

SH. TITLE CRITICAL ITEMS LIST - RBITER

SUBSYSTEM : R/RADAR & COM ANT DEPLOY FMEA NO 05-6EH-56011 -1 REV:05/21/90

ASSEMBLY : MID MCA 2 AND 4	CRIT. FUNC: 1R
P/N RI : JANTXVIN4246	CRIT. HDW: 3
P/N VENDOR:	VEHICLE 102 103 104
QUANTITY : 2	EFFECTIVITY: X X X
: TWO (1 PER MCA)	PHASE(S): PL LO OO X DO LS

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

PREPARED BY:	APPROVED BY:	APPROVED BY (NASA):
DES T BANHIDY	DES <i>[Signature]</i>	SSM <i>[Signature]</i>
REL <i>[Signature]</i> 5-21-90	REL <i>[Signature]</i> 5-21-90	REL <i>[Signature]</i>
QE J COURSEN	QE <i>[Signature]</i> 5-21-90	QE <i>[Signature]</i> 6/22/90

GDJSC SSM: *[Signature]*  
 EPJSC SSE: *[Signature]* 7-1-90

ITEM: DIODE, ISOLATION (1 AMP) - KU-BAND BOOM STOW ENABLE II EXCITATION

FUNCTION:  
 PROVIDES REVERSE CURRENT PROTECTION AND CONDUCTS POWER TO THE BOOM STOW ENABLE II EXCITATION SIGNAL CIRCUIT.  
 (102) - M-MCA-2, 40V76A118A1CR16; M-MCA-4, 40V76A120A1CR48  
 (103,104) - M-MCA-2, 40V76A118A1CR46; M-MCA-4, 40V76A120A1CR48

FAILURE MODE:  
OPEN, FAILS TO CONDUCT

CAUSE(S):  
STRUCTURAL FAILURE, MECHANICAL STRESS, VIBRATION, ELECTRICAL STRESS  
THERMAL STRESS, PROCESSING ANOMALY

EFFECT(S) ON:  
 (A) SUBSYSTEM (B) INTERFACES (C) MISSION (D) CREW/VEHICLE (E) FUNCTIONAL CRITICALITY:

(A) FIRST FAILURE - LOSS OF ONE DIODE WILL RESULT IN THE LOSS OF REDUNDANCY. LOSS OF THE SECOND DIODE WILL RESULT IN LOSS OF NORMAL STOW CAPABILITY.

(B) NO EFFECT- FIRST FAILURE. AFTER TWO FAILURES, IF THE GIMBALS ARE VERIFIED TO BE LOCKED, THE DIRECT STOW SWITCH CAN BE USED TO STOW THE DEPLOYED ASSEMBLY. IF GIMBALS CANNOT BE VERIFIED TO BE LOCKED, JETTISON WILL BE REQUIRED.

(C,D,E) NO EFFECT - FIRST FAILURE. POSSIBLE LOSS OF CREW/VEHICLE AFTER FOUR FAILURES (DIODE FAILS OPEN, REDUNDANT DIODE FAILS OPEN, DIRECT STOW SWITCH FAILS OPEN LOSING ALL CAPABILITY TO STOW THE DEPLOYED ASSEMBLY, LOSS OF DEPLOYED ASSEMBLY JETTISON CAPABILITY) DUE TO THE LOSS OF ABILITY TO CLOSE THE PAYLOAD BAY DOORS

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FAILURE IS NOT DETECTABLE IN FLIGHT DUE TO THE PARALLEL REDUNDANCY POWER SOURCES FOR THE BOOM STOW ENABLE II EXCITATION CIRCUIT.

**DISPOSITION & RATIONALE:**

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

**(A-D) DISPOSITION AND RATIONALE**

REFER TO APPENDIX F, ITEM NO. 3 - DIODE

**(B) GROUND TURNAROUND TEST**

"KU-BAND BOOM STOW ENABLE II" VERIFIES THE INTEGRITY OF THE KU-BAND ANTENNA BOOM STOW ENABLE II FUNCTION BY USING BUS ISOLATION. THIS IS VERIFIED FOR FIRST FLIGHT; THEREAFTER, ON AN INTERVAL OF FIVE FLIGHTS, FOLLOWING LRU REPLACEMENT. TESTS WILL DETECT THE FAILED OPEN FAILURE MODE OF THE BOOM STOW ENABLE II EXCITATION SIGNAL CIRCUIT CONTAINING THE ISOLATION DIODE.

**(E) OPERATIONAL USE**

SECOND FAILURE RESULTS IN LOSS OF BOOM STOW ENABLE II DISCRETE WHICH CAUSES LOSS OF ABILITY TO DRIVE THE STOW MOTORS USING THE "DEPLOY/GND/STOW" SWITCH. THE "DEPLOY/GND/STOW" SWITCH, HOWEVER, CAN STILL BE USED TO COMMAND THE GIMBAL LOCK SEQUENCE FOR LOCKING THE GIMBAL BUT THE DIRECT STOW SWITCH WILL BE USED FOR STOWING THE DEPLOYED ASSEMBLY. IF THE DEPLOYED ASSEMBLY CANNOT BE STOWED OR THE GIMBAL CANNOT BE LOCKED FOR ENTRY, THE DEPLOYED ASSEMBLY WILL BE JETTISONED.