

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : LIFE SUPPORT FMEA NO 06-20 -1103 -2 REV:10/20/87

ASSEMBLY : WATER MGMT SUBSYSTEM CRIT. FUNC: 1R  
P/N RI : V070-623200 CRIT. HDW: 2  
P/N VENDOR: VEHICLE 102 103 104  
QUANTITY : 1 EFFECTIVITY: X X X  
: PHASE(S): PL LO X CO X DO X LS  
: ONE PER SUBSYSTEM

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

PREPARED BY: APPROVED BY: APPROVED BY (NASA):  
DES S. CASTILLO DES *[Signature]* SSM *[Signature]*  
REL L. SCHASCHL REL *[Signature]* REL *[Signature]*  
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ITEM:

LINES AND FITTINGS, H2 SEPARATOR LINE

FUNCTION:

PROVIDES PATHWAYS FOR THE MOVEMENT OF HYDROGEN FROM THE H2 SEPARATORS TO THE 2 INCH DUCT.

FAILURE MODE:

EXTERNAL LEAKAGE

CAUSE(S):

CORROSION, MECHANICAL SHOCK, VIBRATION

EFFECT(S) ON:

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

(A) NO EFFECT.

(B) LOSS OF CABIN AIR THROUGH 1/4 INCH DIAMETER LINE.

(C) LOSS OF CABIN CONSUMABLES OVERBOARD MAY SHORTEN MISSION DURATION.

(D) SECOND ASSOCIATED FAILURE (VACUUM VENT ISOLATION VALVE FAILED OPEN) WILL CAUSE EXCESSIVE LOSS OF CABIN AIR OVERBOARD AND MAY CAUSE 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), DYNATUBE FITTINGS (17-4 PH). INSTALLATION INSTRUCTIONS PER V070-623200 (TORQUING, INSULATION INSTALLATION, ETC.) PHENOLIC BRACKETS AND TEFLON TUBE CLAMPS FOR TUBE SUPPORT. CONNECTIONS AND JOINTS ARE BRAZED WITH A COPPER NICKEL GOLD ALLOY PREFORM. AIRDROME FLARED TUBE FITTINGS USED ON THE ADDITIONAL HYDROGEN SEPARATOR.

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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 -3) CYCLES OF IMPULSE WAVES. LEAK TEST - 1 X 10 (EXP -4) SCCS He MAXIMUM. IN-VEHICLE TEST - OVERPRESSURE AND LEAK ARE PERFORMED AFTER INSTALLATION.

OMRSD: VACUUM VENT LINE LEAK CHECK AND 2 PSID CABIN LEAK CHECK IS CONDUCTED BEFORE EACH FLIGHT.

C) INSPECTION

RECEIVING INSPECTION

TUBE MATERIAL IS VERIFIED BY INSPECTION ON MANUFACTURING ORDERS.

CONTAMINATION CONTROL

VAPOR DEGREASE CLEANED AND INTERNAL SURFACES ARE FLUSHED PER APPLICABLE SPECIFICATIONS, AND ARE VERIFIED BY INSPECTION. PARTS CLEANED AND PASSIVATED PER APPLICABLE SPECIFICATION ARE VERIFIED BY INSPECTION. TUBE ENDS ARE ELECTRO-POLISHED PER APPLICABLE SPECIFICATION AND ARE 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.

ASSEMBLY/INSTALLATION

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

NONDESTRUCTIVE EVALUATION

JOINT/TUBE BRAZING VERIFIED BY RADIOGRAPHIC INSPECTION.

TESTING

ACCEPTANCE TEST VERIFIED BY INSPECTION.

D) FAILURE HISTORY

NO FAILURES.

E) OPERATIONAL USE

CLOSE VACUUM VENT ISOLATION VALVE TO LIMIT CABIN GAS OVERBOARD TO LESS THAN 4 LB/HR.