

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - ATCS/RPCA FMEA NO 05-6WC-1005 -3 REV: 06/10/
 ASSEMBLY : PANEL L1A2 CRIT. FUNC: 1R
 P/N RI : ME452-0102-7403 CRIT. HDW: 2
 P/N VENDOR: VEHICLE 102 103 104
 QUANTITY : 2 (TWO), EFFECTIVITY: X X X
 : ONE PER LOOP PHASE(S): PL LO OX X DO X LS
 :

REDUNDANCY SCREEN: A-PASS B-FAIL C-PAS
 PREPARED BY: J BROWN APPROVED BY: APPROVED BY (NASA):
 DES M HOVE DES REL M. G. V. 6-0-18 SSM
 REL J COURSEN REL J. C. 6-21-88 REL J. D. 6/13/88
 QE QE MR. D. 6/29/88
 EAC SSM 6/29/88

ITEM:
 SWITCH, TOGGLE. RADIATOR BYPASS VALVE MANUAL SELECT.

FUNCTION:
 PROVIDES MANUAL CONTROL OF THE RADIATOR BYPASS VALVE WHEN MODE SWIT 31V73A1A2S35 (S36) IS IN THE MANUAL POSITION. 31V73A1A2S29 (S30).

FAILURE MODE:
 SHORT TO CASE (GROUND) (BOTH BYPASS VALVE MOTORS)

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

EFFECT(S) ON:
 (A) SUBSYSTEM (B) INTERFACES (C) MISSION (D) CREW/VEHICLE
 (A) LOSS OF AC POWER TO BOTH BYPASS VALVE MOTORS.
 (B) LOSS OF RADIATOR FLOW CAPABILITY IF BYPASS VALVE IS CLOSED AND LOSS OF UNDER TEMP PROTECTION IF BYPASS VALVE IS OPEN FOR ONE FREON LOOP.
 (C) EARLY MISSION TERMINATION AFTER FAILURE IS DETECTED.
 (D) NO EFFECT.
 (E) FUNCTIONAL CRITICALITY EFFECT - SECOND ASSOCIATED FAILURE (LOSS OF RADIATOR FLOW CONTROL VALVE FUNCTION) CAN CAUSE UNDER TEMP OF INTERCHANGER AND RESULTS IN LOSS OF COOLING LOOPS AND POSSIBLE LOSS OF CREW/VEHICLE. SCREEN B FAILS BECAUSE THERE IS NO INSTRUMENTATION TO INDICATE LOSS OF POWER TO BYPASS VALVE CONTROL MOTORS.

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
 BYPASS VALVE AND SWITCH ARE VERIFIED PRIOR TO EACH FLIGHT.
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(E) OPERATIONAL USE

FOR BYPASS VALVE FAILED CLOSED, TURN OFF ASSOCIATED FREON PUMP AND
PERFORM VEHICLE POWERDOWN. FREON PUMP WILL BE REACTIVATED FOR ENTRY.

FOR BYPASS VALVE FAILED OPEN, FAILURE IS UNDETECTABLE AND NO CREW
ACTION IS REQUIRED FOR FIRST FAILURE.

SECOND FAILURE "LOSS OF RADIATOR FLOW CONTROL" MAY CAUSE UNDERTEMP
CONDITION WHICH WILL BE INDICATED BY ONBOARD ALARM 'EVAP OUT TEMP'. TURN
OFF ASSOCIATED FREON PUMP AND 'LOSS OF ONE FREON LOOP POWERDOWN' WILL BE
PERFORMED FOR ENTRY.

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