

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - COMM. & TRACK. FMEA NO 05-6PR-54051 -1 REV:06/28/88

ASSEMBLY : PNL R15 CRIT. FUNC: 2
P/N RI : JANTXV1N5551 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 MADDAD
REL J Y HARADA
QE

REDUNDANCY SCREEN: A- B- C-
APPROVED BY: APPROVED BY (NASA):
DES *[Signature]* 5/27/88 SSN *[Signature]* 9/2/88
REL *[Signature]* 8-30-88 REL *[Signature]*
QE *[Signature]* 8/2/88 QE *[Signature]* 7/1/88
EPDC REL *[Signature]* 7/1/88
CIT SHM *[Signature]* 7/9/88

ITEM:
CRI, DIODE, 3 AMPS, TRANSIENT SUPPRESSION

FUNCTION:
PROVIDES TRANSIENT SUPPRESSION ON MAIN BUS B. THIS DIODE IS IN THE F1 CIRCUIT. 32V73A15A1CRI.

FAILURE MODE:
SHORT (END TO END)

CAUSE(S):
STRUCTURAL FAILURE, MECHANICAL STRESS, VIBRATION.

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) LOSS OF ABILITY TO LOCK GIMBALS IN COMM MODE. AFTER LOSS OF RADAR "ON", LOSS OF ABILITY TO LOCK GIMBALS, REAL-TIME DECISION REQUIRED TO PERFORM IN-FLIGHT MAINTENANCE PROCEDURE WITH EVA OR JETTISON THE DEPLOYED ASSEMBLY.
- (C,D) POSSIBLE LOSS OF CREW/VEHICLE AFTER THREE FAILURES IF THE DA CANNOT BE SECURED FOR REENTRY OR JETTISONED. REENTRY WITH THE 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,C) LOSS OF ALL MISSION OBJECTIVES REQUIRING KU-BAND COMM DATA PROCESSING OR RENDEZVOUS RADAR.
- (D) NO EFFECT.

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - COMM. & TRACK. FMEA NO 05-6PR-54051 -1 REV:06/28/88

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 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 F, ITEM # 4, DIODE

(B) TEST

GROUND TURNAROUND TEST - VERIFY FORWARD LINK OPERATION BY RECEIVING GROUND COMMAND TO CHANGE STEERING MODE. VERIFY RETURN LINK (FM/PM) OPERATION BY FRAME SYNC INDICATION OF 192 Kbps AT C & T STATION- PERFORMED EVERY FLIGHT.

(E) OPERATIONAL USE

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

LOCK GIMBALS AND STOW THE DEPLOYED ASSEMBLY WITH THE NORMAL STOW PROCEDURE WHICH IS PERFORMED IN THE RADAR-PANEL MODE.

WORKAROUND TO REGAIN SUPPORT OF MISSION OBJECTIVES

COMM: NONE. RADAR: ATTEMPT RENDEZVOUS WITH ALTERNATE SENSORS. USE BACK-UP RENDEZVOUS PROCEDURES.

WORKAROUND TO PROVIDE THE STATE VECTOR UPDATE

THE STATE VECTOR CAN BE UPDATED VIA THE NORMAL S-BAND COMMUNICATIONS LINK OR VIA UHF/AUDIO.