

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : COMMUNICATION & TRACKING FMEA NO 05-2R -5105 -2 REV:06/27/88

ASSEMBLY : PNL A1A1				CRIT. FUNC:	2
P/N RI : ME452-0102-7101				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:		REDUNDANCY SCREEN:	A-	B-	C-
DES H D HADDAD		APPROVED BY:	APPROVED BY (NASA):		
REL <del>7-3-88</del> J Y HARADA		DES <u>H D Haddad 9/17/88</u>	SSM	<u>John A. Harpfi 9/19</u>	
QE J T COURSEN		REL <u>John O. R-20-88</u>	REL <u>[Signature]</u>	<u>9/21/88</u>	
		QE <u>John J. Courson 9/29/88</u>	QE <u>[Signature]</u>	<u>9/18/88</u>	

ITEM:  
TOGGLE SWITCH, MANUAL SLEW A1S4, TOGGLE SWITCHES, MANUAL ANTENNA SLEW CONTROL.

FUNCTION:  
PANEL SWITCH CONTROLS MANUAL SLEW RATE OF THE ANTENNA. 36V73A1A1S4, SPDT, COMMANDS FAST OR SLOW SLEW RATE.

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/3

(A,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 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- ALL SWITCH POSITIONS ARE SELECTED AND CORRECT TELEMETRY RESPONSE VERIFIED - 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 STATE VECTOR UPDATE

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