

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - AFT-RCS FMEA NO 05-6KA-2035 -1 REV:11/03/87

ASSEMBLY : PANEL 014, 015, 016
P/N RI : ME452-0102-7201
P/N VENDOR:
QUANTITY : 4
: FOUR
:

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

CRIT. FUNC: 1R
CRIT. HDW: 3

PREPARED BY:
DES D SOVEREIGN
REL J BEERMAN
QE

REDUNDANCY SCREEN:
APPROVED BY:
DES D.S. [Signature]
REL [Signature] 11-21-87
QE [Signature]

A-PASS B-FAIL C-PASS
APPROVED BY (NASA):
SSM [Signature]
REL [Signature]
QE [Signature]

epd&c 504 final [Signature]
12-10-87

ITEM:

TOGGLE SWITCH (2P2T) HERMETIC SEAL - LEFT AND RIGHT AFT RCS REACTION JET DRIVER 1 AND 2 (MANIFOLD 1 THROUGH 5) POWER SUPPLY LOGIC CIRCUIT.

FUNCTION:

PROVIDES THE CREW WITH THE CAPABILITY TO SWITCH "ON" OR "OFF" REMOTE POWER CONTROLLERS WHICH SUPPLY THE REACTION JET DRIVERS AFT 1 AND 2 (MANIFOLDS 1 THROUGH 5) POWER SUPPLY AND LOGIC SWITCH COMMAND CIRCUIT. 33V73A14S3, S5. 33V76A15S3. 33V76A16S3.

FAILURE MODE:

FAILS TO CONDUCT, FAILS TO CLOSE, INADVERTENTLY OPENS (BOTH POLES).

CAUSE(S):

PIECE PART STRUCTURAL FAILURE, CONTAMINATION.

EFFECT(S) ON:

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

(A) LOSS OF "ON" COMMAND TO ASSOCIATED REMOTE POWER CONTROLLERS.

(B) RESULTS IN LOSS OF THE AFFECTED MANIFOLD OPERATION WHEN REINITIATING THE FUNCTION, SINCE AFTER THE REMOTE POWER CONTROLLER TURN-ON IS ONCE ESTABLISHED, IT IS "MAINTAINED ON" FROM THE DRIVER POWER OUTPUT CIRCUITRY.

(C,D) NO EFFECT.

(E) FUNCTIONAL CRITICALITY EFFECT - POSSIBLE LOSS OF CREW/VEHICLE DUE TO LOSS OF CAPABILITY TO PERFORM EXTERNAL TANK SEPARATION AND ENTRY MANEUVERS AFTER LOSS OF ALL POWER TO THE REACTION JET DRIVER. REQUIRES 2 OTHER FAILURES (2 REACTION JET DRIVER BUS FUSES FAIL OPEN) BEFORE EFFECT IS MANIFESTED. FIRST FAILURE OF STRING NOT DETECTABLE IN FLIGHT DUE TO LACK OF MONITORING MEASUREMENTS.

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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 A, ITEM NO. 1 - TOGGLE SWITCH.

(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

LEAVE ASSOCIATED DRIVER POWER SWITCH ON FOR DURATION OF FLIGHT.