

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : LIFE SUPPORT FMEA NO 06-2E -0435 -1 REV:12/01

ASSEMBLY : VENT AND DUMP EQUIPMENT CRIT. FUNC:
P/N RI : V070-623002 CRIT. HDW:
P/N VENDOR: VEHICLE 102 103 104
QUANTITY : 1 EFFECTIVITY: X X X
: PHASE(S): PL LO OO X DO L

: ONE PER SUBSYSTEM

PREPARED BY: REDUNDANCY SCREEN: B- C-
DES S. CASTILLO DES APPROVED BY: APPROVED BY (NASA):
REL L. SCHASCHL REL SEM [Signature]
QE M. SAVALA QE [Signature]

ITEM:

LINES, FITTINGS, AND QUICK DISCONNECTS (QD'S)
FROM THE WCS/WASTE TANK INTERFACE QD TO THE WASTE TANK INLET VALVE,
THE FILL QD, AND THE ATMOSPHERIC REVITALIZATION SYSTEM (ARS) HUMIDITY
SEPARATOR INTERFACE.

FUNCTION:

PROVIDES FLOW PATH FOR WASTE WATER FROM THE WCS INTERFACE QD AND
ARS HUMIDITY SEPARATORS TO THE WASTE WATER TANK; INCLUDES FLOW PATH TO
THE FILL QD FOR GSE SERVICING.

FAILURE MODE:

RESTRICTED FLOW

CAUSE(S):

CONTAMINATION, MECHANICAL SHOCK, VIBRATION

EFFECT(S) ON:

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

(A, B) LOSS OF URINE COLLECTION AND/OR HUMIDITY SEPARATOR CONDENSATE
COLLECTION.

(C) LOSS OF URINE COLLECTION CAPABILITY OR CABIN HUMIDITY CONTROL
WILL LIMIT MISSION DURATION.

(D) NO EFFECT.

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 FITTING
(17-4 PH), INSTALLATION INSTRUCTIONS PER V070-623002 (TORQUING,
INSULATION INSTALLATION, ETC.). FITTINGS AND JOINTS ARE BRAZED. TUBE
SUPPORTS PER MA0102-306. QD IS ALL STAINLESS STEEL CONSTRUCTION WITH
ETHYLENE PROPYLENE (EPR) O-RING SEAL AND A TEFLON BACKUP RING SEAL.
MATERIALS ARE COMPATIBLE WITH WORKING FLUIDS (URINE, EMU DRAIN WATER,
AND DISINFECTANT).

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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 POW GENERATOR AND HYDRAULICS OF TYPICAL PLUMBING INSTALLATION CONDUCTED AT HIGHER LEVELS THAN THAT REQUIRED FOR ECLSS PLUMBING.

OMRSD: FLOW RATES ARE VERIFIED PRIOR TO EACH FLIGHT.

(C) INSPECTION

RECEIVING INSPECTION

RAW MATERIALS AND PROCESSES ARE VERIFIED.

CONTAMINATION CONTROL

CORROSION PROTECTION PROVISIONS AND CONTAMINATION CONTROL PLAN ARE VERIFIED BY INSPECTION. CLEANLINESS OF PARTS AND TOOLS VERIFIED BY INSPECTION.

ASSEMBLY/INSTALLATION

QD IS VISUALLY INSPECTED FOR DAMAGE DURING INSTALLATION. DIMENSIONS AND TORQUING ARE VERIFIED BY INSPECTION. MANUFACTURING PROCESSES, INSTALLATION AND ASSEMBLY ARE VERIFIED BY INSPECTION. FABRICATED DETAILS CONFIGURATION IS VERIFIED BY INSPECTION.

NONDESTRUCTIVE EVALUATION

JOINT/TUBE BRAZING IS VERIFIED BY RADIOGRAPHIC INSPECTION.

CRITICAL PROCESSES

BRAZING PROCESS IS VERIFIED BY INSPECTION. WELDING CERTIFICATION AND HEAT TREATMENT OF QD ARE VERIFIED BY INSPECTION.

TESTING

PROOF PRESSURE TEST AND LEAK TEST ARE VERIFIED BY INSPECTION.

HANDLING/PACKAGING

PARTS PROTECTION IS VERIFIED BY INSPECTION.

(D) FAILURE HISTORY

ONE FAILURE OCCURRED WHERE A COTTON SWAB (USED DURING THE BRAZING PROCESS FOR CLEANING PURPOSES), WAS FOUND LODGED IN THE GALLEY VALVE TUBING. AN "AWARE" (NUMBER 167) WAS WRITTEN AND DISTRIBUTED THROUGHOUT THE FIELD TO ALERT PERSONNEL TO VERIFY TUBES ARE CLEAR BEFORE BRAZING. THE "AWARE" IS ALSO LISTED IN THE BRAZER'S MANUFACTURING ORDERS. (CAR #AD1687)

(E) OPERATIONAL USE

CREW SHOULD USE THE URINE COLLECTION DEVICES (BAGS) TO COLLECT URINE.