

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - ADP DEPLOY & HTR FMRA NO 05-6EE-2008 -2 REV:05/11/90

ASSEMBLY : PANEL C3A5
P/N RI : JANTXVIN4246
P/N VENDOR:
QUANTITY : 8
: EIGHT

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

CRIT. FUNC: 1R
CRIT. HDW: 3

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

PREPARED BY: DES J KRAGER
REL T KIMURA
QE E GUTIERREZ

APPROVED BY: *[Signature]*
DES *[Signature]*
REL *[Signature]*
QE *[Signature]*

APPROVED BY (NASA):
SSM *[Signature]*
REL *[Signature]*
QE *[Signature]*

EPDC USE *[Signature]*
EPDC SSM *[Signature]*

ITEM: DIODE (1 AMP) - AIR DATA PROBE (ADP) LEFT AND RIGHT DEPLOY/HEATER CIRCUIT

FUNCTION: PROVIDES ISOLATION OF DEPLOY/HEATER CIRCUIT FROM DEPLOY FUNCTION. 35V73A3A5A1CR1, A1CR4, A2CR1, A2CR4, A3CR1, A3CR4, A4CR1, A4CR4

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 EFFECT:

(A, B) FIRST FAILURE - NO EFFECT. LOSS OF ISOLATION BETWEEN THE DEPLOY AND DEPLOY/HEATER CIRCUITS

(C, D) FIRST FAILURE - NO EFFECT

(E) POSSIBLE LOSS OF CREW/VEHICLE AFTER TWO OTHER FAILURES (DEPLOY CONTACT SET OF TOGGLE SWITCH FAILS CLOSED, SWITCH SCAN ISOLATION DIODE FAILS SHORT) DUE TO INADVERTENT DEPLOY AND BURN OFF OF ADP AND THERMALLY AFFECTING THE SURROUNDING STRUCTURE. PROPER LIMIT SWITCH INDICATIONS WITH ERRONEOUS DATA TO ADP CAN CAUSE A SIDE-TO-SIDE DILEMMA AND THE SOFTWARE DOWNMODES TO USING DEFAULT GAINS.

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

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DISPOSITION & RATIONALE:

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

(A-D) FOR DISPOSITION AND RATIONALE
REFER TO APPENDIX F, ITEM NO. 3 DIODE

(B) TEST

"DEPLOY RH ADP - MTR 1 AND 2", TESTS DEPLOY OF RIGHT HAND ADP AND OPERATING TIME.

"DEPLOY LH ADP - MTR 1 AND 2", TESTS DEPLOY OF LEFT HAND ADP AND OPERATING TIME. PUT IN DEPLOY POSITION AND VERIFY THAT DEPLOY HEAT SWITCH SCANS ARE OFF.

ABOVE TESTS ARE PERFORMED BY INFLIGHT CHECKOUT OR AFTER LRU REPLACEMENT.

(E) OPERATIONAL USE

THE PROBE FAILURE CAUSES A SIDE-TO-SIDE DILEMMA AND THE SOFTWARE DOWNMODES TO USING DEFAULT GAINS. THE CREW MUST MAINTAIN PITCH ATTITUDE WITHIN THETA LIMITS DISPLAYED ON CRT. CRT DISPLAYS ALPHA, MACH, AND ALTITUDE FROM EACH ADTA TO THE CREW. IF THE NAV DERIVED ALPHA, MACH, AND ALTITUDE DISPLAYED ON DEDICATED DISPLAYS (AMI, AVVI) ARE CORRECT, THE CREW CAN COMPARE THE ADTA DATA WITH THE NAV DERIVED DATA TO RESOLVE THE DILEMMA.