

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : LIFE SUPPORT FMEA NO 06-2C -0445 -2 REV:09/28/87

ASSEMBLY : URINE COLLECTION EQUIPMENT CRIT. FUNC: 2

P/N RI : MC282-0069 CRIT. HDW: 2

P/N VENDOR: 47E225362, 47D232948, VEHICLE 102 103 104

: 47E232939 EFFECTIVITY: X X X

QUANTITY : ONE PHASE(S): PL LO CO X DO LS

PREPARED BY: REDUNDANCY SCREEN: A- B- C-

DES D. SANDERSFELD APPROVED BY: APPROVED BY (NASA):

REL L. SCHASCHL DES *[Signature]* SSM *[Signature]* 10/2/87

QE M. SAVALA REL *[Signature]* REL *[Signature]* 10/2/87

QE *[Signature]* QE *[Signature]* 10/2/87

ITEM:
DUCT AND COMPONENTS, FAN HOUSING TO MUFFLER OUTLET

FUNCTION:
PROVIDES AIR FLOW PATH FROM FAN HOUSING TO ODOR/BACTERIA FILTER AND HOUSING.

FAILURE MODE:
EXTERNAL LEAKAGE

CAUSE(S):
CORROSION, VIBRATION, MECHANICAL SHOCK

- EFFECT(S) ON:
(A)SUBSYSTEM (B)INTERFACES (C)MISSION (D)CREW/VEHICLE
- (A) REDUCED EFFICIENCY OF FILTERING AIR FLOW FROM COLLECTION OF URINE AND FECAL MATTER.
- (B) POTENTIAL BACTERIA IN CABIN AIR.
- (C) HIGHER ODOR/BACTERIA LEVEL IN CABIN MAY REQUIRE EARLY MISSION TERMINATION.
- (D) NO EFFECT.

DISPOSITION & RATIONALE:
(A)DESIGN (B)TEST (C)INSPECTION (D)FAILURE HISTORY (E)OPERATIONAL USE

(A) DESIGN
THE DUCT IS CONSTRUCTED OF FIBERGLASS, SEALED WITH STATIC VITON O-RINGS AND SILICON RUBBER (RTV 630) GASKETS. THE FAN OUTLET PARTS ARE CONSTRUCTED FROM MACHINED ALUMINUM STOCK OR INVESTMENT CAST ALUMINUM WITH AN ANODIZED FINISH.

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(B) TEST

QUALIFICATION TESTS FOR 100 MISSION LIFE - RANDOM VIBRATION, 48 MINUTES/AXIS, RATE OF PLUS 6 dB/OCTAVE FROM 20 TO 150 HZ; CONSTANT 0.03 G SQ/HZ FROM 150 TO 1000 HZ; DECREASING AT THE RATE OF MINUS 6 dB/OCTAVE FROM 1000 TO 2000 HZ. SINUSOIDAL VIBRATION SWEEPS 5 TO 30 AT 1 OCTAVE/MINUTE AT 0.25 G PEAK. SHOCK TESTING OF 20 G SAWTOOTH 5 IMPULSE, 11 MILLISECOND DURATION.

ACCEPTANCE TEST - FAN/SEPARATOR AND AIR OUTLET DUCT IS LEAK-TESTED AT 8 INCHES WATER PRESSURE.

OMRSD: AIR SIDE IS LEAK-CHECKED AT NORMAL OPERATING CONDITIONS AND BUBBLE LEAK-CHECKED AT 8 INCHES WATER PRESSURE PRIOR TO EACH FLIGHT & VENDOR. AIR FLOW THROUGH THE FAN/SEPARATOR IS MEASURED PRIOR TO EACH FLIGHT.

(C) INSPECTION

RECEIVING INSPECTION

CERTIFICATION OF ALL RAW MATERIALS AND PROCESSES IS VERIFIED.

ASSEMBLY/INSTALLATION

CORROSION PROTECTION PROVISIONS AND TORQUING ARE VERIFIED BY INSPECTOR

NONDESTRUCTIVE EVALUATION

VISUAL INSPECTION OF O-RING SURFACES. DYE PENETRANT INSPECTION OF FAN HOUSING WELDS.

TESTING

ACCEPTANCE TEST PROCEDURE IS VERIFIED AND WITNESSED BY QUALITY CONTROL

(D) FAILURE HISTORY

NO FAILURES.

(E) OPERATIONAL USE

CREW WOULD USE CONTINGENCY FECAL AND URINE BAGS.