SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM :R/RADAR & COM ANT DEPLOY FMEA NO 05-6EH-56055 -1 REV:05/21/90

ASSEMBLY :MID MCA 2 AND 4
P/N RI :ME451-0018-0200
P/N VENDOR:
QUANTITY :2
:TWO (1 PER MCA)
:

CRIT. FUNC: 1R
CRIT. HDW: 3

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

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

PREPARED BY:		APPROVED BY:	APPROVED BY (NASA):
DES	T BANHIDY	DES	SSM
REL	J RESSIA	REL	REL
QE	J COURSEN	QE	QE

EPDIC SSM
EPDIC SSE

ITEM:
FUSE, (1 AMP) - KU-BAND ANTENNA DEPLOYMENT INDICATION AND TRANSMIT SCA ENABLE CIRCUIT

FUNCTION:
PROVIDES OVERLOAD PROTECTION TO THE DISPLAY DEPLOY INDICATOR AND TRANSMIT SCAN ENABLE CIRCUIT TO THE EA-1 TO ALLOW ANTENNA TRANSMITTER TO OPERATE KU-BAND COMMUNICATION AND RADAR FUNCTIONS.
40V76A118F10, 40V76A120F10

FAILURE MODE:
FAILS OPEN, FAILS TO CONDUCT

CAUSE(S):
STRUCTURAL FAILURE, CONTAMINATION, VIBRATION, MECHANICAL SHOCK PROCESSING ANOMALY, THERMAL STRESS

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

(A) FIRST FAILURE - LOSS OF REDUNDANT PATH FOR "DEPLOYED" PANE INDICATION AND OF TRANSMIT SCAN ENABLE SIGNAL. AFTER TWO FAILURES, LOS OF "DEPLOYED" PANEL INDICATION AND TRANSMIT SCAN ENABLE SIGNAL.

(B) NO EFFECT - FIRST FAILURE. AFTER TWO FAILURES, S-BAND OR UHF WILL B REQUIRED FOR STATE VECTOR UPDATE.

(C) NO EFFECT - FIRST FAILURE. AFTER TWO FAILURES (DIODE OR FUSE I REDUNDANT CIRCUIT FAILS OPEN), LOSS OF MISSION REQUIRING HIGH DATA RAT AND RENDEZVOUS RADAR OPERATIONS DUE TO LOSS OF ABILITY TO UNLOCK GIMBALS POSITION THE ANTENNA. AND ACTIVATE THE TRANSMITTER.

(D,E) NO EFFECT - FIRST FAILURE. POSSIBLE LOSS OF CREW/VEHICLE AFT
FIVE FAILURES (FUSE FAILS OPEN, DIODE OR FUSE IN REDUNDANT CIRCUIT OPEN
LOSS OF TWO S-BAND OPERATIONS, LOSS OF UHF OPERATIONS) DUE TO THE LOSS
STATE VECTOR UPDATE CAPABILITY.

FIRST FAILURE IS NOT DETECTABLE IN FLIGHT BECAUSE THIS KU-BAND ANTENNA
"DEPLOYED" DISCRETE SIGNAL CIRCUIT IS PARALLEL REDUNDANT.

DISPOSITION & RATIONALE:
(A)DESIGN (B)TEST (C)INSPECTION (D)FAILURE HISTORY (E)OPERATIONAL USE:

(A-D) DISPOSITION AND RATIONALE
REFER TO APPENDIX D, ITEM NO. 4 - FUSE

(B) GROUND TURNAROUND TEST
"KU-BAND DEPLOY LIMIT SWITCH AND TALKBACK" VERIFIES THE INTEGRITY OF TH
KU-BAND ANTENNA DEPLOY LIMIT SWITCH AND THE TALKBACK FUNCTION CIRCUI
WHICH CONTAINS THE BLOCKING DIODE. THIS IS VERIFIED FOR FIRST FLIGHT
THEREAFTER, ON AN INTERVAL OF FIVE FLIGHTS, OR FOLLOWING LRU REPLACEMENT

(E) OPERATIONAL USE
NONE FOR REGAINING KU-BAND OPERATIONS. SECOND FAILURE RESULTS IN LOSS
MISSION IF KU-BAND OPERATIONS ARE REQUIRED. S-BAND AND UHF ARE BACK
PATHS FOR STATE VECTOR UPDATE.