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PRINT DATE: 10/19/88

SHUTTLE CRITICAL ITEMS LIST - ORBITER NUMBER: 06-2E-0438-X

SUBSYSTEM NAME: LIFE SUPPORT

REVISION : 10/19/88

CLASSIFICATION NAME PART NUMBER
LRU : LINES, FITTINGS, DISCONNECTS V070-623002

QUANTITY OF LIKE ITEMS: 1
ONE PER SUBSYSTEM

DESCRIPTION/FUNCTION:

LINES, FITTINGS, AND QUICK DISCONNECTS (QD'S) FROM THE WASTE WATER DUMP ISOLATION VALVE TO THE WASTE WATER DUMP VALVE AND TO THE CROSS-TIE QD

PROVIDES WASTE WATER FLOW PATH FROM THE WASTE WATER STORAGE TANK TO THE DUMP NOZZLE AND TO THE CROSS-TIE QD.

06-2E-35

SHUTTLE CRITICAL ITEMS LIST - ORBITER NUMBER: 06-2E-0438-I

SUMMARY

SUBSYSTEM NAME: LIFE SUPPORT
 LRU : LINES, FITTINGS, DISCONNECTS
 LRU PART #: V070-623002
 ITEM NAME: LINES, FITTINGS, DISCONNECTS

FMEA NUMBER	ABBREVIATED FAILURE MODE DESCRIPTION	CIL FLG	CRIT	H2D FLG
06-2E-0438-01	FLOW OR THRUST ANOMALIES	X	2 2	
06-2E-0438-02	EXTERNAL LEAKAGE	X	2 2	

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SHUTTLE CRITICAL ITEMS LIST - ORBITER NUMBER: 06-2E-0438-01

REVISION: 10/19/88

SUBSYSTEM: LIFE SUPPORT

LRU : LINES, FITTINGS, DISCONNECTS

CRITICALITY OF THIS

ITEM NAME: LINES, FITTINGS, DISCONNECTS

FAILURE MODE: 2 2

FAILURE MODE:
RESTRICTED FLOW

MISSION PHASE:
OO ON-ORBIT

VEHICLE/PAYLOAD/RIT EFFECTIVITY: 102 COLUMBIA
: 103 DISCOVERY
: 104 ATLANTIS

CAUSE:
CONTAMINATION, MECHANICAL SHOCK, VIBRATION

CRITICALITY 1/1 DURING ANY MISSION PHASE OR ABORT? N

REDUNDANCY SCREEN A) N/A
B) N/A
C) N/A

PASS/FAIL RATIONALE:

A)

B)

C)

- FAILURE EFFECTS -

(A) SUBSYSTEM:
INABILITY TO DUMP WASTE WATER. POSSIBLE LOSS OF CONTINGENCY SUPPLY
WATER CROSS-TIE CAPABILITY.

(B) INTERFACING SUBSYSTEM(S):
SAME AS (A)

(C) MISSION:
LOSS OF WASTE WATER STORAGE CAPACITY WILL LIMIT MISSION DURATION.
(CRITICALITY 2/2)

06-2E-37

SHUTTLE CRITICAL ITEMS LIST - ORBITER NUMBER: 06-2E-0438-01

(D) CREW, VEHICLE, AND ELEMENT(S):
NO EFFECT.

RATIONALE FOR CRITICALITY:

FUNCTIONAL CRITICALITY EFFECT - LOSS OF ALL SUPPLY WATER DUMP CAPABILITY (SUPPLY WATER DUMP LINE, WASTE WATER DUMP LINE, FLASH EVAPORATOR DUMP MODE, AND FUEL CELL OVERBOARD DUMP NOZZLE) CAN DEAD HEAD THE FUEL CELL WATER OUTPUT LINE AND CAUSE LOSS OF CREW/VEHICLE. (CRITICALITY 1R3 PPP EFFECT)

- DISPOSITION RATIONALE -

(A) DESIGN:

CORROSION-RESISTANT MATERIALS - TUBING (21-6-9 CRES), DYNATUBE FITTINGS (17-4 PH), INSTALLATION INSTRUCTIONS PER WD70-623002 (TORQUING, INSULATION INSTALLATION, ETC.). FITTINGS AND JOINTS ARE BRAZED. TUBING SUPPORTS PER MA0102-306. QD IS ALL STAINLESS STEEL CONSTRUCTION WITH AN ETHYLENE PROPYLENE (EPR) O-RING SEAL AND A TEFLON BACKUP RING SEAL. ALL MATERIALS ARE COMPATIBLE WITH WORKING FLUIDS (URINE, EMU DRAIN WATER, AND DISINFECTANT).

(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. QMRSD: 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

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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:


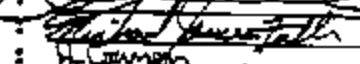
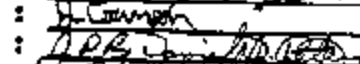
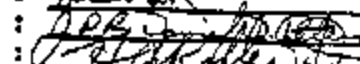
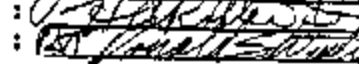
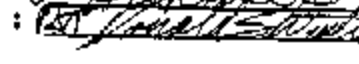
ONE FAILURE OCCURRED WHERE A COTTON SWAB (USED DURING THE BRAZING PROCESS FOR CLEANING PURPOSES), WAS FOUND LODGED IN THE GALLEY VALVE TUBING. AN "AWARE" (NUMBER 167) WAS WRITTEN AND DISTRIBUTED THROUGHOUT THE FIELD TO ALERT PERSONNEL TO VERIFY TUBES ARE CLEAR BEFORE BRAZING. THE "AWARE" IS ALSO LISTED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

(E) OPERATIONAL USE:

CREW WOULD RETURN TO THE PRIMARY LANDING SITE BEFORE THE WASTE TANK BECOMES HARD FILLED (PER FLIGHT RULE).

REMARKS:

- APPROVALS -

RELIABILITY ENGINEERING:	L. SCHASCHL	DEM :	
DESIGN ENGINEERING	S. CASTILLO	or C :	
QUALITY ENGINEERING	M. SAVALA	MS :	
NASA RELIABILITY	:	:	
NASA DESIGN	:	:	
NASA QUALITY ASSURANCE	:	:	

11/2/88