

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : P/L RETEN & DEPLOY-MPM DEPLOY FMEA NO 02-5B-J08-2 REV:04/05/88

ASSEMBLY : MPM PEDESTAL MECHANISM

P/N RI : V082-544650

P/N VENDOR:

QUANTITY : 3

VEHICLE	102	103	104
EFFECTIVITY:	X	X	X
PHASE(S):	PL	LO X OO X	DO X LS

CRIT. FUNC: 1
CRIT. HDW: 1

PREPARED BY:

DES S. L. SHARP
REL M. B. MOSKOWITZ
QE W. J. SMITH

REDUNDANCY SCREEN:

APPROVED BY:	A-	B-	C-
DES <i>[Signature]</i>	APPROVED BY (NASA):		
REL <i>[Signature]</i>	SSM		
QE <i>[Signature]</i>			

ITEM:

JETTISON MECHANISM, MANIPULATOR POSITIONING MECHANISM (MPM) PEDESTAL

FUNCTION:

MECHANISM IS RELEASED BY PYRO RETRACTOR AND SEPARATES PEDESTAL FROM BASE STRUCTURE.

FAILURE MODE:

INADVERTENT OPERATION

CAUSE(S):

FAILURE/DEFLECTION OF INTERNAL PART

EFFECTS ON:

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

(A) FAILURE OF ONE OF THREE PEDESTAL JETTISON MECHANISMS WILL RESULT IN PARTIAL LOSS OF REMOTE MANIPULATOR SYSTEM (RMS) RETENTION CAPABILITY.

(B) POSSIBLE DAMAGE TO MPM/RMS, PAYLOAD, AND/OR PAYLOAD BAY DOORS.

(C) POSSIBLE LOSS OF MISSION IF MPM/RMS PREMATURELY SEPARATES AND BECOMES DAMAGED.

(D) PEDESTAL FAILURES MAY RESULT IN POSSIBLE LOSS OF CREW/VEHICLE, IF MPM/RMS DAMAGES PAYLOAD BAY DOORS.

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DISPOSITION & RATIONALE:

(A) DESIGN (B) TEST (C) INSPECTION (D) FAILURE HISTORY (E) OPERATIONAL USE

(A) DESIGN

COMPONENTS DESIGNED WITH STRUCTURAL FACTOR OF SAFETY OF 1.4 OR GREATER. MECHANISM REQUIREMENTS INCLUDE DUAL RETENTION OF ALL FASTENERS AND DUAL ROTATION PROVISIONS FOR ALL MOVING JOINTS.

(B) TEST

QUALIFICATION TESTS: VIBRATION 34 MIN/AXIS 4.5 OVERALL GRMS -14 MIN/AXIS 3.6 OVERALL GRMS. TEMPERATURE 24 HOUR -100 DEG F, 24 HOUR +250 DEG F, AND 9 HOURS AMBIENT. FOUR SYSTEM SEPARATION TESTS WERE PERFORMED.

ACCEPTANCE TESTS: ACCEPTANCE- BY INSPECTION DURING ASSEMBLY.

OMRSD: GROUND TURNAROUND INCLUDES VISUAL INSPECTION FOR EVIDENCE OF STRUCTURAL/MECHANICAL DAMAGE PRIOR TO EACH FLIGHT.

(C) INSPECTION

RECEIVING INSPECTION

ALL RAW MATERIALS ARE VERIFIED BY RECEIVING INSPECTION FOR COMPLIANCE WITH PURCHASED MATERIAL REQUIREMENTS.

CONTAMINATION CONTROL

CONTAMINATION CONTROL AND CORROSION PROTECTION PROCESSES ARE VERIFIED BY INSPECTION.

ASSEMBLY/INSTALLATION

THEREADED FASTENERS INSTALLATION ARE VERIFIED BY INSPECTION. TORQUE REQUIREMENTS ARE VERIFIED BY INSPECTION. RIGGING OPERATIONS ARE PER DRAWING GENERAL NOTES AND TEST MANUFACTURING ORDERS (TMO) AND ARE VERIFIED BY INSPECTION.

NONDESTRUCTIVE EVALUATION

PENETRANT INSPECTION IS VERIFIED BY INSPECTION.

CRITICAL PROCESSES

HEAT TREAT IS VERIFIED BY INSPECTION.

HANDLING/PACKAGING

PARTS PACKAGED AND PROTECTED PER APPLICABLE SPECIFICATION AND INSPECTED.

(D) FAILURE HISTORY

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

(E) OPERATIONAL USE

NONE.