

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : LANDING DECELERATION FMEA NO 02-1F -H01-CO-G01 REV:06/27/
 ASSEMBLY : NLG STRUT ACTUATOR CRIT. FUNC: 1
 P/N RI : MC287-0034 CRIT. HDW: 102 103 104
 P/N VENDOR: PARKER-BERTEA VEHICLE 102 103 104
 QUANTITY : 1 EFFECTIVITY: X X X
 : ONE PER ACTUATOR PHASE(S): PL LO OO DO X LS

REDUNDANCY SCREEN: A-FAIL B-FAIL C-PA
 PREPARED BY: APPROVED BY: APPROVED BY (NASA):
 DES N LEVERT DES *N. Levert* SSM *R. Balciunas*
 REL C NELSON REL *CN Nelson* REL *W. Gray + K. ...*
 QE M SAVALA QE *M. Savala* QE *W. ...*

ITEM:
 ORIFICE, ANTICAVITATION:

FUNCTION:
 PROVIDES PASSAGE FOR MAKEUP FLUID TO REACH OPPOSITE SIDE OF PISTON DUR
 EXTEND MODE. ASSURES RELIEF OF VACUUM ATTEMPTING TO RETRACT GEAR.

FAILURE MODE:
 BLOCKED:

CAUSE(S):
 CONTAMINATION

EFFECT(S) ON:
 (A) SUBSYSTEM (B) INTERFACES (C) MISSION (D) CREW/VEHICLE
 (B) CAVITATION OF GROSS SIDE OF ACTUATOR DURING EXTENSION.
 (C, D) POSSIBLE LOSS OF CREW/VEHICLE WITH TWO FAILURES: FAILURE OF G
 TO FULLY LOCK IN EXTENDED POSITION DUE TO CAVITATION VACUUM BEH
 PISTON AND FAILURE OF THE DOWNLOCK BUNGEE TO OVERCOME RESISTANCE
 CAVITATION VACUUM FORCES. FAILURE TO LOCK GEAR INTO POSITION MAY RES
 IN GEAR COLLAPSE.
 (E) FUNCTIONAL CRITICALITY EFFECTS-SEE ITEM (D) ABOVE. "A" SCREEN
 FAILED BECAUSE IN ORDER TO VERIFY THE CHECK VALVE FUNCTION, THE BUNG
 MUST BE DEACTIVATED. ALTHOUGH GEAR COLLAPSE WOULD BE DETECTED, THERE
 INSUFFICIENT TIME TO CORRECT THE PROBLEM. ("B" SCREEN IS FAILED.)

DISPOSITION & RATIONALE:
 (A) DESIGN (B) TEST (C) INSPECTION (D) FAILURE HISTORY (E) OPERATIONAL USE
 (A) DESIGN
 UPSTREAM SIDE OF ORIFICE PROTECTED WITH AN 80 MICRON MINIMUM FILTR
 SYSTEM CLEANLINESS IS TO LEVEL 220 PER MA0110-301. EXTEND AND RETR
 PORTS PROTECTED WITH A 80 MICRON FILTER.

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(B) TEST

QUALIFICATION-RANDOM VIBRATION AND ENDURANCE TESTS REPRESENTATIVE MISSION ENVIRONMENT. ACTUATOR EXTEND TIME TEST, PROOF PRESSURE TEST. POST TEST PROCEDURE INCLUDES DISASSEMBLY AND INSPECTION OF WORKING COMPONENTS.

ACCEPTANCE-ACTUATOR EXTEND TIME TEST, UNIT CLEANLINESS TEST.

OMRSD-THERE IS NO TEST AVAILABLE.

(C) INSPECTION

RECEIVING INSPECTION

CERTIFICATION RECORDS AND CERTIFIED TEST REPORTS ARE MAINTAINED WITH CERTIFYING MATERIAL AND PHYSICAL PROPERTIES.

CONTAMINATION CONTROL

SUPPLIER TEST STAND FLUID PARTICLE COUNT CHECKED TWICE A DAY, WHERE APPLICABLE. FLUID CONTAMINATION PARTICLE COUNT CONDUCTED PRIOR TO AND AFTER ATP, A FLUID SAMPLE IS DRAWN TO VERIFY FLUID CLEANLINESS. IF CONTAMINATED, ACTUATOR IS CYCLED AND FLUSHED UNTIL CONFIRMATION IS ATTAINED. SYSTEM CLEANLINESS IS VERIFIED TO LEVEL 220 PER MA0110-300.

CRITICAL PROCESSES

HEAT TREAT PROCESS IS VERIFIED BY INSPECTION.

NDE

INSPECTION VERIFIES THAT DETAIL PARTS ARE MAGNETIC PARTICLE OR PENETRANT INSPECTED, DEPENDING ON THE ALLOY.

ASSEMBLY/INSTALLATION

INSPECTION OF DIMENSIONS AT FINAL INSPECTION. COMPONENT PARTS VERIFIED UNDAMAGED PRIOR TO CLEANING AND PACKAGING.

TESTING

ATP IS VERIFIED BY INSPECTION.

HANDLING/PACKAGING

PARTS PROTECTION TO PRECLUDE CONTAMINATION DURING SHIPMENT IS VERIFIED BY INSPECTION.

(D) FAILURE HISTORY

THERE IS NO HISTORY OF FAILURE FOR THIS FAILURE MODE.

(E) OPERATIONAL USE

NONE