

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C HYDRAULICS (WSB) FMEA NO 05-6WA-2055 -2 REV: 11/30/87

ASSEMBLY : PANEL R2 CRIT. FUNC: 1R
 P/N RI : ME452-0102-7201 CRIT. HDW: 2
 P/N VENDOR: VEHICLE 102 103 104
 QUANTITY : 3 EFFECTIVITY: X X X
 : THREE REQUIRED PHASE(S): PL LO OO DO X LS
 :

REUNDANCY SCREEN: A-PASS B-PASS C-PASS
 PREPARED BY: APPROVED BY: APPROVED BY (NASA):
 DES J HERMAN DES *[Signature]* SSM *[Signature]*
 REL T KIMURA REL *[Signature]* REL *[Signature]*
 QE J COURSEN QE *[Signature]* QE *[Signature]*
 EPDC *[Signature]*
 EPDC REL *[Signature]*

ITEM:

SWITCH, TOGGLE, 2 POLE 2 POSITION, "APU/HYD BOILER N2 SUPPLY"

FUNCTION:

ACTIVATES N2 SHUTOFF VALVE SOLENOID COILS. 32V73A2S44, S45, AND S46

FAILURE MODE:

SWITCH LOCKED IN "OFF" POSITION, FAILS CLOSED (ALL CONTACTS)

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) CONTINUOUS POWER TO N2 SUPPLY VALVE LOCK, VALVE DRIVES TO CLOSE POSITION. LOSS OF WATER SPRAY BOILER (WSB) DUE TO LOSS OF ABILITY TO EXPEL WATER IN TANK (ENTRY EFFECT ONLY).

(B) POSSIBLE LOSS OR LIMITED RUN TIME OF ONE APU/HYD SYSTEM DUE TO LOSS OF COOLING. LIMITED RUN TIME MAY NOT ALLOW APU/HYD SYSTEM TO SUPPORT THE ENTIRE ENTRY PHASE. LOSS OF HYD LANDING GEAR DEPLOYMENT AND NOSE-WHEEL STEERING IF SYSTEM 1 IS LOST. LOSS OF ONE OF THREE HYDRAULIC POWER SYSTEMS TO FLIGHT CONTROL SURFACES AND BRAKES.

(C,D) NO EFFECT - FIRST FAILURE

(E) POSSIBLE LOSS OF CREW/VEHICLE WITH TWO FAILURES - (1) THIS FAILURE (RESULTING IN LOSS OF ONE WSB AND ASSOCIATED APU/HYD SYSTEM), (2) A SECOND FAILURE (FOR EXAMPLE, FAILURE OF A TOGGLE SWITCH ON THE WSB N2 SUPPLY CIRCUIT ON ANOTHER WSB SYSTEM) WHICH RESULTS IN THE LOSS OF A SECOND WSB AND ASSOCIATED APU/HYD SYSTEM.

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DISPOSITION & RATIONALE:

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

(A-D) DISPOSITION AND RATIONALE

REFER TO APPENDIX A, ITEM NO. 1 - TOGGLE SWITCH

(B) GROUND TURNAROUND TEST

V58ALO.010, "WSB CONTROLLER A ELECTRICAL VERIF" (PERFORMED PRIOR TO FIRST FLIGHT OR FOR LRU RETEST).

V58ALO.011, "WSB CONTROLLER B ELECTRICAL VERIF" (PERFORMED PRIOR TO EACH FLIGHT OR FOR LRU RETEST)

VERIFY CONTROLLER POWER BY OPERATION OF "BOILER PWR", "BOILER CNTLR/HTR", AND "BOILER N2 SUPPLY" SWITCHES. VERIFY BOILER "READY" CONDITION WITH SWITCHES ACTIVATED.

(E) OPERATIONAL USE

SHUT DOWN AFFECTED APU/HYD SYSTEM OR DELAY APU START IF FAILURE IS KNOWN PRIOR TO DEORBIT.