

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - AFT-RCS

FMEA NO 05-6KA-2220 -2

REV: 11/03/87

ASSEMBLY : AFT LCA 1,2
 P/N RI : MC477-0262-0002
 P/N VENDOR:
 QUANTITY : 2
 : TWO
 :

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

CRIT. FUNC: 1R
 CRIT. HDW: 3

PREPARED BY:
 DES D SOVEREIGN
 REL J BECKMAN
 QE

REDUNDANCY SCREEN: A-PASS B-FAIL C-PASS
 APPROVED BY:
 DES D.S. R. Bunn
 REL M. J. O'Shea 11-16-87
 QE B. J. G. 11-17-87

APPROVED BY (NASA):
 SSM [Signature]
 REL [Signature]
 QE [Signature]
 EODC SSM [Signature]
 F-44 C. STAND

ITEM:

HYBRID DRIVER CONTROLLER (HDC) TYPE II - LEFT AND RIGHT AFT RCS
 REACTION JET DRIVER MANIFOLD L5/R5 1.125 SECOND TIME DELAY.

FUNCTION:

PROVIDES A TIME DELAY FOR INITIATING "ON" THE SECOND OF TWO SERIES SOLID STATE (REMOTE POWER CONTROLLER OR HYBRID DRIVER) SWITCHES USED TO ENERGIZE REACTION JET DRIVER AFT 1 AND 2 FOR MANIFOLDS L5 AND R5. VERNIER JET CONTROL.
 54V76A121AR (J4-7), 55V76A122AR (J4-7).

FAILURE MODE:

INADVERTENT OUTPUT, SHORTS, CONDUCTS PREMATURELY

CAUSE(S):

CONTAMINATION, PIECE PART SHOCK, VIBRATION. FAILURE, MECHANICAL SHOCK, THERMAL

EFFECT(S) ON:

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

(A) PREMATURE STIMULUS TO THE ASSOCIATED SOLID STATE (REMOTE POWER CONTROLLER OR HYBRID DRIVER) SWITCHES.

(B) THE SECOND SERIES SOLID STATE (REMOTE POWER CONTROLLER OR HYBRID DRIVER) SWITCHES IN THE AFFECTED REACTION JET DRIVER MANIFOLD DRIVER POWER CIRCUIT WILL BE COMMANDED "ON". NO EFFECT, BOTH SWITCHES MUST CONDUCT BEFORE THE FUNCTION IS INITIATED.

(C, D) NO EFFECT.

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(E) FUNCTIONAL CRITICALITY EFFECT - POSSIBLE LOSS OF CREW/VEHICLE DUE TO INADVERTENT VERNIER THRUSTER FIRING CAUSING LOSS OF PROPELLANT REQUIRED FOR ENTRY. REQUIRES 5 OTHER FAILURES (SOLID STATE SWITCH FAILS ON, REACTION JET DRIVER COMMAND, 2 ISOLATION VALVES FAIL OPEN, MAIN BUS FAIL ON) BEFORE EFFECT IS MANIFESTED. FIRST FAILURE OF STRING NOT DETECTABLE IN FLIGHT DUE TO LACK OF MONITORING MEASUREMENTS.

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

NO ACTION FOR FIRST FAILURE - NOT DETECTABLE. IF JET FAILS ON, ISOLATE FAILURE BY CLOSING ASSOCIATED MANIFOLD VALVE.