHT. REQUIRES THREE ADDITIONAL FAILURES (LOSS OF BOTH CENTERLINE LATCHES AND INADVERTENT GPC COMMANDS) BEFORE EFFECT IS MANIFESTED.

FAILS "B" SCREEN BECAUSE OF DIODE FAILED SHORT IS NOT DETECTABLE IN FLIGHT.

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. 3 - DIODE

(B) GROUND TURNAROUND TEST
VERIFY DIODE FUNCTION THROUGH ET DOOR SYSTEM GPC COMMAND INTEGRITY CHECK. GPC COMMANDS ARE SENT WITHOUT ARM COMMANDS AND PROPER MCA OP STATUS ARE VERIFIED. TESTS ARE PERFORMED FOR EVERY FLIGHT AND LRU REPLACEMENT.

(E) OPERATIONAL USE
NONE