

SM-TLE CRITICAL ITEMS LIST - RBITER

107

SUBSYSTEM : R/RADAR & COM ANT DEPLOY FMEA NO 05-6EH-56000 -1 REV:05/21/90

ASSEMBLY : RT SD CONSOLE, PNL R13

P/N RI : ME452-0102-7406

P/N VENDOR:

QUANTITY : 1
: ONE

VEHICLE	102	103	104
EFFECTIVITY:	X	X	X
PHASE(S):	PL	LO	OO X DO LS

CRIT. FUNC: 1R

CRIT. HDW: 2

PREPARED BY:

DES T BANHIDY
REL JAR 3-21-90 J RESSIA
QE J COURSEN

APPROVED BY:

DES *[Signature]*
REL *[Signature]* 5-3-90
QE *[Signature]* 5-21-90

REDUNDANCY SCREEN: A-PASS B-PASS C-PASS

APPROVED BY (NASA):

SSM *[Signature]*
REL *[Signature]*
QE *[Signature]*

EPDSC SSM: *[Signature]*
EPDSC SSG: *[Signature]*
7-13-90

ITEM:

SWITCH, TOGGLE - DEPLOY/GND/STOW

FUNCTION:

PROVIDES SIGNAL TO EA-1 ANTENNA CONTROL CIRCUIT FOR STOW SEQUENCE TO PROVIDE GIMBAL LOCK INITIATE AND PROVIDES COMMAND DISCRETES TO THE MC INITIATIONS OF STOW/DEPLOY SEQUENCES. 32V73A13A2S6

FAILURE MODE:

FAILS OPEN, SHORT-TO-CASE (GROUND), PREMATURE OPEN

CAUSE(S):

PIECE-PART STRUCTURAL FAILURE, CONTAMINATION, VIBRATION, MECHANICAL SHOCK, PROCESSING ANOMALY, THERMAL STRESS (EXCLUDE "THERMAL STRESS" FROM "SHORT-TO-CASE" FAILURE MODE)

EFFECT(S) ON:

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

(A) FIRST FAILURE - LOSS OF COMMAND CAPABILITY TO NORMALLY STOW OR DEPLOY THE DEPLOYED ASSEMBLY. IF FAILURE OCCURS WITH THE SWITCH IN THE DEPLOY POSITION WHILE THE DEPLOYED ASSEMBLY IS PARTIALLY DEPLOYED, JETTISON WILL BE REQUIRED.

(B) FIRST FAILURE - LOSS OF COMMAND CAPABILITY TO NORMALLY STOW OR DEPLOY THE DEPLOYED ASSEMBLY. IF FAILURE RESULTS IN INABILITY TO DEPLOY, S-BAND OR UHF COMMUNICATION WILL BE REQUIRED FOR STATE VECTOR UPDATE. IF FAILURE RESULTS IN INABILITY TO STOW, BUT OCCURS AFTER GIMBAL LOCK SEQUENCE IS COMPLETED, THE DIRECT STOW SWITCH CAN BE USED TO STOW THE DEPLOYED ASSEMBLY. IF GIMBALS CANNOT BE VERIFIED TO BE LOCKED, JETTISON WILL BE REQUIRED. IF FAILURE IS DUE TO A TEASE CONDITION, THE STOW OF DEPLOY SEQUENCE CAN BE RE-INITIALIZED BY SWITCH RECYCLING. IF INTERMITTENT SWITCH OPERATION OCCURS DURING THE GIMBAL LOCK SEQUENCE AND RESULTS IN GIMBAL LOCK DAMAGE, JETTISON WILL BE REQUIRED.

(C) FIRST FAILURE - LOSS OF DEPLOY CAPABILITY RESULTS IN THE LOSS OF A MISSION THAT REQUIRES KU-BAND OPERATIONS.

(D) NO EFFECT - FIRST FAILURE. POSSIBLE LOSS OF CREW/VEHICLE AFTER TWO FAILURES (INABILITY TO PROVIDE A BOOM STOW INITIATE SIGNAL TO PERFORM THE GIMBAL LOCK OPERATION (PREVENTING THE PROPER STOWING OF THE DEPLOYED ASSEMBLY) DUE TO THE SWITCH FAILING OPEN OR SHORTING TO GROUND, AND LOSS OF DEPLOYED ASSEMBLY JETTISON CAPABILITY).

DISPOSITION & RATIONALE:

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

(A-D) DISPOSITION AND RATIONALE

REFER TO APPENDIX A, ITEM NO. 1 - TOGGLE SWITCH

(B) GROUND TURNAROUND TEST

"KU-BAND ANTENNA DEPLOY MOTOR 1 AND 2" VERIFIES THAT MOTORS 1 AND 2 DEPLOY WITHIN SPECIFIED OPERATING TIMES, AND "KU-BAND ANTENNA STOW MOTOR 1 AND 2" VERIFIES THAT MOTORS 1 AND 2 STOW WITHIN SPECIFIED OPERATING TIMES. STOW/DEPLOY MOTORS PERFORMANCE IS VERIFIED DURING IN-FLIGHT OPERATION. ON GROUND TESTING WOULD BE ACCOMPLISHED WHEN A VALID VERIFICATION IS UNOBTAINABLE DURING FLIGHT, OR FOLLOWING LRU REPLACEMENT. ALSO, SINGLE MOTOR OPERATION IS VERIFIED EVERY FLOW: DEPLOY MOTOR 1/STOW MOTOR 2 IS VERIFIED ON ODD FLOWS; AND DEPLOY MOTOR 2/STOW MOTOR 1 IS VERIFIED ON EVEN FLOWS.

(E) OPERATIONAL USE

FAILURE WILL BE APPARENT FROM LOSS OF ABILITY TO DRIVE ANTENNA IN THE COMMANDED DIRECTION. CONTINGENCY PROCEDURES WHICH DO NOT JEOPARDIZE FLIGHT SAFETY WILL BE CONSIDERED IF TIME IS AVAILABLE. AN IN-FLIGHT MAINTENANCE PROCEDURE IS AVAILABLE ON BOARD TO BYPASS A FAILED SWITCH IF THE DEPLOYED ASSEMBLY CANNOT BE DEPLOYED. S-BAND AND UHF COMMUNICATION CAN BE USED FOR STATE VECTOR UPDATE. IF THE DEPLOYED ASSEMBLY CANNOT BE STOWED, JETTISON WILL BE REQUIRED. IF THE SWITCH FAILURE IS THE RESULT OF A TEASE FAILURE AND IS REVERSIBLE, SWITCH RECYCLING ENTAILS OBSERVANCE OF TIME-DELAY RESTRICTIONS AND SHOULD BE COORDINATED WITH MCC ELEMENTS.