

EO1-SAA096S05-011
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Page 56 of 62**CRITICAL ITEM:** HEPA Filters (two assemblies, two filters in each assembly)**Find Number:** A143076, A143075**System:** YPF Payload ECS**Failure Category:** 2**SAA No.:** 096S05-011**NASA Part No.:** None**PNM/Name:** S72-1257**Mfr's Part No.:** Flanders Filters,
Inc. 007-C-08-03-1E-YPF**Drawing/ Sheet No.:** Ellis & Watts
J83JS; 79K22629**Function:** Filters particles from conditioned air**Critical Failure Mode:** Pass contaminants (FMN 096S05-011.002)**Cause:** Failure of filter media or leakage around gasket**Failure Effect:** Particulate contamination of payload**ACCEPTANCE RATIONALE:****Design:**

- o Filter medium and efficiency: nonwoven glass paper (boron-silicate microfiber), 99.97% minimum efficiency on 0.3 micron particles.
- o Separator material: flat sheet, pleated over 0.0015" (minimum thickness) corrugated-aluminum separators with hemmed edges.
- o Frame material: 14-gauge, galvanized steel.
- o Frame style: double turn flanges both faces, neoprene gaskets.
- o Sealant: high-temperature silicone (500 $\frac{1}{2}$ F/260 $\frac{1}{2}$ C - supply air)
- o Size 23 $\frac{3}{8}$ " x 23 $\frac{3}{8}$ " x 11 $\frac{1}{2}$ " (H x W x D)
- o The capacity of each filter is 1135 C.F.M. at 1.00" H₂O pressure drop. There are two filters in each assembly, for a total capacity of 2270 C.F.M. at 1.00" H₂O pressure drop. The vendor manual states that each air circuit supplies 150 lbs./min. of conditioned air, which is equivalent to 1884 C.F.M. at 55 $\frac{1}{2}$ F. The unit is normally used below full capacity.

Test:

File VI OMRSD, as implemented by OMI E3501, requires verification of particulate count and hydrocarbon content prior to initial connection to the payload and verification of satisfactory temperature, humidity, pressure and flow before and during use

Inspection:

- o After start-up of the ECS, a sample of air from an outlet discharge is tested with a particle counter. The air's cleanliness level is checked to verify that it is class 8000 per Federal Standard 209.
- o The differential pressure across the filter is measured and shown on a gage.

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- o The pressure gages are calibrated annually.
- o During quarterly maintenance, it is verified that the HEPA filter differential pressure gage readings are within the 0-1.5 inches H₂O range.

Failure History:

From 1981 to the present, no PRAEA reports were written on HEPA filters in this system.

Operational Use:

This system is used in accordance with OMI E2501. Out of tolerance readings will result in termination of payload testing.