

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : LIFE SUPPORT FMEA NO 06-2D -1101 -2 REV:08/11/88

ASSEMBLY : WATER COLLECTION CRIT. FUNC: 1  
 P/N RI : MC250-0009-0001 CRIT. HDW: 1  
 P/N VENDOR: ITEM 4.15  
 QUANTITY : 2 VEHICLE 102 103 104  
 EFFECTIVITY: X X X  
 PHASE(S): PL LO OO X DO LS  
 : TWO IN SERIES

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

ITEM:  
 SEPARATOR, HYDROGEN/WATER 90V62AB1, 90V62AB2

FUNCTION:  
 PROVIDES FOR REMOVAL OF FREE AND DISSOLVED HYDROGEN FROM FUEL CELL WATER  
 PRIOR TO STORAGE IN SUPPLY WATER TANKS.

FAILURE MODE:  
 INTERNAL LEAKAGE, WATER TO VACUUM

CAUSE(S):  
 STRUCTURAL FAILURE, VIBRATION, CORROSION, MECHANICAL SHOCK

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

(A) WATER LEAK INTO VACUUM VENT LINE FROM THE FUEL CELLS AND FROM TANK A.

(B) UNABLE TO COLLECT FUEL CELL WATER IN SUPPLY WATER TANKS AND UNCONTROLLED VENTING OF WATER OVERBOARD.

(C) UNISOLATABLE WATER LEAK MAY REQUIRE EARLY MISSION TERMINATION.

(D) A WATER LEAK IN THE VACUUM VENT DUCT WILL EXCEED DUCT HEATERS CAPABILITY AND FREEZE INSIDE THE DUCT, CAUSING A BUILDUP OF ICE. DUE TO THE PRESSURE DIFFERENCE, HYDROGEN WILL COME OUT OF SOLUTION AND BE TRAPPED INSIDE THE DUCT, CAUSING A POTENTIAL EXPLOSIVE CONDITION WHEN MIXED WITH THE AIR ENTERING THROUGH THE COMMODO. THIS CONDITION RESTRICTS THE ON-ORBIT TIME. FURTHERMORE, IF THE WATER DOES NOT FREEZE INSIDE THE DUCT, IT WILL FREEZE AND BUILD UP ON THE NOZZLE. DURING ENTRY, THE ICE WILL BREAK FREE AND WILL IMPACT THE LEFT OMS POD (STS-41L) AND MAY RUPTURE OMS TANK CAUSING LOSS OF CREW/VEHICLE.

EXPEDITE  
 PROCESSING

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SUBSYSTEM : LIFE SUPPORT

FMEA NO 06-2D -1101 -2

REV:07/29/82

TESTING

ACCEPTANCE TEST IS VERIFIED BY INSPECTION.

HANDLING/PACKAGING

PARTS PROTECTION IS VERIFIED BY INSPECTION.

(D) FAILURE HISTORY

NO FAILURES.

(E) OPERATIONAL USE

CREW WILL CLOSE THE VACUUM VENT VALVE. CREW WOULD DEMATE MICROBIAL CHECK VALVE QD TO ISOLATE TANK A FROM THE LEAK AND TO ALLOW THE WATER SUPPLY TO REACH THE GALLEY.  
ENTRY AT NEXT PLS.

EXPEDITE  
PROCESSING

06-2D-2