

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : LIFE SUPPORT FMEA NO 06-2C -0402 -1 REV:09/28/87  
 ASSEMBLY : VENT AND DUMP EQUIPMENT CRIT. FUNC: 13  
 P/N RI : V070-623020-037 CRIT. HDW: 2  
 P/N VENDOR: VEHICLE 102 103 104  
 QUANTITY : 1 EFFECTIVITY: X X X  
 : PHASE(S): PL LO X OO X DO X LS  
 : ONE PER VEHICLE

PREPARED BY: REDUNDANCY SCREEN: A-PASS B-PASS C-PASS  
 DES D. SANDERSFELD APPROVED BY: APPROVED BY (NASA):  
 REL L. SCHASCHL DES *[Signature]* SSM *[Signature]* 10/28  
 QE M. SAVALA REL *[Signature]* 10/28  
 QE *[Signature]* 10/28

ITEM:  
 LINES AND FITTINGS, FROM MANUAL SHUTOFF VALVE TO TWO INCH  
 DEPRESSURIZATION LINE

FUNCTION:  
 PROVIDES WASTE COLLECTION SYSTEM OVERBOARD VENT CAPABILITY. THESE  
 LINES AND FITTINGS ARE THOSE BETWEEN THE DOWNSTREAM SIDE OF THE MANUAL  
 SHUTOFF VALVE AND THE TWO INCH DEPRESSURIZATION LINE.

FAILURE MODE:  
 EXTERNAL LEAKAGE

CAUSE(S):  
 MECHANICAL SHOCK, VIBRATION, CORROSION

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

(A) FUNCTIONAL DEGRADATION - CABIN AIR WILL VENT OVERBOARD UNTIL  
 CORRECTIVE ACTION.

(B) DEGRADED INTERFACES - INCREASED USAGE OF CABIN ATMOSPHERE  
 CONSUMABLES. AFTER CORRECTIVE ACTION, PRESSURE MAY BUILD IN VACUUM VENT  
 LINE RESULTING IN INABILITY TO APPLY VACUUM TO COMMODE. LOSS OF VACUUM  
 TO HYDROGEN SEPARATOR.

(C) LOSS OF CABIN ATMOSPHERE MAY CAUSE EARLY MISSION TERMINATION.

(D) NO EFFECT FOR FIRST FAILURE.

(E) FUNCTIONAL CRITICALITY EFFECT - FAILURE TO ISOLATE LEAK (VACUUM  
 VENT ISOLATION VALVE - SECOND FAILURE) WILL RESULT IN UNCONTROLLED LOSS  
 OF CABIN ATMOSPHERE AND MAY RESULT IN LOSS OF CREW/VEHICLE.

DISPOSITION & RATIONALE:

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

(A) DESIGN

CORROSION RESISTANT MATERIALS - TUBING (21-6-9 CRES, 1 INCH OD TUBE, 33  
 INCHES LONG), BRAZED-ON DYNATUBE END FITTINGS. FLEX HOSE (ONE INCH OD)

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15.5 INCHES LONG, CRES WITH BRAZED ON DYNATUBE END FITTING AND OTHER END HAS BRAZED ON FLANGE WITH STATIC FACE O-RING SEAL.

(B) TEST

CERTIFICATION FOR 100 MISSION LIFE. VIBRATION, FATIGUE, BURST, AND SHOCK ARE BASED ON REPRESENTATIVE PANEL TEST FOR ECLSS, ELECTRICAL POWER GENERATOR AND HYDRAULICS OF TYPICAL PLUMBING INSTALLATION CONDUCTED AT HIGHER LEVELS THAN THAT REQUIRED FOR ECLSS PLUMBING. PROOF TEST - 2 TIMES MAXIMUM OPERATING PRESSURE. IMPULSE FATIGUE TEST - 2 X 10 (EXP +5) CYCLES OF IMPULSE WAVES. LEAK TEST - OVERPRESSURE AND LEAK ARE PERFORMED AFTER INSTALLATION.

OMRSD: LINES AND FITTINGS ARE VERIFIED FOR NO LEAKAGE PRIOR TO EACH FLIGHT.

(C) INSPECTION

RECEIVING INSPECTION

TUBE MATERIAL VERIFIED BY INSPECTION ON MANUFACTURING ORDERS. MANUFACTURING OF TUBE IS PER DRAWING AND APPLICABLE SPECIFICATION AND IS VERIFIED BY INSPECTION.

CONTAMINATION CONTROL

VAPOR DECREASE CLEANED AND INTERNAL SURFACES FLUSHED PER APPLICABLE SPECIFICATIONS AND VERIFIED BY INSPECTION. CLEANED AND PASSIVATED PER APPLICABLE SPECIFICATION AND VERIFIED BY INSPECTION. TUBE ENDS ARE ELECTRO-POLISHED PER APPLICABLE SPECIFICATION AND VERIFIED BY INSPECTION. INTERNAL SURFACES ARE CLEANED TO LEVEL 500 AND EXTERNAL SURFACES ARE VISIBLY CLEANED PER CLEANING SPECIFICATION. ALL CLEANING IS VERIFIED BY INSPECTION.

(D) FAILURE HISTORY

NO FAILURES.

(E) OPERATIONAL USE

THE CREW WOULD PERFORM THE LOSS OF CABIN PRESSURE PROCEDURE, WHICH IS PART OF NORMAL CREW TRAINING.