

## SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : COMMUNICATION &amp; TRACKING FMEA NO 05-26 -23510 -3 REV: 01/05/88

ASSEMBLY : PNL C3A7		CRIT. FUNC:	2	
P/N RI : ME452-0093-5042		CRIT. HDW:	2	
P/N VENDOR:	VEHICLE	102	103	104
QUANTITY : 1 (ONE)	EFFECTIVITY:	X	X	X
: 2 POLES EACH STR 1/STR 2	PHASE(S):	PL	LO X	OO X DO X LS
: 1 SWITCH SCAN POLE				

	REDUNDANCY SCREEN:	A-	B-	C-
PREPARED BY:	APPROVED BY:	APPROVED BY (NASA):		
DES <i>M. Zelon</i> 1/5/88 M ZELON	DES <i>M. Alvarez</i> 1/7/88	SSM	<i>P.E. Shub</i>	<i>2/2/88</i>
REL <i>M. Alvarez</i> 1/5/88 M ALVAREZ	REL <i>M. Alvarez</i> 1-12-88	REL	<i>M. Alvarez</i>	<i>1/2/88</i>
QE <i>J. Courson</i> 1/11/88 J COURSON	QE <i>J. Courson</i>	QE	<i>J. Courson</i>	

## ITEM:

SWITCH FM ANT SELECT ROTARY SWITCH, 5 POLE, 9 POSITION, S-BAND FM ANTENNA SELECT.

## FUNCTION:

PROVIDES PANEL CAPABILITY FOR S-BAND FM ANTENNA SELECTION AND CONTROL OF THE BEAM POSITION (FORWARD OR AFT) OF THE SELECTED ANTENNA (DUAL SWITCH BEAM). PROVIDES A SPECIAL SWITCH POSITION FOR ENABLING GPC CONTROL OF THE ANTENNA SELECTION AND BEAM POSITION. ALL THE PANEL CONTROL SIGNALS ARE PROVIDED VIA 2 REDUNDANT SWITCH CIRCUITS CORRESPONDING TO THE REDUNDANT CONTROL ELECTRONICS IN THE RF SWITCH ASSEMBLY AND IN THE SWITCH BEAM CONTROL ASSEMBLY. 35V72A2A7S10.

## FAILURE MODE:

LOSS OF FUNCTION, JAMS OR TWO OR MORE POLES SHORT TO GROUND WHEN IN A MANUAL ANTENNA SELECT POSITION.

## CAUSE(S):

VIBRATION, MECHANICAL SHOCK, CONTAMINATION, MISHANDLING, PIECE-PART STRUCTURAL FAILURE.

## EFFECT(S) ON:

(A) SUBSYSTEM (B) INTERFACES (C) MISSION (D) CREW/VEHICLE

(A, B) LOSS OF ANTENNA/BEAM SELECTION CAPABILITY FOR THE S-BAND FM QUAD ANTENNAS. FAILS TO A SPECIFIC ANTENNA AND BEAM.

(C) LOSS OF PRIME MISSION OBJECTIVE SINCE ATTITUDE CONTROL IS REQUIRED TO MAINTAIN TDRS COMMUNICATION.

(D) NO EFFECT.

## DISPOSITION &amp; RATIONALE:

(A) DESIGN (B) TEST (C) INSPECTION (D) FAILURE HISTORY (E) OPERATIONAL USE

(A, B, C, D) REFER TO APPENDIX A, ITEM #2, ROTARY SWITCH.

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(B) TEST

GROUND TURNAROUND TEST - VERIFY COMMAND AND DATA ACCEPTANCE, ALSO, POWER OUTPUT STDN-HI; PERFORMED EVERY FLIGHT.

(E) OPERATIONAL USE

NO CREW CORRECTIVE ACTION AVAILABLE TO RECOVER ANTENNA SELECT CAPABILITY. ANY SELECTED ANTENNA MAY BE GIVEN LINE OF SIGHT ORIENTATION WITH THE TARGET STATION, BY CHANGING THE ATTITUDE OF THE VEHICLE. THIS IS SUFFICIENT TO MAINTAIN S-BAND COMMUNICATION WITH ANY ANTENNA CONFIGURATION - HOWEVER, A CHANGE IN THE ATTITUDE OF THE VEHICLE COULD IMPACT MISSION OBJECTIVES.