

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - OMS FMEA NO 05-6L -2086 -1 REV:10/30/87  
 ASSEMBLY : AFT LCA 1,2,3 ABORT, ATO,TAL CRIT. FUNC: 3  
 P/N RI : RLR07C512GR CRIT. HDW: 3  
 P/N VENDOR: VEHICLE 102 103 104  
 QUANTITY : 4 EFFECTIVITY: X X X  
 : FOUR PHASE(S): PL X LO X OO X DO X LS X  
 : (TWO PER ENGINE)

PREPARED BY: DES D SOVEREIGN APPROVED BY: DES D. E. R. [Signature] REDUNDANCY SCREEN: A- B- C-  
 REL F DEFENSOR REL [Signature] APPROVED BY (NASA): SSM [Signature]  
 QE J COURSEN QE [Signature] REL [Signature] QE [Signature]  
 EIDC SSM [Signature] for W.C. Stagg

ITEM:  
 RESISTOR, ISOLATION, 5.1K OHM, 1/4 W - LEFT AND RIGHT OMS ENGINE ON CONTROL INDICATION CIRCUIT.

FUNCTION:  
 PROVIDES ISOLATION BETWEEN "ARM/PRESS" SWITCH COMMAND AND MDM SWITCH SCAN MEASUREMENT INPUTS FOR THE LEFT AND RIGHT OMS SOLENOID VALVE CIRCUITS. 54V76A121R(J2-7, 18). 55V76A122R(J2-7). 56V76A123R(J2-7).

FAILURE MODE:  
 FAILS OPEN.

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

EFFECT(S) ON:  
 (A) SUBSYSTEM (B) INTERFACES (C) MISSION (D) CREW/VEHICLE  
 (A) LOSS OF SWITCH SCAN FOR THE "ARM/PRESS" SWITCH POSITION.  
 (B) LOSS OF OMS ENGINE PURGE CAPABILITY DUE TO MISSING "ARM/PRESS" INDICATION.  
 (C) FIRST FAILURE HAS NO EFFECT.

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(D) NO EFFECT FOR NORMAL MISSION; COAST TIME BETWEEN BURNS ALLOWS RESIDUAL FUEL TO DISPERSE. CRITICALITY 1 FOR TAL AND ATO ABORTS. MISSION RULES REQUIRE MINIMUM 10 MINUTE COAST TIME FOR RESTART OF AN UNPURGED ENGINE; POST-MAIN ENGINE CUTOFF (POST-MECO) ABORT DUMP TIMELINE DOES NOT ALLOW 10 MINUTE COAST. RESIDUAL FUEL IN THE REGION JACKET MAY ALTER THE START TRANSIENT CAUSING ENGINE HARDSTART OR ENGINE DETONATION. INABILITY TO RESTART AN UNPURGED ENGINE FOR POST-MECO BURN MAY RESULT IN LOSS OF CREW/VEHICLE DUE TO EXCESSIVE VEHICLE DOWNWEIGHT OR UNCONTROLLABLE X OR Y-AXIS VEHICLE CENTER OF GRAVITY.

DISPOSITION AND RATIONALE:

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

(A-D) FOR DISPOSITION AND RATIONALE

REFER TO APPENDIX E, ITEM NO. 2 - RESISTOR, FIXED FILM.

(B) GROUND TURNAROUND TEST

V43CEO.100 PNEUMATIC SYSTEM ELECTRICAL CONTROL VERIFICATION; PERFORMED EACH FLIGHT. REDUNDANCY VERIFICATION OF CONTROL CIRCUIT PER FIGURE V43CAO.070-5.

S00FJO.040 POST ACTIVATION LEAK AND FUNCTIONAL TEST; PERFORMED EACH FLIGHT. VERIFIES BOTH CONTACTS OF THE ARM/PRESS SWITCH POSITION AND OPERATION OF THE GN2 PRESSURE ISOLATION VALVE.

(E) OPERATIONAL USE

SCHEDULE AT LEAST TEN MINUTES BETWEEN BURNS WITH AFFECTED OMS ENGINE. ALLOWS FUEL IN COOLING CHANNEL TO DISPERSE, ELIMINATING HAZARD. ENGINE STILL USABLE FOR NORMAL MISSION OPERATIONS.