SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM :LANDING/DECELERATION-LGC FMEA NO 02-1A -016 -1 REV:09/19/88

ASSEMBLY :MAIN LANDING GEAR (MLG)
P/N RI :V070-510001
P/N VENDOR:
QUANTITY :8
:4 LH
:4 RH

CRIT. FUNC: 1
CRIT. HDW: 1

VEHICLE EFFECTIVITY:	102	103	104
	X	X	X

PHASE(S): PL LO OO DO LS X

REDUNDANCY SCREEN: A- B- C-

PREPARED BY:		APPROVED BY:		APPROVED BY (NASA):	
DES	R. A. GORDON	DES	R A Gordon 9/21/88	SSM	
REL	J. S. MULLEN	REL		REL	
QE	W. J. SMITH	QE		QE	

ITEM:
MAIN LANDING GEAR FITTING ASSEMBLIES, DRAG BRACE AND STRUT TRUNNIONS

FUNCTION:
VEHICLE TO LANDING GEAR STRUT & DRAG BRACE ATTACH ASSY.

FAILURE MODE:
STRUCTURAL FAILURE

CAUSE(S):
OVERLOAD, DEFECTIVE PART/MATERIAL.

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

(A) LOSS OF LOAD CARRYING CAPABILITY.

(B) DAMAGE TO VEHICLE STRUCTURE.

(C,D) PROBABLE LOSS OF MISSION/CREW/VEHICLE DUE TO GEAR COLLAPSE.

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

(A) DESIGN
THE FITTINGS ARE DESIGNED TO OPERATE FOR 400 CYCLES WITHOUT STRUCTURAL DEGRADATION. DESIGNED TO A MINIMUM FACTOR OF SAFETY OF 1.4 WITH STANDAR MATERIAL ALLOWABLES. MATERIALS USED ARE NOT SUSCEPTIBLE TO CORROSION DURING EXPOSURE TO EXPECTED ORBITER ENVIRONMENTS.

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(B) TEST

QUALIFICATION TEST: THE FITTINGS WERE CERTIFIED AS AN INTEGRAL PART OF THE MLG MECHANISM INSTALLATION (LANDING GEAR OPERATION) - 32 CYCLES OF THE LANDING GEAR DURING ALT, 15 DEVELOPMENT CYCLES AND 353 QUALIFICATI LIFE CYCLES FOR A TOTAL OF 400 CYCLES. (THE LANDING GEAR WAS CYCLED F UP AND LOCKE TO DOWN AND LOCKED EACH TIME).
ENVIRONMENTS:
HIGH TEMP TESTS; 3 CYCLES AT 140 DEG F
COLD TEMP TESTS; 3 CYCLES AT -25 DEG F TO -40 DEG F

OMRSD: MLG WHEELWELL DETAIL INTERNAL INSPECTION; MAIN GEAR STRUT TRUNNION FITTINGS AND DRAG BRACE FITTINGS ARE INSPECTED FOR EVIDENCE O STRUCTURAL DEGRADATION.

FREQUENCY: NINTH FLIGHT OF EVERY VEHICLE AND EVERY EIGHTH FLIGHT THEREAFTER.

(C) INSPECTION

RECEIVING INSPECTION
RECEIVING INSPECTION VERIFIES MATERIAL AND PROCESS CERTIFICATIONS.

CONTAMINATION CONTROL
CLEANLINESS AND CORROSION PROTECTION REQUIREMENTS VERIFIED BY INSPECTI(

ASSEMBLY/INSTALLATION
MATERIAL USED FOR FABRICATION VERIFIED BY INSPECTION ON MANUFACTURING ORDERS. MACHINE TOLERANCES PER DRAWING AND MACHINING SPECIFICATION. INSTALLATION OF BEARING PER BEARING INSTALLATION SPECIFICATION, TOOL AI REQUIRED, VERIFIED BY INSPECTION. TRUNNION ASSEMBLY COMPLETE PER DRAWIN AND APPLICABLE SPECIFICATIONS VERIFIED BY INSPECTION ON MANUFACTURING ORDERS.

CRITICAL PROCESSES
HEAT TREATING VERIFIED BY INSPECTION.

NONDESTRUCTIVE EVALUATION
FLUORESCENT PENETRANT INSPECTION REQUIRED AND VERIFIED BY INSPECTION.

TESTING
ACCEPTANCE TESTING IS VERIFIED BY INSPECTION.

PACKAGING/HANDLING
HANDLING AND PACKAGING REQUIREMENTS ARE VERIFIED BY INSPECTION.

(D) FAILURE HISTORY
NONE.

(E) OPERATIONAL USE
NONE.