

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - AUXILIARY PWR FMEA NO 05-6N -2059A -1 REV:08/02/90

ASSEMBLY : AFT LCA 1,2,3 CRIT. FUNC: 1a  
 P/N RI : MC477-0263-0002 CRIT. HDW: 2  
 P/N VENDOR: VEHICLE 102 103 104  
 QUANTITY : 24 EFFECTIVITY: X X X  
 : TWENTY FOUR PHASE(S): PL X LO X OO X DO X LS X

REDUNDANCY SCREEN: A-PASS B-PASS C-PASS  
 PREPARED BY: APPROVED BY: APPROVED BY (NASA):  
 DES T NGUYEN DES J.M. White 8.2.90 SSM Walter Scott 9/6/90  
 REL T KIMURA REL William C. ... 6.21.90 REL ...  
 QE J T COURSEN QE ... QE ...

ITEM:

CONTROLLER, HYBRID DRIVER, HDC TYPE 3 - AUXILIARY POWER UNIT (APU)  
 HEATERS TANK/FUEL LINE 1, 2, AND 3 (A AND B) POWER CIRCUITS

FUNCTION:

WITH THE PROPER STIMULI AND LOGIC THE HDC CONDUCTS MAIN BUS POWER TO THE TANK/FUEL LINE HEATERS (THERMOSTAT CONTROLLED).

54V76A121AR (J10-r), (J10-t), (J10-v), (J10-x), (J10-GG), (J10-JJ),  
 (J10-LL), (J10-NN);  
 55V76A122AR (J10-r), (J10-t), (J10-v), (J10-x), (J10-GG), (J10-JJ),  
 (J10-LL), (J10-NN);  
 56V76A123AR (J10-r), (J10-t), (J10-v), (J10-x), (J10-GG), (J10-  
 (J10-LL), (J10-NN)

FAILURE MODE:

LOSS OF OUTPUT, FAILS TO CONDUCT, FAILS TO TURN "ON"

CAUSE(S):

PIECE PART FAILURE, CONTAMINATION, VIBRATION, MECHANICAL SHOCK,  
 PROCESSING ANOMALY, THERMAL STRESS

EFFECT(S) ON:

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

CRITICALITY EFFECT:

(A) LOSS OF ABILITY TO APPLY POWER TO THE AFFECTED HEATER CIRCUIT.

(B) LOSS OF HEATER (A OR B) TO AFFECTED TANK/FUEL LINE.

(C,D) NO EFFECT - FIRST FAILURE

(E) POSSIBLE LOSS OF MISSION, CREW AND VEHICLE AFTER SECOND FAILURE (LOSS OF REDUNDANT TANK/FUEL LINE HEATERS) DUE TO FUEL (HYDRAZINE) FREEZING AND LINE RUPTURE UPON THAWING. ATTITUDE THERMAL CONDITIONING COULD BE USED TO PREVENT FREEZING.

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DISPOSITION & RATIONALE:

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

(A-D) DISPOSITION AND RATIONALE

REFER TO APPENDIX B, ITEM NO. 1 - HYBRID DRIVER

(B) TEST

APU 1/2/3 HEATER TEST BY COCKPIT COMMAND PERFORMED IN FLIGHT EVERY FLOW OR AFTER CIG RETEST.

(E) OPERATIONAL USE

FIRST FAILURE - MANUALLY SWITCH TO ALTERNATE HEATER. SECOND FAILURE- ATTEMPT ATTITUDE THERMAL CONDITIONING.