

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - ARS:COOLING FMEA NO 05-6UB-4002 -1 REV:03/21/88
ASSEMBLY : PANEL 11A2 CRIT. FUNC: 1R
P/N RI : ME452-0102-7301 CRIT. HDW: 2
P/N VENDOR: VEHICLE : 102 103 104
QUANTITY : 1 EFFECTIVITY: X X X
 : (ONE), LOOP 2 PHASE(S): PL LO X OO X DO X LS

REUNDANCY SCREEN: A-PASS B-N/A C-PASS
PREPARED BY: *J BROWN* APPROVED BY: *R J Brown* APPROVED BY (NASA):
DES DES SSM
REL REL *2-21-88* REL
QE QE *6/22/88* QE
EPD&C REVIEW
EPD&C 5/15/88

ITEM:
SWITCH, TOGGLE (4 POLE, 3 POSITION). LOOP 2 WATER PUMP. 31V73A1A2S6

FUNCTION:
PROVIDES THE CAPABILITY FOR MANUAL OR GPC CONTROL OF PUMP IN WATER COOLANT LOOP 2.

FAILURE MODE:
FAILS OPEN, SHORT-TO-CASE (GROUND), FAILS CLOSED IN THE "OFF" POSITION.

CAUSE(S):
PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECHANICAL SHOCK, VIBRATION, PROCESSING ANOMALY

EFFECT(S) ON:
(A) SUBSYSTEM (B) INTERFACES (C) MISSION (D) CREW/VEHICLE (E) FUNCTIONAL CRITICALITY EFFECT:
(A) LOSS OF POWER TO LOOP 2 WATER PUMP.
(B) LOSS OF WATER COOLANT LOOP 2.
(C) LOSS OF ONE WATER COOLANT LOOP REQUIRES POSSIBLE ENTRY AT THE NEXT PRIMARY LANDING SITE.
(D) FIRST FAILURE - NO EFFECT
(E) THIS FAILURE IN COMBINATION WITH LOSS OF REDUNDANT COOLANT LOOP RESULTS IN LOSS OF AVIONICS COOLING (AIR AND WATER COOLED AVIONICS). LOSS OF AVIONICS COOLING RESULTS IN POTENTIAL LOSS OF CREW/VEHICLE.

SCREEN B IS N/A DUE TO STANDBY REDUNDANCY.

DISPOSITION & RATIONALE:
(A) DESIGN (B) TEST (C) INSPECTION (D) FAILURE HISTORY (E) OPERATIONAL USE:
(A, B, C, D) DISPOSITION AND RATIONALE
REFER TO APPENDIX A, ITEM NO. 1 - TOGGLE SWITCH.

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(B) GROUND TURNAROUND TEST

EACH PUMP IS VERIFIED FOR PROPER OPERATION PRIOR TO EACH FLIGHT. ALSO, REMOTE, GPC AND CABIN SWITCH OPERATIONAL MODES ARE VERIFIED PRIOR TO EACH FLIGHT.

(E) OPERATIONAL USE

-CREW RESPONSE

-ACTIVATE REDUNDANT H2O COOLANT LOOP.

-TRAINING

-CURRENT ICLSS TRAINING COVERS THE GENERIC EFFECTS OF THIS FAILURE.

-OPERATIONAL CONSIDERATION

-REAL TIME DATA SYSTEM ALLOWS FOR GROUND MONITORING.