

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM :ACTUATION MECH-RADIATORS FMEA NO 02-4G -184 -1 REV:03/07/83

ASSEMBLY :RADIATOR LATCH MECHANISM CRIT. FUNC: 1R
P/N RI :MC203-0002-0012,19,32,39 CRIT. HDW: 3
P/N VENDOR:224-00140 VOUGHT VEHICLE 102 103 104
QUANTITY :24 EFFECTIVITY: X X X
:12 PER SIDE PHASE(S): PL LO OO X DO LS
:6 PER PANEL

PREPARED BY: REDUNDANCY SCREEN: A-PASS B-FAIL C-PASS
DES M. A. ALLEN APPROVED BY: APPROVED BY (NASA):
REL M. B. MOSKOWITZ DES *[Signature]* SSM *[Signature]* 3/15/88
QE W. J. SMITH REL *[Signature]* QE *[Signature]*

ITEM:
ROLLER ASSEMBLY LATCH, RADIATOR

FUNCTION:
PROVIDES ATTACHMENT POINT ON DEPLOYABLE RADIATOR PANEL FOR LATCH HOOK ON PAYLOAD BAY DOOR.

FAILURE MODE:
FAILS TO ENGAGE

CAUSE(S) :
ADVERSE TOLERANCES/WEAR, CONTAMINATION/FOREIGN OBJECT/DEBRIS, FAILURE/DEFLECTION OF INTERNAL PART, IMPROPER RIGGING/ADJUSTMENT, THERMAL DISTORTION

EFFECTS ON:
(A)SUBSYSTEM (B)INTERFACES (C)MISSION (D)CREW/VEHICLE
(A,B) LOSS OF SINGLE ROLLER/LATCH ATTACHMENT WOULD HAVE NO EFFECT. OTHER FIVE LATCHES AND ROLLERS ARE CAPABLE OF RETAINING RADIATOR PANEL.
(C,D) NONE - FIRST FAILURE; LATCHING OF RADIATORS IS NOT CRITICAL FOR SAFE ENTRY UNLESS THE OTHER FREON COOLANT LOOP HAS ALREADY BEEN LOST.
FAILS REDUNDANCY SCREEN "B" SINCE THERE IS NO VISUAL OR INSTRUMENTED WAY OF DETERMINING IF ONE OR MORE OF THE FIVE LATCHES FAILS TO ENGAGE WITH THE ROLLER(S).

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SUBSYSTEM :ACTUATION MECH-RADIATORS FMEA NO 02-4G -184 -1 REV:03/07/85

DISPOSITION & RATIONALE:

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

(A) DESIGN

ROLLER DESIGNED WITH POSITIVE MARGIN OF SAFETY FOR ALL DESIGN LOAD CONDITIONS WHICH INCLUDE LATCHING WITH MAXIMUM STRUCTURAL DISTORTION. MATERIAL UTILIZED, A286, IS ACCEPTABLE AS INSTALLED TO STRESS AND GALVANIC CORROSION REQUIREMENTS. INSTALLATION/RIGGING IS CONTROLLED BY SPECIFICATION (REF. ML0308-0023).

(B) TEST

QUALIFICATION TESTS: QUALIFICATION TESTS OF RADIATOR LATCHING MECHANISM ON 15 FT. PAYLOAD BAY DOOR TEST ARTICLE (087) INCLUDE FUNCTIONAL WITH SIMULATED THERMAL DISTORTION OF PAYLOAD BAY DOOR HINGE LINE, LIFE CYCLES AND ACOUSTIC VIBRATION. OPERATION OF RADIATOR LATCH ROLLERS VERIFIED IN CHECKOUT AT KSC WHICH INCLUDES RADIATOR FUNCTIONAL CHECK.

OMRSD: GROUND TURNAROUND INCLUDES MONITORING FUNCTIONAL CHECKS TO VERIFY STRUCTURAL INTEGRITY. THESE TESTS ARE PERFORMED FIRST FLIGHT AND FOR EVERY FLIGHT WHERE THE RADIATORS WILL BE DEPLOYED.

(C) INSPECTION

RECEIVING INSPECTION

MATERIAL IS VERIFIED BY PHYSICAL/CHEMICAL ANALYSIS AT SOURCE INSPECTION.

CONTAMINATION CONTROL

ASSEMBLY CLEANLINESS LEVEL 300 IS VERIFIED BY INSPECTION.

ASSEMBLY/INSTALLATION

DIMENSIONS AND ASSEMBLY ARE VERIFIED BY INSPECTION.

NONDESTRUCTIVE EVALUATION

FUSION WELDS ARE VERIFIED BY X-RAY INSPECTION.

CRITICAL PROCESSES

HAND WELD SCHEDULES ARE VERIFIED BY INSPECTION.

TESTING

VIBRATION REQUIREMENTS ARE VERIFIED BY INSPECTION DURING ACCEPTANCE TESTING OF THE COMPLETE FLOW CONTROL ASSEMBLY.

HANDLING/PACKAGING

HANDLING AND PACKAGING REQUIREMENTS VERIFIED BY INSPECTION.

(D) FAILURE HISTORY

THERE HAVE BEEN NO ACCEPTANCE TEST, QUALIFICATION TEST, FIELD OR FLIGHT FAILURES ASSOCIATED WITH THIS FAILURE MODE.

(E) OPERATIONAL USE

NONE.