

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - OMS

FMEA NO 05-6L -2089 -1

REV:10/30/87

ASSEMBLY : AFT LCA 1,2,3

P/N RI : RWR80S1211FR

P/N VENDOR:

QUANTITY : 24

: TWENTY-FOUR

: (THREE PARALLEL PAIRS PER HEATER GROUP)

VEHICLE

102

CRIT. FUNC: 2R

CRIT. HDW: 3

103 104

EFFECTIVITY:

X

X

X

PHASE(S): PL

LO

OC

X

DO

LS

LS

PREPARED BY:

DES

D SOVEREIGN

REL

F DEFENSOR

QE

J COURSEN

REDUNDANCY SCREEN:

A-PASS B-FAIL C-PASS

APPROVED BY:

DES

D. J. R. Burr

APPROVED BY (NASA):

SSM

John Thomas

REL

W. J. C. Hove 11-1-87

REL

12-7-87

QE

DM/Will

QE

12-7-87

EPD&C SSM Approval by W.C. Stagg

ITEM:

RESISTOR, CURRENT LIMIT, 1.2 K OHM, 2 W - LEFT AND RIGHT OMS, GROUP 1 AND 2 HEATER CONTROL LOGIC CIRCUITS.

FUNCTION:

PROVIDES CURRENT LIMITING/CIRCUIT PROTECTION FOR THERMAL SWITCH/LOGIC CIRCUIT CONTROLS FOR THE LEFT AND RIGHT OMS, GROUP 1 AND 2 HEATERS. 54V76A121R(J3-101, 113, 118, 127). 54V76A121R (J4-8). 55V76A122R (J3-101, 113, 127). 55V76A122R (J4-8). 56V76A123R (J4-8). 56V76A123R (J3-101, 113).

FAILURE MODE:

FAILS OPEN.

CAUSE(S):

STRUCTURAL FAILURE, CONTAMINATION, VIBRATION, THERMAL STRESS.

EFFECT(S) ON:

(A) SUBSYSTEM CRITICALITY (B) INTERFACES (C) MISSION (D) CREW/VEHICLE (E) FUNCTIONAL

(A) LOSS OF REDUNDANCY - NO EFFECT.

(B) NO EFFECT, PARALLEL RESISTOR CAN PROVIDE THE COMPLETE FUNCTION. A SECOND RELATED FAILURE WOULD PARTIALLY DISABLE THE GROUP 1 OR 2 HEATERS.

(C,D) NO EFFECT.

(E) POSSIBLE LOSS OF MISSION OBJECTIVES DUE TO THE LOSS OF ELECTRICAL POWER FOR COMPLETION OF FUNCTION OF THERMAL SWITCH/LOGIC CIRCUIT CONTROLS. REQUIRES TWO OTHER FAILURES (LOSS OF PARALLEL RESISTOR, LOSS OF REDUNDANT GROUP HEATER SYSTEM) BEFORE THE EFFECT IS MANIFESTED. FAILURE IS NOT READILY DETECTABLE DURING FLIGHT BECAUSE OF LACK OF MONITORING MEASUREMENTS.

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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 E, ITEM NO. 3 - RESISTOR, WIRE WOUND.

(B) GROUND TURNAROUND TEST

V43CAO.070 - REDUNDANT CIRCUIT VERIFICATION (PERIODIC) - ORB/POD;
PERFORMED FOR FIRST FLIGHT AND AT 5 FLIGHT INTERVALS OR FOR LRU RETEST
PER FIGURE V43200.000 OR FOR ORBITER DISRUPTED COPPER PATHS. FUNCTIONAL
CHECKOUT OF HEATER CONTROL CIRCUIT PER FIGURE V43CAO.070-6.

V43CAO.075 - ELECTRICAL INTERFACE VERIFICATION ORB/POD; PERFORMED ON A
CONTINGENCY BASIS (POD REMOVAL AND REPLACEMENT). COPPER PATH
VERIFICATION OF HEATER CONTROL CIRCUIT INTERFACES.

(E) OPERATIONAL USE

NO ACTION FOR FIRST FAILURE - NOT DETECTABLE. FOR SECOND FAILURE, USE
REDUNDANT HEATER CIRCUIT.