

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - OMS

FMEA NO 05-6L -2030 -1

REV: 10/30/87

ASSEMBLY : PANEL 014, 016
 P/N RI : ME452-0102-7201
 P/N VENDOR:
 QUANTITY : 2
 : TWO
 : (ONE PER ENGINE)

ABORT: RTLS,
 TAL, ATO, AOA
 CRIT. FUNC: 1R
 CRIT. HDW: 2
 VEHICLE 102 103 104
 EFFECTIVITY: X X X
 PHASE(S): PL LO X OO DO X LS

PREPARED BY:

DES D SOVEREIGN
 REL F DEFENSOR
 QE J COURSEN

REDUNDANCY SCREEN:
 APPROVED BY:
 DES P.S. R. Bunn
 REL J. M. ... 11-18-87
 QE ...

A-PASS B-PASS C-PASS
 APPROVED BY (NASA):
 SSM ...
 REL ...
 QE ...
 SPEC 514 Call memo to WC Stagg

ITEM:

SWITCH, TOGGLE, 2 POLES, 2 POSITIONS (ON, OFF), LEFT AND RIGHT OMS ENGINE CONTROL VALVE DRIVER POWER.

FUNCTION:

PROVIDES THE CREW WITH MANUAL CAPABILITY TO CONTROL THE OMS ENGINE CONTROL VALVE DRIVER POWER. 33V73A14S9, 33V73A16S7.

FAILURE MODE:

INADVERTENTLY OPENS, PREMATURE TRANSFER TO "OFF", FAILED IN THE "OFF" POSITION (BOTH CONTACT SETS).

CAUSE(S):

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

EFFECT(S) ON:

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

(A) LOSS OF POWER TO THE ENGINE CONTROL VALVE 1 AND 2. ENGINE "ON" COMMAND FROM THE GENERAL PURPOSE COMPUTER (GPC) MUST BE PRESENT ALONG WITH THE OMS ENGINE VALVE SWITCH IN THE "ON" POSITION AND THE ARM/PRESS SWITCH IN EITHER "ARM," OR "ARM/PRESS" TO OPEN THE CONTROL VALVE.

(B) LOSS OF ABILITY TO FIRE ONE OMS ENGINE.

(C) POSSIBLE EARLY MISSION TERMINATION. REDLINE ADDITIONAL PROPELLANT FOR RCS BACKUP DEORBIT. NEXT PLS DEORBIT IF SUFFICIENT PROPELLANT NOT AVAILABLE.

(D) NO EFFECT. CRITICALITY 1 FOR ABORT. ONE ENGINE CANNOT DEplete PROPELLANT WITHIN TIME REQUIRED REDUCED FLOWRATE DURING DUMP COULD CAUSE LANDING WEIGHT AND CENTER OF GRAVITY PROBLEMS.

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(E) POSSIBLE LOSS OF CREW/VEHICLE DUE TO LOSS OF ELECTRICAL POWER NECESSARY FOR THE OPERATION OF OMS ENGINE CONTROL VALVES. REQUIRES ONE OTHER FAILURE (LOSS OF OTHER OMS ENGINE) BEFORE THE EFFECT IS MANIFESTED.

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

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

(E) OPERATIONAL USE

REDLINE ADDITIONAL PROPELLANT FOR RCS BACKUP DEORBIT, POSSIBLE MISSION IMPACT (DECREASED PROPELLANT AVAILABLE FROM OMS TO RCS THROUGH INTERCONNECT FOR ON-ORBIT OPERATIONS). NEXT PLS DEORBIT IF PROPELLANT FOR RCS BACKUP NOT AVAILABLE.