ST TTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM :R/RADAR & COM ANT DEPLOY FMEA NO 05-6EH-56007 ~2 REV:05/21/9

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
	X	X	X

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	J.A.S. 5-24-90	SSM	
REL GHR 6-21-90	J RESSIA	REL	5-24-90	REL	
QE	J COURSEN	QE	5-21-90	QE	

EPDSC SSM:
EPDSLSS=

ITEM:
DIODE (1 AMP) - BOOM STOW ENABLE I

FUNCTION:
PROVIDES REVERSE CURRENT PROTECTION AND POWER TO DRIVER HYBRID RELA WHICH ENERGIZE STOW MOTORS AS A RESULT OF A SUCCESSFULLY COMPLETE FIRMWARE WIGGLE TEST WHICH VERIFIES LOCKED GIMBALS.
(102) - M-MCA-2, 40V76A118A1CR34; M-MCA-4, 40V76A120A1CR10
(103, 104) - M-MCA-2, 40V76A118A1CR5; M-MCA-4, 40V76A120A1CR10

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 I 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, NORMA STOW WILL BE REQUIRED. AFTER FOUR 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 NORMAL SWITCH FAILS OPEN TO LOSE NORMAL STOW CAPABILITY (CLOSIN THE DIRECT STOW SWITCH WILL CAUSE TWO FUSES TO OPEN LOSING ALL STOW

CAPABILITY OF THE DEPLOYED ASSEMBLY), AND LOSS OF DEPLOYED ASSEMB JETTISON CAPABILITY) DUE TO THE LOSS OF ABILITY TO CLOSE THE PAYLOAD B DOORS.

FAILURE IS NOT DETECTABLE DURING FLIGHT SINCE THE FAIL SHORT MODE OF THIS DIODE DOES NOT AFFECT THE FUNCTIONAL OPERATION UNLESS THERE AR 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 TH DEPLOYED ASSEMBLY AND THE INTEGRITY OF THE CIRCUIT CONTAINING THE BOO STOW ENABLE 1 BLOCKING DIODE WITH GIMBALS LOCKED AND BOOM STOW 1 AND 1 OFF. THIS IS VERIFIED FOR FIRST FLIGHT; THEREAFTER, ON AN INTERVAL O FIVE FLIGHTS, OR FOLLOWING LRU REPLACEMENT. THIS TEST FREQUENCY REFLECT THE CURRENT OMRSD AND REQUIRES A MASTER VERIFICATION PLAN WAIVER.

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