

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - AFT-RCS FMEA NO 05-6KA-2185 -1 REV:03/08/88

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

REDUNDANCY SCREEN: A- B- C-
APPROVED BY: APPROVED BY (NASA):
DES D SOVEREIGN DES D. J. Sullivan SEM D. J. Sullivan 3/16/88
REL J BECKMAN REL James W. ... 3/15/88
QE J T COURSEN QE Charles W. ... 3/15/88
EPD&C REL ... 3/15/88
EPD&C SW ... 3/15/88

ITEM:
HYBRID DRIVER CONTROLLER (HDC) TYPE III - RIGHT AFT RCS REACTION JET DRIVER 2 VERNIER JETS.

FUNCTION:
CONTROLS MAIN BUS "B" POWER TO REACTION JET DRIVER AFT 2. THE HYBRID DRIVERS ARE IN SERIES TO PROVIDE REDUNDANCY AGAINST INADVERTENT POWER TO THE AFT RIGHT, RCS VERNIER JETS. 55V76A122 (J6-X,K).

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

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

EFFECT(S) ON:
(A) SUBSYSTEM (B) INTERFACES (C) MISSION (D) CREW/VEHICLE
(A) LOSS OF FUNCTION
(B) LOSS OF INTERFACE FUNCTION - LOSS OF DRIVER POWER TO REACTION JET DRIVER AFT 2 FOR AFT RIGHT RCS VERNIER JETS.
(C) POSSIBLE MISSION MODIFICATION OR EARLY MISSION TERMINATION DUE TO LOSS OF VERNIER THRUSTERS. NO OTHER REDUNDANT VERNIER THRUSTERS ARE AVAILABLE TO COMPLETE THE REQUIRED FUNCTIONS. PRIMARY THRUSTERS USAGE WILL RESULT IN HIGHER PROPELLANT CONSUMPTION RATE RESULTING IN EARLY MISSION TERMINATION.
(D) NO EFFECT.

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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 VIA THE GUIDANCE, NAVIGATION, AND CONTROL'S (GN&C) OPERATIONAL MAINTENANCE REQUIREMENTS AND SPECIFICATIONS DOCUMENT (OMRSD) REQUIREMENTS FOR CHECKING THE PRIMARY AND VERNIER REACTION JET DRIVER POWER. THE TESTING CONSISTS OF CYCLING THRUSTER REACTION JET DRIVER LOGIC AND DRIVER SWITCHES WHILE MONITORING VEHICLE INSTRUMENTATION TO DETERMINE IF COMPONENTS HAVE FAILED.

(E) OPERATIONAL USE

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.

05-6KA-78