

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : LANDING DECELERATION FMEA NO 02-1F -H01-TO-F01 REV:06/27/

ASSEMBLY : NLG STRUT ACTUATOR CRIT. FUNC:
P/N RI : MC287-0034 CRIT. HDW:
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
:

PREPARED BY: DES N LEVERT APPROVED BY: DES N. Levert REDUNDANCY SCREEN: A-N/A B-N/A C-N/
REL C NELSON REL C. Nelson APPROVED BY (NASA): SSM R. Balcerus
QE M SAVALA QE JRS 7.25.88 REL W. J. ... QE ...

ITEM:
TIMING ORIFICE

FUNCTION:
CONTROLS HYDRAULIC FLUID INTERCHANGE FROM ONE SIDE OF PISTON TO THE OTHER TO ACHIEVE PROPER GEAR DEPLOYMENT TIME.

FAILURE MODE:
BLOCKED

CAUSE(S):
CONTAMINATION

EFFECT(S) ON:
(A) SUBSYSTEM (B) INTERFACES (C) MISSION (D) CREW/VEHICLE

- (A, B) LANDING GEAR WILL NOT DEPLOY DUE TO HYDRAULIC LOCKUP OR WILL BE INCREASED EXTENSION TIME.
- (C) NONE, COMMITTED TO LANDING.
- (D) POSSIBLE LOSS OF CREW/VEHICLE IF GEAR DOES NOT DEPLOY.

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

(A) DESIGN
THE ORIFICE IS PROTECTED BY AN 80 MICRON FILTER IN THE ACTUATOR CONTROL VALVE MODULE EXTEND AND RETRACT PASSAGES AND A 5 MICRON SYSTEM SUCTION FILTER. SILTING IS UNLIKELY DUE TO THE ORIFICE SIZE, WHICH RANGES FROM 0.077 TO 0.268 INCH FOR THE NOSE LANDING GEAR.

(B) TEST
QUALIFICATION-RANDOM VIBRATION AND ENDURANCE TESTS REPRESENTATIVE OF 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.

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : LANDING DECELERATION FMEA NO 02-1F -H01-TO-F01 REV:06/27/

OMRSD-EXTEND NOSE LANDING GEAR FROM CREW STATION, PERFORMED PRIOR TO E MISSION. POST LANDING HYDRAULIC RESERVOIR EFFLUENT SAMPLES, PERFORM AFTER EVERY FLIGHT; VERIFY THAT RESULTS OF FLUID SAMPLE CONTAMINATION MEET SPECIFICATION. GENERAL REQUIREMENT 5.2, VERIFY ALL HYDRAULIC FLUID USED TO SERVICE VEHICLE IS PER MIL-H-83282.

(C) INSPECTION

RECEIVING INSPECTION

CERTIFICATION RECORDS AND CERTIFIED TEST REPORTS ARE MAINTAINED AS 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 MAO110-30

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 UNDEFORMED 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