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PRINT DATE: 10/19/88

SHUTTLE CRITICAL ITEMS LIST - ORBITER NUMBER: 06-2D-1132-X

SUBSYSTEM NAME: LIFE SUPPORT

REVISION : 10/19/88

CLASSIFICATION NAME PART NUMBER
LRU : LNS, FTS, HOSE, QD&COMP V070-623200

QUANTITY OF LIKE ITEMS: 1
ONE PER SUBSYSTEM

DESCRIPTION/FUNCTION:

LINES, FITTINGS, HOSE, QUICK DISCONNECT (QD) AND COMPONENTS, PRIMARY FUEL CELL PATH

PROVIDES PRIMARY FUEL CELL WATER PATH FROM THE FUEL CELL/ECLSS INTERFACE TO THE A/B CHECK VALVE AND MICROBIAL CHECK VALVE INLET QD.

06-20-15

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SUMMARY

SUBSYSTEM NAME: LIFE SUPPORT
LRD : LNS, FTS, HOSE, QD&COMP
LRU PART #: V070-623200
ITEM NAME: LNS, FTS, HOSE, QD&COMP

| FMEA NUMBER | ABBREVIATED FAILURE MODE DESCRIPTION | CIL PLG | CRIT | H2D PLG |
|---------------|---|------------|------|------------|
| 06-2D-1132-02 | EXTERNAL LEAKAGE | X | 2 2 | |

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SUBSYSTEM: LIFE SUPPORT
LRU : LNS, FTS, HOSE, QD&COMP
ITEM NAME: LNS, FTS, HOSE, QD&COMP

CRITICALITY OF THIS
FAILURE MODE: 2 2

FAILURE MODE:
EXTERNAL LEAKAGE

MISSION PHASE:
LO LIFT-OFF
OO ON-ORBIT

| | | |
|----------------------------------|-----|-----------|
| VEHICLE/PAYLOAD/KIT EFFECTIVITY: | 102 | COLUMBIA |
| | 103 | DISCOVERY |
| | 104 | ATLANTIS |

CAUSE:
VIBRATION, MECHANICAL SHOCK, CORROSION

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

REUNDANCY SCREEN A) N/A
B) N/A
C) N/A

PASS/FAIL RATIONALE:
A)

B)

C)

- FAILURE EFFECTS -

(A) SUBSYSTEM:
UNISOLATABLE WATER LEAK INTO CABIN OR PAYLOAD BAY.

(B) INTERFACING SUBSYSTEM(S):
POSSIBLE FREEZING OF WATER LINE FOR LEAK INTO PAYLOAD BAY, OR FREE
WATER IN CABIN FOR LEAK INSIDE CABIN.

(C) MISSION:
UNISOLATABLE LEAK MAY LIMIT MISSION DURATION AND REQUIRES DEACTIVATION
OF FES ON ORBIT RESULTING IN LOSS OF PAYLOAD COOLING AND MISSION

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OBJECTIVES.

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

RATIONALE FOR CRITICALITY:

- DISPOSITION RATIONALE -

(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. THE HYDROGEN SEPARATORS HAVE AN ANODIZED ALUMINUM HOUSING WITH ELASTOMER SEALS TO PRECLUDE EXTERNAL LEAKAGE. CORROSION RESISTANT HYDROGEN SEPARATOR INTERNAL TUBING CONSTRUCTED OF SILVER PALLADIUM. INTERIOR AND MATING SURFACES OF THE HYDROGEN SEPARATORS ARE COATED WITH SUPER KOROPON TO PROVIDE HIGH CORROSION RESISTANCE. QD IS ALL STAINLESS STEEL CONSTRUCTION WITH AN ETHYLENE PROPYLENE O-RING SEAL AND A TEFLON BACKUP 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 - 1 X 10 (EXP -4) SCCS H= MAXIMUM. IN-VEHICLE TEST - OVERPRESSURE AND LEAK ARE PERFORMED AFTER INSTALLATION. OMRSD: FLOW THROUGH LINES AND NO LEAKAGE ARE VERIFIED BEFORE EACH FLIGHT. CONTINGENCY LRU RETEST OF INTERFACE LEAK TEST AND SYSTEM PRESSURE DECAY TEST.

(C) INSPECTION:

RECEIVING INSPECTION

RAW MATERIAL CERTIFICATION IS VERIFIED BY INSPECTION.

CONTAMINATION CONTROL

CORROSION PROTECTION AND CLEANLINESS ARE VERIFIED BY INSPECTION.

ASSEMBLY/INSTALLATION

TORQUE IS VERIFIED FOR ALL DETAIL PARTS AND FLUID FITTING INSTALLATIONS.

NONDESTRUCTIVE EVALUATION

JOINT/TUBE BRAZING VERIFIED BY RADIOGRAPHIC INSPECTION.



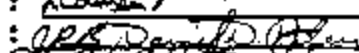
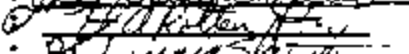


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TESTING
ACCEPTANCE TEST IS VERIFIED BY INSPECTION.

(D) FAILURE HISTORY:
NO FAILURES.

(E) OPERATIONAL USE:
CREW WOULD DEMATE MICROBIAL CHECK VALVE QD TO ISOLATE TANK A FOR WATER
SUPPLY TO THE GALLEY.

- APPROVALS -

| | | | | |
|--------------------------|-------------|-----|---|---|
| RELIABILITY ENGINEERING: | L. SCHASCHL | DRI | : |  |
| DESIGN ENGINEERING | S. CASTILLO | QC | : |  |
| QUALITY ENGINEERING | M. SAVALA | ML | : |  |
| NASA RELIABILITY | : | | : |  |
| NASA DESIGN | : | | : |  |
| NASA QUALITY ASSURANCE | : | | : |  |