SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM :CREW MODULE SEALS FMEA NO 01-4 -CS18 -1 REV:03/29/

ASSEMBLY :CREW MODULE BULKHEADS CRIT. FUNC:
P/N RI : CRIT. HDW:
P/N VENDOR:NAS1523C16R TYP
:M83248/1-219 TYP
QUANTITY :28 AFT BULKHEAD
: 7 AIRLOCK

VEHICLE	102	103	104
EFFECTIVITY:	X	X	X

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

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

PREPARED BY:		APPROVED BY:	APPROVED BY (NASA):
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ITEM:
SEALS, HARD LINE FEEDTHROUGH FITTING

FUNCTION:
THESE SEALS PREVENT LEAKAGE OF CREW MODULE ATMOSPHERE.

FAILURE MODE:
LEAKAGE

CAUSE(S):
LOOSE CLAMP NUT, CONTAMINATION, VIBRATION OF HARD LINE

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

(A) FAILURE OF SINGLE SEAL HAS NO EFFECT. LOSS OF REDUNDANT SEAL WOU RESULT IN THE LOSS OF CREW MODULE CONSUMABLES.

(B) FAILURE OF A SINGLE SEAL HAS NO EFFECT. LOSS OF REDUNDANT SEAL WOU RESULT IN THE LOSS OF CREW MODULE CONSUMABLES.

(C) FAILURE OF A SINGLE SEAL HAS NO EFFECT. LOSS OF THE REDUNDANT SEAL WOULD RESULT IN LOSS OF CREW MODULE CONSUMABLES, HOWEVER, THIS WOULD NO EXCEED THE MAKEUP CAPABILITY OF THE ARPCS BUT WOULD POSSIBLY RESULT IN EARLY TERMINATION OF MISSION.

(D) FAILURE OF SINGLE SEAL HAS NO EFFECT. LOSS OF THE REDUNDANT SEAL A AN ADDITIONAL SEAL FAILURE WITHIN THE CREW MODULE COULD RESULT IN A LEA RATE EXCEEDING THE ARPCS MAKEUP CAPABILITY RESULTING IN LOSS OF CREW/VEHICLE.

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

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM :CREW MODULE SEALS FMEA NO 01-4 -CS18 -1 REV:03/29/8

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

(A) DESIGN
THE O-RING FACE SEAL IN THE FITTING FLANGE IS STANDARD FLUOROCARBON ELASTOMER SEAL, RESISTANT TO FLUID CONTACT. THE BONDED WASHER IS CORROSION RESISTANT STEEL WASHER WITH FLUORINATED SILICONE SEAL. EITHER SEAL WILL PREVENT LEAKAGE THROUGH FEEDTHROUGH PLATE.

(B) TEST
ACCEPTANCE TESTS: TESTS CONSIST OF CREW MODULE HIGH PRESSURE TEST TO 14. PSID AND LOW PRESSURE TEST TO 3.2 PSID.

QUALIFICATION TESTS: QUALIFICATION TESTS WERE NOT PERFORMED - CERTIFICATION 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 FEEDTHROUGH PLATE SEAL LEAKAGE.

(C) INSPECTION

RECEIVING INSPECTION
RECEIVING INSPECTORS INSPECT FOR DAMAGE AND WORKMANSHIP AND THAT IT IS C SINGLE PIECE MOLDED CONSTRUCTION. RECEIVING INSPECTORS CHECK IDENTIFICATION AND WALL CROSS-SECTIONAL DIAMETER ON A S-3 SAMPLING BASIS IT IS ALSO VERIFIED THAT THE SUPPLIER SUBMITTED THE REQUIRED REPORTS.

CONTAMINATION CONTROL
RECEIVING INSPECTORS VISUALLY INSPECT SEAL FOR CLEANLINESS. INSPECTORS VERIFY, BEFORE INSTALLATION, THAT THE SEAL AND SEALING SURFACE ARE CLEAN

ASSEMBLY/INSTALLATION
THE SEALS ARE INSTALLED PER MA0106-328. INSPECTORS VERIFY THAT THE SEAL AND THE SEALING SURFACE ARE NOT DAMAGED BEFORE INSTALLATION AND THAT THE JAM NUTS AND HARD LINE SADDLE CLAMPS ARE INSTALLED PER MA0102-306.

TESTING
THE ASSEMBLY IS LEAK TESTED PER ML0206-0015.

HANDLING/PACKAGING
THE RECEIVING INSPECTORS VERIFY THAT THE SEAL IS INDIVIDUALLY PACKAGED WITH PART NUMBER, MANUFACTURER NAME, COMPOUND NUMBER AND CURE DATE. RECEIVING INSPECTORS ALSO VERIFY THAT THE SEAL IS PACKAGED IN A WAY THAT WILL PROTECT IT DURING STORAGE.

(D) FAILURE HISTORY
STANDARD BOSS SEAL AND BONDED ELASTOMERIC SEAL HAVE EXTENSIVE USE IN AEROSPACE APPLICATIONS WITH NO FAILURE HISTORY.

(E) OPERATIONAL USE
IF INTERFACE 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.