SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM :CREW MODULE SEALS FMEA NO 01-4 -CS43 -1 REV:03/29/8

ASSEMBLY :STAR TRACKER WELL
P/N RI :V070-331063
P/N VENDOR:
QUANTITY :1

CRIT. FUNC: 1R
CRIT. HDW: 2

VEHICLE	102	103	104
EFFECTIVITY:	X	X	X

PHASE(S): PL LO X OO X DO X LS

REDUNDANCY SCREEN: A-FAIL B-FAIL C-PASS

PREPARED BY:		APPROVED BY:	APPROVED BY (NASA):
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ITEM:
SEAL, STAR TRACKER WELL TO CREW MODULE STRUCTURE

FUNCTION:
SINGLE SEAL PREVENTS LEAKAGE OF CREW MODULE ATMOSPHERE BY SEALING INTERFACE BETWEEN STAR TRACKER WELL PANEL AND CREW MODULE STRUCTURE.

FAILURE MODE:
LEAKAGE

CAUSE(S):
CRACKS, MATERIAL DEGRADATION, LOW TEMPERATURE, STRUCTURALDEFORMATION

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

(A) FAILURE OF SINGLE SEAL WOULD RESULT IN THE LOSS OF CREW MODULE CONSUMABLES.

(B) FAILURE OF A SINGLE SEAL WOULD RESULT IN THE LOSS OF CREW MODULE CONSUMABLES.

(C) FAILURE OF A SINGLE SEAL WOULD RESULT IN LOSS OF CREW MODULE CONSUMABLES, HOWEVER, THIS WOULD NOT EXCEED THE MAKEUP CAPABILITY OF TH[E] ARPCS BUT WOULD POSSIBLY RESULT IN EARLY TERMINATION OF MISSION.

(D) FAILURE OF SINGLE SEAL AND AN ADDITIONAL SEAL FAILURE WITHIN THE CR[EW] MODULE COULD RESULT IN A LEAK RATE EXCEEDING THE ARPCS MAKEUP CAPABILIT[Y] RESULTING IN LOSS OF CREW/VEHICLE.

REDUNDANCY SCREENS: SEAL FAILS SCREENS "A" AND "B" BECAUSE LEAK TEST OF EACH SEAL INDIVIDUALLY IS NOT FEASIBLE.

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

(A) DESIGN

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SEAL IS SILICONE RUBBER O-RING FACE SEAL INSTALLED IN GROOVE IN CLOSEO PANEL ADJACENT TO ATTACH BOLTS.

(B) TEST
ACCEPTANCE TESTS: CREW MODULE HIGH PRESSURE TEST TO 14.7 PSID AND LOW PRESSURE TEST TO 3.2 PSID.

QUALIFICATION TESTS: QUALIFICATION TESTS WERE NOT PERFORMED - CERTIFICATION IS BASED ON ACCEPTANCE TESTS AND SEAL MATERIALS DATA. OMRSD: GROUND TURNAROUND INCLUDES PRE-LIFTOFF PRESSURIZATION TEST AT 2 PSID; HOWEVER, IT IS UNLIKELY TO DETECT PANEL SEAL LEAKAGE.

(C) INSPECTION

RECEIVING INSPECTION
RECEIVING INSPECTORS CHECK FOR CORRECT IDENTITY AND DAMAGE, VERIFY THAT SUPPLIER SUBMITTED REQUIRED REPORTS, AND VERIFY PARTS ARE PROPERLY PACKAGED TO PREVENT DAMAGE DURING STORAGE.

CONTAMINATION CONTROL
INSPECTORS VERIFY, BEFORE INSTALLATION, THAT THE SEALING SURFACE AND SILICONE RUBBER SEAL ARE CLEAN, PER MA0106-328. INSPECTORS VERIFY METAL SURFACES ARE CORROSION PROTECTED PER MA0608-301.

ASSEMBLY/INSTALLATION
THE SEALS ARE INSTALLED PER MA0106-328. INSPECTOR VERIFIES THAT THE SEALING SURFACE AND THE SEAL TO BE UNDAMAGED BEFORE INSTALLATION. INSPECTOR ALSO VERIFIES THE SILICONE RUBBER SURFACE TO BE FREE OF DEFECTS, BLEMISHES AND IRREGULARITIES PER DRAWING REQUIREMENTS, BEFORE INSTALLATION. INSPECTOR VERIFIES THREADED FASTENERS ARE INSTALLED PER MA0101-301, CLASS 1.

TESTING
INSPECTORS VERIFY CREW MODULE HIGH PRESSURE TEST TO 14.7 PSID AND LOW PRESSURE TEST TO 3.2 PSID.

HANDLING/PACKAGING
THE SUPPLIER PACKAGES DETAIL SEALS PER MK0116-001 REQUIREMENTS AND IDENTIFIES BY PART NUMBER.

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

(E) OPERATIONAL USE
IF LEAKAGE OCCURS, LOSS OF CREW MODULE CONSUMABLES CAN BE MONITORED AND ASSESSED FOR FEASIBILITY OF CONTINUING THE MISSION PER CABIN LEAK PROCEDURES AND FLIGHT RULES.