SHUTTLE CRITICAL ITEMS LIST — ORBITER

SUBSYSTEM :COMMUNICATION & TRACKING   FMEA NO 05-2R -5113 -2 REV:06/27/88

ASSEMBLY :PNL A1A1   CRIT. FUNC: 1R
P/N RI   :ME452-0102-7406   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
          :

                              REDUNDANCY SCREEN: A-PASS B-PASS C-PASS
PREPARED BY: APPROVED BY: APPROVED BY (NASA):
DES   H D HADDAD   DES Haddad 2/27/88 SSM 7/6/
REL 7-5-88 J Y HARADA   REL 8-30-88   REL 7/18/
QE   J T COURSEN   QE   Dan J Coursen 8-29-88 QE 9/8/88

ITEM:
  A1S13, TOGGLE SWITCH, 4P3T, KU-BAND A MODE

FUNCTION:
  THREE SWITCH POSITIONS ARE "COMM", "RADAR PASS", AND "RADAR COOP".
  SELECTS COMM "ON", RADAR PASSIVE TARGET "ON", RADAR ACTIVE TARGET "ON",
  WHEN "POWER ON" IS SELECTED BY S12. SELECTS "COMM STANDBY" OR "RADAR
  STANDBY" WHEN "POWER STANDBY" IS SELECTED BY S12. WHEN A RADAR "ON"
  MODE IS SELECTED, PROVIDES POWER TO RADAR OUTPUT SWITCH S14 AND THE
  CROSS POINTER M1. 36V73A1A1S13.

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 PROCEDURE WITH EVA 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.

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(D) NO EFFECT.

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 - ALL SWITCH POSITIONS ARE SELECTED AND CORRECT TELEMETRY RESPONSES VERIFIED - PERFORMED EVERY FLIGHT.

(E) OPERATIONAL USE

  WORKAROUND TO REGAIN ABILITY TO CONTROL, POSITION, OR LOCK ANTENNA GIMBALS
  REAL-TIME DECISION REQUIRED TO PERFORM THE GIMBAL LOCK IN-FLIGHT MAINTENANCE PROCEDURE WITH EVA 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.