

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - OMS FMEA NO 05-6L -2079 -2 REV:03/14/8

ASSEMBLY : AFT MCA 1,3 CRIT. FUNC: 15
P/N RI : RWR80S1211FR CRIT. HDW: 2
P/N VENDOR: VEHICLE 102 103 104
QUANTITY : 8 EFFECTIVITY: X X X
: EIGHT PHASE(S): PL X LO X OO X DO X LS
: (ONE PER VALVE)

PREPARED BY: DES D SOVEREIGN
REL F DEFENSOR
QE J COURSEN

REDUNDANCY SCREEN: A-PASS B-FAIL C-PAS
APPROVED BY: DES *D.S. [Signature]* APPROVED BY (NASA): SSM *[Signature]* 4/14
REL *[Signature]* REL *[Signature]*
QE *[Signature]* QE *[Signature]* 3/2/8
EPC SSM of [Signature] for U.S. SA
EPC REL *[Signature]* 2/17/8

ITEM:
RESISTOR, CURRENT LIMIT, 1.21K OHM, 2W, LEFT AND RIGHT OMS, FUEL/OXIDIZER TANK ISOLATION VALVE A AND B LOGIC/POSITION INDICATION CIRCUIT.

FUNCTION:
PROVIDES CURRENT LIMITING/CIRCUIT PROTECTION FOR RELAY LOGIC AND POSITION INDICATION CIRCUITS OF THE LEFT AND RIGHT OMS FUEL AND OXIDIZER TANK ISOLATION VALVES A AND B. FOR OV-102 - 54V76A114A3R13, 10; 56V76A116A4R3, 10; 56V76A116A3R1, 2, A4R2, R4, FOR OV-103 2 SUBSEQUENT - 54V76A114A3R13, 15, 17, 19; 56V76A116A4R1, 2, 3, 4.

FAILURE MODE:
FAILS OPEN.

CAUSE(S):
STRUCTURAL FAILURE, CONTAMINATION, VIBRATION, THERMAL STRESS.

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

(A) LOSS OF POWER TO THE AFFECTED POSITION INDICATION AND RELAY LOG INHIBIT COMMAND CIRCUITS.

(B) LOSS OF TANK ISOLATION VALVE POSITION INDICATION AND RELAY LOG INHIBIT COMMAND. THE "OPEN/CLOSE" MOTOR VALVE DRIVE CIRCUIT CONTINUOUSLY ENERGIZED. POSITION INDICATION "TALKBACK" WILL SHOW "NO OR BARBER POLES" INDICATION.

(C,D) FIRST FAILURE HAS NO EFFECT.

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(E) POSSIBLE LOSS OF CREW/VEHICLE DUE TO THE LOSS OF ELECTRICAL POWER NECESSARY FOR COMPLETION OF FUNCTION. REQUIRES ONE OTHER FAILURE (BELLOWS LEAK) BEFORE THE EFFECT IS MANIFESTED. CONTINUOUS POWER APPLIED TO THE AC MOTOR VALVE MAY RESULT IN VALVE OVERHEATING AND PROPELLANT DECOMPOSITION LEADING TO VALVE RUPTURE AND PROPELLANT RELEASE. BELLOW FAILURE IS NOT DETECTABLE IN FLIGHT. RESISTOR FAILED OPEN IN FLIGHT IS DETECTABLE THROUGH THE POSITION INDICATION TALKBACK.

DISPOSITION & RATIONALE:

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

(A-D) FOR DISPOSITION AND RATIONALE

REFER TO APPENDIX E, ITEM NO. 3 - RESISTOR, WIRE WOUND.

(B) GROUND TURNAROUND TEST

V43CA0.070 - REDUNDANT CIRCUIT VERIFICATION (PERIODIC) - ORB/POI PERFORMED FOR FIRST FLIGHT AND AT FIVE FLIGHT INTERVALS OR FOR LRU RETES PER FIGURE V43200.000 OR FOR ORBITER DISRUPTED COPPER PATHS. FUNCTIONAL CHECKOUT OF AC MOTOR VALVE CONTROL CIRCUITS PER FIGURE V43CA0.070-2.

V43CA0.072 - REDUNDANT CIRCUIT VERIFICATION; PERFORMED EACH FLIGHT (AFTER FIRST FLIGHT). FUNCTIONAL CHECKOUT OF AC MOTOR VALVE CONTROL CIRCUITS PER FIGURE V43CA0.070-2.

V43CBO.165 - AC MOTOR VALVE ACTUATOR SNIFF CHECK; PERFORMED EACH FLIGHT. ALL AC MOTOR VALVE ACTUATORS CHECKED FOR PRESENCE OF PROPELLANT VAPORS.

(E) OPERATIONAL USE

PLACE SWITCH IN GENERAL PURPOSE COMPUTER (GPC) POSITION TO REMOVE CONTINUOUS POWER FROM THE VALVE RELAY.