

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - AFT-RCS FMEA NO 05-6KA-2216 -1 REV: 11/03/87

ASSEMBLY : AFT LCA 1,2,3		CRIT. FUNC: 2
F/N RI : MC477-0263-0002		CRIT. HDW: 2
F/N VENDOR:	VEHICLE	102 103 104
QUANTITY : 8	EFFECTIVITY:	X X X
: EIGHT	PHASE(S):	PL LO OO X DO LS

PREPARED BY:	REDUNDANCY SCREEN:	A-	B-	C-
DES D SOVEREIGN	APPROVED BY:	APPROVED BY (NASA):		
REL J BEEKMAN	DES <u>D. S. R. Berman</u>	SSM	<u>[Signature]</u>	
QE	REL <u>M. J. ... 11-14-87</u>	REL <u>[Signature]</u>	<u>[Signature]</u>	
	QE <u>[Signature]</u>	QE <u>[Signature]</u>	<u>[Signature]</u>	

EDD&C SS&C General C. D. ...
7-12-87, 11-14-87

ITEM:
HYBRID DRIVER CONTROLLER (HDC) TYPE III - LEFT AND RIGHT AFT RCS
PRIMARY THRUSTER HEATER POWER CIRCUIT.

FUNCTION:
CONDUCTS (MANIFOLD 1 THROUGH 4) HEATER CIRCUIT CURRENT AND PROVIDES
PROTECTION OF CIRCUITRY.
54V76A121AR (J11-H', I'). 55V76A122AR (J11-F', G'). 56V76A123AR (J11-
F', G', H', X').

FAILURE MODE:
LOSS OF OUTPUT, FAILS TO CONDUCT, INADVERTENTLY OPENS.

CAUSE(S):
PIECE PART FAILURE, MECHANICAL AND THERMAL SHOCK, VIBRATION.

EFFECT(S) ON:
(A) SUBSYSTEM (B) INTERFACES (C) MISSION (D) CREW/VEHICLE

(A) LOSS OF CIRCUIT POWER TO AN AFFECTED HEATER GROUP.

(B) PARTIAL LOSS OF INTERFACE REDUNDANCY. THE AFFECTED SYSTEM HEATER
CIRCUIT CANNOT BE ENERGIZED.

(C) PERIODIC HOT FIRING OF PRIMARY THRUSTERS WILL BE REQUIRED TO MAINTAIN
THE THRUSTER TEMPERATURES ABOVE THE MINIMUM REQUIREMENT. CORRECTIVE
ACTION COULD DISRUPT MISSION OBJECTIVES. MICROGRAVITY EXPERIMENTS ARE
AFFECTED BY HOT FIRES. INCREASED PROPELLANT USAGE IS REQUIRED TO
MAINTAIN TEMPERATURES.

(D) NO EFFECT.

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DISPOSITION AND RATIONALE:

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

(A-D) FOR DISPOSITION AND RATIONALE, REFER TO APPENDIX B, ITEM NO. 1 - HYBRID DRIVER.

(B) GROUND TURNAROUND TEST

COMPONENT CHECKED OUT EVERY FLIGHT DURING GROUND TURNAROUND. THE TESTING CONSISTS OF CYCLING VALVE MANUAL SWITCHES AND/OR SENDING GPC (GENERAL PURPOSE COMPUTER) COMMANDS TO CYCLE VALVES OR HEATERS WHILE MONITORING VEHICLE INSTRUMENTATION TO DETERMINE IF COMPONENTS HAVE FAILED.

(E) OPERATIONAL USE

HOT FIRE JET AS REQUIRED TO MAINTAIN THRUSTER TEMPERATURE IN ACCEPTABLE RANGE. SOME MISSION OBJECTIVES MAY NOT BE MET DUE TO HIGHER PROPELLANT CONSUMPTION CAUSED BY PERIODIC PRIMARY THRUSTER HOT FIRE. MICROGRAVITY EXPERIMENTS WILL BE DISRUPTED DUE TO HIGHER ACCELERATION RATE OF PRIMARY THRUSTERS.