

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM :PURGE, VENT & DRAIN FMEA NO 01-5 -332408-5 REV:09/28/87

ASSEMBLY :WCCS  
P/N RI :V070-383126  
P/N VENDOR:  
QUANTITY :2  
:TWO  
:

	VEHICLE	102	103	104	--
EFFECTIVITY:	X	X	X	X	-
PHASE(S):	PL	LO	X	OO	X DO X LS

PREPARED BY: DES F A FERRIS  
REL J S MULLEN  
QE *M.S. for W. Sullivan*

REDUNDANCY SCREEN: A-N/A B-N/A C-N/A  
APPROVED BY: DES *J. F. Regueira*  
REL *[Signature]*  
QE *[Signature] 11/2/77*

APPROVED BY (NASA): SSM *[Signature]*  
REL *[Signature]*  
QE *[Signature]*

ITEM:  
DESICCANT/FILTER ASSEMBLY

FUNCTION:  
THIS ITEM ACTS TO CONDITION AMBIENT AIR INGESTED FROM THE ATMOSPHERE.

FAILURE MODE:  
LEAKAGE, EXTNL (INNER AND OUTER HATCH WINDOW)

CAUSE(S):  
CONTAMINATION, LOOSE FLUID FITTING, FAILED RUBBER SEALS

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

(A) FUNCTIONAL DEGRADATION DUE TO THE INTRODUCTION OF AMBIENT AIR INTO THE HATCH WINDOW CAVITIES.

(B) LOSS OF CABIN ATMOSPHERE OVERBOARD THROUGH PURGE/VENT LINES.

(C) LOSS OF CABIN GAS THROUGH A 0.218 INCH DIAMETER LEAK PATH WOULD REQUIRE ABORT DECISION.

(D) NONE.

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

(A) DESIGN  
THE DESICCANT/FILTER ASSEMBLY IS INSTALLED BY MEANS OF DYNATUBE FITTINGS WHICH ARE NOT PRONE TO LEAKAGE (REFERENCE JSC TEST REPORT WTS/MS97 DATED 3/31/77). THERE ARE RUBBER SEALS LOCATED AT EACH END OF THE CANISTER WHERE THE END ASSEMBLY MATES TO THE LEXAN TUBE. THE MAXIMUM TUBE DIAMETER IN THE CABIN IS .218 INCH DIAMETER WHICH, IF IT LEAKS, IS LESS THAN THE .45 INCH DIAMETER FLOW MAKE-UP CAPABILITY OF THE ECLSS. THE

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FACTOR OF SAFETY (F.O.S.) IS 22 BY ANALYSIS FOR THE ULTIMATE CRUSH PRESSURE OF 64.8 PSID.

(B) TEST

A TYPICAL DESICCANT/FILTER ASSEMBLY UNDERWENT CERTIFICATION TESTS SUBJECTING THE HARDWARE TO THE DESIGN RANDOM VIBRATION ENVIRONMENT FOR THE EQUIVALENT OF 400 MISSIONS. THE ASSEMBLY WAS ALSO SUBJECTED TO THE 20G DESIGN SHOCK PULSE AND THEN SUCCESSFULLY COMPLETED FUNCTIONAL LEAK TESTS. THE CANISTER ASSEMBLY IS INSTALLED WHEN THE HATCH WINDOW SYSTEM UNDERGOES A PRESSURE DECAY TEST EACH TURNAROUND PER THE OMRSD. THE DESICCANT/FILTER ASSEMBLY IS CERTIFIED UNDER CR 14-381120F.

(C) INSPECTION

RECEIVING INSPECTION

CANISTER BODY ASSEMBLY MATERIAL AND PROCESS CERTIFICATIONS VERIFIED BY INSPECTION.

ASSEMBLY/INSTALLATION

SEAL AND END CAPS INSTALLATION VERIFIED BY INSPECTION. TORQUE REQUIREMENTS VERIFIED BY INSPECTION.

TESTING

LEAK TEST VERIFIED BY INSPECTION.

HANDLING/PACKAGING

PACKAGING/ BAGGING VERIFIED BY INSPECTION.

(D) FAILURE HISTORY

NO FAILURES DUE TO LEAKAGE HAVE BEEN EXPERIENCED TO DATE.

(E) OPERATIONAL USE

NO IN-FLIGHT CORRECTIVE ACTION IS POSSIBLE.