

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : COMMUNICATION & TRACKING FMEA NO 05-2R -5214 -2 REV:06/27/88

ASSEMBLY : PNL A1A1
P/N RI : ME452-0102-7106
P/N VENDOR:
QUANTITY : 1
: ONE
:
VEHICLE 102
EFFECTIVITY: X X X
PHASE(S): PL LO OO X DO LS
CRIT. FUNC: 1R
CRIT. HDW: 2

PREPARED BY: DES H D HADDAD
REL 7-5-88 J Y HARADA
QE J T COURSEN
REDUNDANCY SCREEN: A-PASS B-PASS C-PASS
APPROVED BY: DES Haddad 8/27/88
REL Harada 8-28-88
QE J. Courson 9-28-88
APPROVED BY (NASA): SSM John W. ... 9/9/88
REL ... 11/7/88
QE ... 11/18/88

ITEM:
A1S14, TOGGLE SWITCH, SP3T, KU-BAND A RADAR OUTPUT RF POWER

FUNCTION:
THE 3 SWITCH POSITIONS PROVIDE RADAR OUTPUT POWER COMMAND DISCRETES TO EA-1A - "RADAR POWER LOW", "RADAR POWER MEDIUM", AND "RADAR POWER HIGH".
36V73A1A1S14

FAILURE MODE:
SHORT-TO-CASE (GROUND).

CAUSE(S):
VIBRATION, MECHANICAL SHOCK, CONTAMINATION, PIECE PART STRUCTURAL FAILURE, PROCESSING ANOMALY.

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, B) LOSS OF ABILITY TO LOCK GIMBALS, REAL-TIME DECISION REQUIRED TO PERFORM IN-FLIGHT MAINTENANCE PROCEDURES OR JETTISON THE DEPLOYED ASSEMBLY.

(C, D) POSSIBLE LOSS OF CREW/VEHICLE AFTER TWO FAILURES 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, B, C) LOSS OF ALL MISSION OBJECTIVES REQUIRING KU-BAND COMM DATA PROCESSING OR RENDEZVOUS RADAR.

(D) NO EFFECT.

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

(A,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 A, ITEM # 1, TOGGLE SWITCH

(B) TEST

GROUND TURNAROUND TEST - MEASURE RF POWER IN COMM MODE AND VERIFY THAT RF POWER RESPONDS CORRECTLY TO HIGH, MEDIUM AND LOW PANEL COMMAND IN RADAR MODE - PERFORMED EVERY FLIGHT.

(E) OPERATIONAL USE

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

REAL-TIME DECISION TO PERFORM EA-1 ALTERNATE POWER IN-FLIGHT MAINTENANCE PROCEDURE TO LOCK THE GIMBALS AND STOP THE DA OR TO JETTISON THE DA.

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.