

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - AFT-RCS

FMEA NO 05-6KA-2322 -1

REV: 11/03/87

ASSEMBLY : AFT LCA 3
 P/N RI : MC477-0263-0002
 P/N VENDOR:
 QUANTITY : 1
 : ONE
 :

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

CRIT. FUNC: 2
 CRIT. HDW: 2

PREPARED BY:
 DES D SOVEREIGN
 REL J BEEKMAN
 QE

REDUNDANCY SCREEN: A- B- C-
 APPROVED BY:
 DES D. S. R. Bunn
 REL M. J. O. H. 11-14-87
 QE R. H. H. 11-17-87

APPROVED BY (NASA):
 SSM [Signature]
 REL [Signature]
 QE [Signature]
 EPD&C SH Source: A. J. [Signature]
 Date: 11/17/87

ITEM:

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

FUNCTION:

THE DRIVER CONDUCTS POWER TO ASSOCIATED VERNIER THRUSTER HEATER CIRCUITS BY CREW INITIATED SWITCH COMMAND.
 56V76A123AR (J8-73).

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) THE AFFECTED VERNIER THRUSTER HEATERS CANNOT BE ENERGIZED. LOW TEMPERATURE EFFECTS VERNIER OPERATION.
- (C) POSSIBLE LOSS OF INTERFACE FUNCTION IF LOW TEMPERATURE AFFECTS VERNIER THRUSTER OPERATION. POSSIBLE MISSION MODIFICATION OR EARLY MISSION TERMINATION DUE TO INABILITY TO USE VERNIER THRUSTERS. PRIMARY THRUSTERS WOULD BE REQUIRED, RESULTING IN HIGHER PROPELLANT CONSUMPTION RATES.
- (D) NO EFFECT

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SUBSYSTEM :EPD&C - AFT-RCS

FMEA NO 05-6KA-2222 -1

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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 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 GENERAL PURPOSE COMPUTER (GPC) COMMANDS TO CYCLE VALVES OR HEATERS WHILE MONITORING VEHICLE INSTRUMENTATION TO DETERMINE IF COMPONENTS HAVE FAILED.

(E) OPERATIONAL USE

IF VERNIER THRUSTER CAPABILITY IS LOST DUE TO COLD VERNIER TEMPERATURES, THE PRIMARY THRUSTERS CAN BE USED FOR THE VERNIER FUNCTION. SOME MISSION OBJECTIVES MAY NOT BE MET DUE TO HIGHER PROPELLANT CONSUMPTION RATE ON PRIMARY THRUSTERS. MICROGRAVITY EXPERIMENTS WILL BE DISRUPTED DUE TO HIGHER ACCELERATION RATE OF PRIMARY THRUSTERS.