SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM :CREW MODULE SEALS FMEA NO 01-4. -CS17 -1 REV:03/29/88

ASSEMBLY :CREW MODULE BULKHEADS, CRIT. FUNC: 1R
:STAR TRACKER WELL, AIRLOCK CRIT. HDW: 2

P/N RI :
P/N VENDOR:20200 DEUTSCH VEHICLE 102 103 104
:98-0000-858 ITT CANNON EFFECTIVITY: X X X
QUANTITY :286 (OV-102) BULKHEADS PHASE (S): PL LO X OO X DO X LS
:273 (OV-103, OV-104) BULKHEADS
: 8 (OV-103 & 104) STAR TRACKER WELL
: 10 (OV-102) STAR TRACKER WELL
: 12 AIRLOCK

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

PREPARED BY:			APPROVED BY:		APPROVED BY (NASA):	
DES	W.	HENRY	DES	7/28/88	SSM	8/22/
REL	D.	MAYNE	REL	7/28/88	REL	8/22/88
QE	W.	SMITH	QE	7-25-88	QE	8/24/88

ITEM:
SEAL, ELECTRICAL FEEDTHROUGH CONNECTOR

FUNCTION:
THESE SEALS PREVENT LEAKAGE OF CREW MODULE ATMOSPHERE.

FAILURE MODE:
LEAKAGE

CAUSE(S):
CRACKS, LOW TEMPERATURE, MATERIAL DEGRADATION, FLUID CONTACT

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 INTO THE PAYLOAD BAY OR THE FORWARD FUSELAGE PLENUM OR IN TH CASE OF THE STAR TRACKER WELL, OVERBOARD.

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

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

(D) FAILURE OF THE SINGLE SEAL AND AN ADDITIONAL SEAL FAILURE WITHIN THE CREW MODULE COULD RESULT IN A LEAK 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 -CS17 -1 REV:03/29/8

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

(A) DESIGN
SEALS ARE STANDARD O-RINGS USED AS FACE SEALS CAPTIVE IN A GROOVE IN THE BULKHEAD CONNECTOR FLANGE TO PREVENT LEAKAGE OF CREW MODULE CONSUMABLES AT ELECTRICAL FEEDTHROUGH CONNECTORS IN THE BULKHEADS AND AIRLOCK AND IN THE STAR TRACKER WELL SIDEWALL. A CLAMP RING OR NUT ENSURES UNIFORM COMPRESSION AROUND SEAL PERIPHERY. MATERIAL OF SEALS IS SILICONE RUBBER.

(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 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 CONNECTOR SEAL LEAKAGE.

(C) INSPECTION

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

CONTAMINATION CONTROL
INSPECTORS VERIFY CLEANLINESS AND CONTAMINATION CONTROL REQUIREMENTS OF MLO303-0014.

ASSEMBLY/INSTALLATION
INSPECTORS VERIFY THAT CONNECTORS ARE INSTALLED TO MLO303-0014 REQUIREMENTS.

TESTING
THE CREW MODULE HIGH PRESSURE TEST TO 14.7 PSID AND LOW PRESSURE TESTS T 3.2 PSID ARE VERIFIED BY INSPECTION.

HANDLING/PACKAGING
RECEIVING INSPECTORS VERIFY PARTS ARE PROPERLY PACKAGED TO PREVENT DAMAG DURING STORAGE.

(D) FAILURE HISTORY
STANDARD PRESSURE BULKHEAD FEEDTHROUGH CONNECTOR HAS EXTENSIVE USE IN AEROSPACE APPLICATIONS WITH NO FAILURE HISTORY.

(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.