SF TTLE CRITICAL ITEMS LIST - RBITER

SUBSYSTEM :R/RADAR & COM ANT DEPLOY FMEA NO 05-6EH-56009 -2 REV:05/21/90

ASSEMBLY :MID MCA 2 AND 4
P/N RI :JANTXV1N4246
P/N VENDOR:
QUANTITY :2
:TWO (1 PER MCA)
:

CRIT. FUNC: 1R
CRIT. HDW: 3

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

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

PREPARED BY:
DES T BANHIDY
REL 5-21-90 J RESSIA
QE J COURSEN

APPROVED BY:
DES
REL 5-31-90
QE 5-21-90

APPROVED BY (NASA):
SSM
REL
QE 5/24/90
EPDSC SSM
EPDSC SSE L. D. Capps for Scott Wade 5-24-90

ITEM:
DIODE (1 AMP) - KU-BAND BOOM STOW ENABLE II CIRCUIT

FUNCTION:
PROVIDES REVERSE CURRENT PROTECTION AND CONDUCTS POWER TO HYBRID RELAY WHICH ENERGIZES STOW MOTORS AS A RESULT OF A GIMBAL LOCKPIN ACTUATING MICROSWITCH WHICH VERIFIES LOCKED GIMBALS.
(102) - 40V76A118A1CR30, 40V76A120A1CR21
(103,104) - 40V76A118A1CR29, 40V76A120A1CR21

FAILURE MODE:
SHORT (END TO END)

CAUSE(S):
STRUCTURAL FAILURE, MECHANICAL STRESS, VIBRATION, CONTAMINATION 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 ISOLATION BETWEEN THE DIRECT STOW CIRCUIT AND THE BOOM STOW ENABLE II SIGNAL CIRCUIT. AFTER TWO FAILURES, CONTRO BUSES CA2 AND BC2 ARE TIED TOGETHER (IN ONE DIRECTION) THROUGH THE DIREC STOW SWITCH. AFTER THREE FAILURES, LOSS OF DIRECT STOW CAPABILITY.

(B) NO EFFECT - FIRST AND SECOND FAILURES. AFTER THREE FAILURES, LOSS O BACKUP (DIRECT STOW CAPABILITY) FOR NORMAL STOW WILL OCCUR. AFTER FOU FAILURES, JETTISON WILL BE REQUIRED.

(C,D,E) NO EFFECT - FIRST FAILURE. POSSIBLE LOSS OF CREW/VEHICLE AFTE FIVE FAILURES (DIODE FAILS SHORT, (DIRECT STOW LOGIC) DIODE SHORTS T LOSE BUS ISOLATION, EITHER BUS CA2 OR BC2 SHORTS TO GROUND, ONE CONTAC SET OF THE "DEPLOY/GND/STOW" SWITCH FAILS OPEN TO LOSE NORMAL STOW

CAPABILITY (CLOSING THE DIRECT STOW SWITCH WILL CAUSE TWO FUSES TO OPEN LOSING ALL STOW CAPABILITY OF THE DEPLOYED ASSEMBLY), AND LOSS DEPLOYED ASSEMBLY JETTISON CAPABILITY) DUE TO THE LOSS OF ABILITY TO CLOSE THE PAYLOAD BAY DOORS.

FAILURE IS NOT DETECTABLE DURING FLIGHT SINCE THE FAIL SHORT MODE OF THIS DIODE DOES NOT AFFECT THE FUNCTIONAL OPERATION UNLESS THERE ARE ADDITIONAL ASSOCIATED FAILURES.

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 DIRECT STOW" VERIFIES THE KU-BAND DIRECT STOW FUNCTION FOR THE DEPLOYED ASSEMBLY AND THE INTEGRITY OF THE CIRCUIT CONTAINING THE BOOM STOW ENABLE II BLOCKING DIODE WITH GIMBALS LOCKED AND BOOM STOW I AND II OFF. THIS IS VERIFIED FOR FIRST FLIGHT; THEREAFTER, ON AN INTERVAL OF FIVE FLIGHTS, OR FOLLOWING LRU REPLACEMENT. THIS TEST FREQUENCY REFLECTS THE CURRENT OMRSD AND REQUIRES A MASTER VERIFICATION PLAN WAIVER.

(E) OPERATIONAL USE
AFTER THE FOURTH FAILURE (KU-BAND "DEPLOY/GND/STOW" SWITCH) IF TIME PERMITS, AN IN-FLIGHT MAINTENANCE PROCEDURE CAN BE PERFORMED TO BYPASS FAILURE OF THIS SWITCH. IF THE IN-FLIGHT MAINTENANCE PROCEDURE CANNOT BE PERFORMED, THE DEPLOYED ASSEMBLY WILL BE JETTISONED.