

-SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - COMM. & TRACK. FMEA NO 05-6PR-53045 -1 REV:06/28/88

ASSEMBLY : MID PCA-2				CRIT. FUNC: 1R
P/N RI : ME451-0009-1007				CRIT. HDW: 2
P/N VENDOR:	VEHICLE	102	103	104
QUANTITY : 3	EFFECTIVITY:	X	X	X
: THREE	PHASE(S):	PL	LO	OO X DO LS

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

PREPARED BY:	APPROVED BY:	APPROVED BY (NASA):
DES H. D HADDAD	DES <i>Haddad 8/27/88</i>	SSM <i>M. B. ... 9/8/88</i>
REL <i>7-5-88</i> Y HARADA	REL <i>8-30-88</i>	REL <i>...</i>
QE	QE <i>...</i>	QE <i>...</i>

EPDC REL *...*
CIT-SSM *...*

ITEM: F45, F50, F54, FUSES, 20 AMPS, DEA & DMA HEATER POWER.

FUNCTION:
TWO FUSES PROTECT THE DEA HEATER CIRCUIT AND THE OTHER FUSE PROTECTS THE DMA HEATER CIRCUIT. RECEIVES POWER FROM 100 AMP FUSE 40V76A32F17 (FMEA # 05-6-2295). 40V76A26F45, F50, F54.

FAILURE MODE:
FAILS OPEN, FAILS TO CONDUCT, FAILS TO CLOSE

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

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

EFFECTS ON ABILITY TO CONTROL, POSITION, OR LOCK ANTENNA GIMBALS - 1R/2

- (A) NO EFFECT ON EPDC.
- (B) POSSIBLE LOSS OF ABILITY TO LOCK GIMBALS IF TEMPERATURES EXCEED OPERATIONAL LIMITS.
- (C,D) POSSIBLE LOSS OF CREW/VEHICLE AFTER TWO FAILURES IF DA CANNOT BE SECURED FOR REENTRY OR JETTISONED. REENTRY WITH GIMBALS UNLOCKED MAY RESULT IN DAMAGE TO THE RADIATOR.

EFFECTS ON MISSIONS REQUIRING KU-BAND SYSTEM SUPPORT - 2/2

- (A) NO EFFECT ON EPDC.
- (B) LOSS OF POWER TO DA (DMA/DEA) HEATERS.
- (C) POSSIBLE LOSS OF ALL MISSION OBJECTIVES REQUIRING KU-BAND COMM DATA PROCESSING OR RENDEZVOUS RADAR IF TEMPERATURES EXCEED OPERATIONAL LIMITS.

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(D) NO EFFECT.

EFFECTS ON PROVIDING DATA TO NSP FOR STATE VECTOR UPDATE - 1R/3

(A) NO EFFECT ON EPDC.

(B,C,D) LOSS OF ONE OF THREE REDUNDANT PATHS TO SUPPLY DATA TO NSP FOR STATE VECTOR UPDATE. UHF PROVIDES AN INDEPENDENT PATH FOR STATE VECTOR UPDATE. AFTER FOUR FAILURES POSSIBLE LOSS OF CREW/VEHICLE DUE TO LOSS OF STATE VECTOR UPDATE. NOTE- A SINGLE FAILURE OF A KU-BAND SPA DASH NUMBER -4001 CAN CAUSE THE LOSS OF POWER TO BOTH MSP'S, RESULTING IN ONLY ONE REMAINING PATH (UHF) TO UPDATE THE STATE VECTOR. THIS FAILURE CAN OCCUR DURING ANY MISSION PHASE. (KU-BAND POWERED ON OR OFF.)

DISPOSITION & RATIONALE:

(A) DESIGN (B) TEST (C) INSPECTION (D) FAILURE HISTORY (E) OPERATIONAL USE

(A,B,C,D) REFER TO APPENDIX D, ITEM # 2, FUSE, AXIAL LEAD CARTRIDGE

(B) TEST

GROUND TURNAROUND TEST- VERIFY CORRECT HEATER ELEMENT OPERATION- PERFORMED EVERY FLIGHT.

(E) OPERATIONAL USE

WORKAROUND TO REGAIN ABILITY TO CONTROL, POSITION, OR LOCK ANTENNA GIMBALS

TEMPERATURES WILL BE MONITORED AND THE ANTENNA GIMBALS WILL BE LOCKED BEFORE THE TEMPERATURES EXCEED THE OPERATIONAL LIMITS. IF TEMPERATURE MONITORING IS NOT POSSIBLE, THE ANTENNA GIMBALS WILL BE LOCKED.

WORKAROUND TO REGAIN SUPPORT OF MISSION OBJECTIVES

COMM: NONE. RADAR: TEMPERATURES WILL BE MONITORED AND THE ANTENNA GIMBALS WILL BE LOCKED BEFORE THE TEMPERATURES EXCEED THE OPERATIONAL LIMITS. IF TEMPERATURE MONITORING IS NOT POSSIBLE, THE ANTENNA GIMBALS WILL BE LOCKED. IF THE GIMBALS ARE LOCKED, ATTEMPT RENDEZVOUS WITH ALTERNATE SENSORS. USE BACK-UP RENDEZVOUS PROCEDURES.

WORKAROUND TO PROVIDE THE STATE VECTOR UPDATE

TEMPERATURES WILL BE MONITORED AND THE ANTENNA GIMBALS WILL BE LOCKED BEFORE THE TEMPERATURES EXCEED THE OPERATIONAL LIMITS. IF TEMPERATURE MONITORING IS NOT POSSIBLE, THE ANTENNA GIMBALS WILL BE LOCKED. IF THE GIMBALS ARE LOCKED, THE STATE VECTOR CAN BE UPDATED VIA THE NORMAL S-BAND COMMUNICATIONS LINK OR VIA UHF/AUDIO.