

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - COMM. & TRACK. FMEA NO 05-6PR-53067 -1 REV:06/28/88

ASSEMBLY : PNL A14 CRIT. FUNC: 2  
P/N RI : ME451-0018-0300 CRIT. HDW: 2  
P/N VENDOR: VEHICLE 102 103 104  
QUANTITY : 1 EFFECTIVITY: X X X  
: ONE PHASE(S): PL LO OO X DO LS

PREPARED BY: DES H. D. HADDOAD APPROVED BY: DES H. D. Haddock 5/27/88 REDUNDANCY SCREEN: A- B- C-  
REL 7-5-88 J Y HARADA 8-20-88 APPROVED BY (NASA): REL H. D. Haddock 9/1/88  
QE ... 8-20-88 QE ... 9/1/88

ITEM: F38, FUSE, 3 AMPS, TELEMETRY STATUS CIRCUIT PROTECTION

FUNCTION: PROTECTS 28 VDC POWER (CONTROL AB1) CIRCUIT TO RELAYS-40V76A26K6 AND K7 (FMEA # 05-6PR-53066-1). 36V73A14F38.

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/3

- (A) NO EFFECT ON EPDC.
- (B) POSSIBLE LOSS OF ABILITY TO LOCK GIMBALS IF TEMPERATURE EXCEEDS OPERATIONAL LIMITS.
- (C,D) POSSIBLE LOSS OF CREW/VEHICLE AFTER THREE FAILURES (RELAY, HEATER FAILURE, JETTISON) IF DA CANNOT BE SECURED FOR REENTRY OR JETTISONED. REENTRY WITH GIMBALS UNLOCKED MAY CAUSE DAMAGE TO THE RADIATOR.

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

- (A) NO EFFECT ON EPDC.
- (B) LOSS OF ABILITY TO MONITOR KU-BAND TEMPERATURES.
- (C) POSSIBLE LOSS OF MISSION OBJECTIVES REQUIRING KU-BAND.
- (D) NO EFFECT.

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

(A) NO EFFECT ON EPOC.

(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 NSP'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 # 4, FUSE, PLUG-IN TYPE

(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

IF THE TEMPERATURE MEASUREMENTS ARE LOST, THE ANTENNA GIMBALS WILL BE LOCKED AND THE DA WILL BE STOWED IN ACCORDANCE WITH THE FLIGHT RULE ANNEX.

WORKAROUND TO REGAIN SUPPORT OF MISSION OBJECTIVES

IF THE TEMPERATURE MEASUREMENTS ARE LOST, THE ANTENNA GIMBALS WILL BE LOCKED AND THE DA WILL BE STOWED IN ACCORDANCE WITH THE FLIGHT RULE ANNEX. COMM: IF THE GIMBALS MUST BE LOCKED, NONE. RADAR: IF THE GIMBALS MUST BE LOCKED, ATTEMPT RENDEZVOUS WITH ALTERNATE SENSORS. USE BACK-UP RENDEZVOUS PROCEDURES.

WORKAROUND TO PROVIDE THE STATE VECTOR UPDATE

IF THE TEMPERATURE MEASUREMENTS ARE LOST, THE ANTENNA GIMBALS WILL BE LOCKED AND THE DA WILL BE STOWED IN ACCORDANCE WITH THE FLIGHT RULE ANNEX. IF THE GIMBALS MUST BE LOCKED, THE STATE VECTOR CAN BE UPDATED VIA THE NORMAL S-BAND COMMUNICATIONS LINK OR VIA UHF/AUDIO.

05-6PR-24