

Radial Flow Large Scale Test Stand (Infrastructure and Capabilities)

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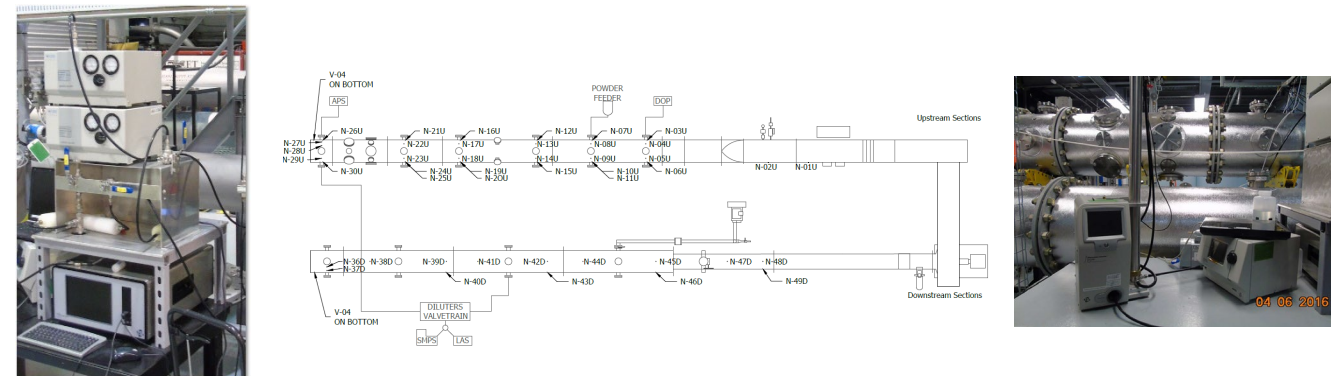
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Work Described was Underwritten by the United States Department of Energy (DOE)

Radial Flow Large Scale Test Stand

- Radial Flow Filters**
 - Safe Change (20.375 in. diameter, 23.875 in. length)
 - Remote Change (21 in. diameter, 25 in. length)
- Operational Ranges**
 - Flowrate 0 CFM to 5000 CFM (0 m³/s to 2.36 m³/s)
 - Max dP 50 in. w. c. (12 kPa)
 - Temperature 60 F° to 200 F° (16 C° to 93 C°)
 - Relative humidity up to +90%
- In-duct Coupon Samplers**
 - Flat sheet media coupons (60 mm)
 - Flowrate: Isokinetic according to large filter media area
- Aerosol Sampling Capabilities**
 - Sampling probes are placed greater than 10 duct diameter's length away from particle injection

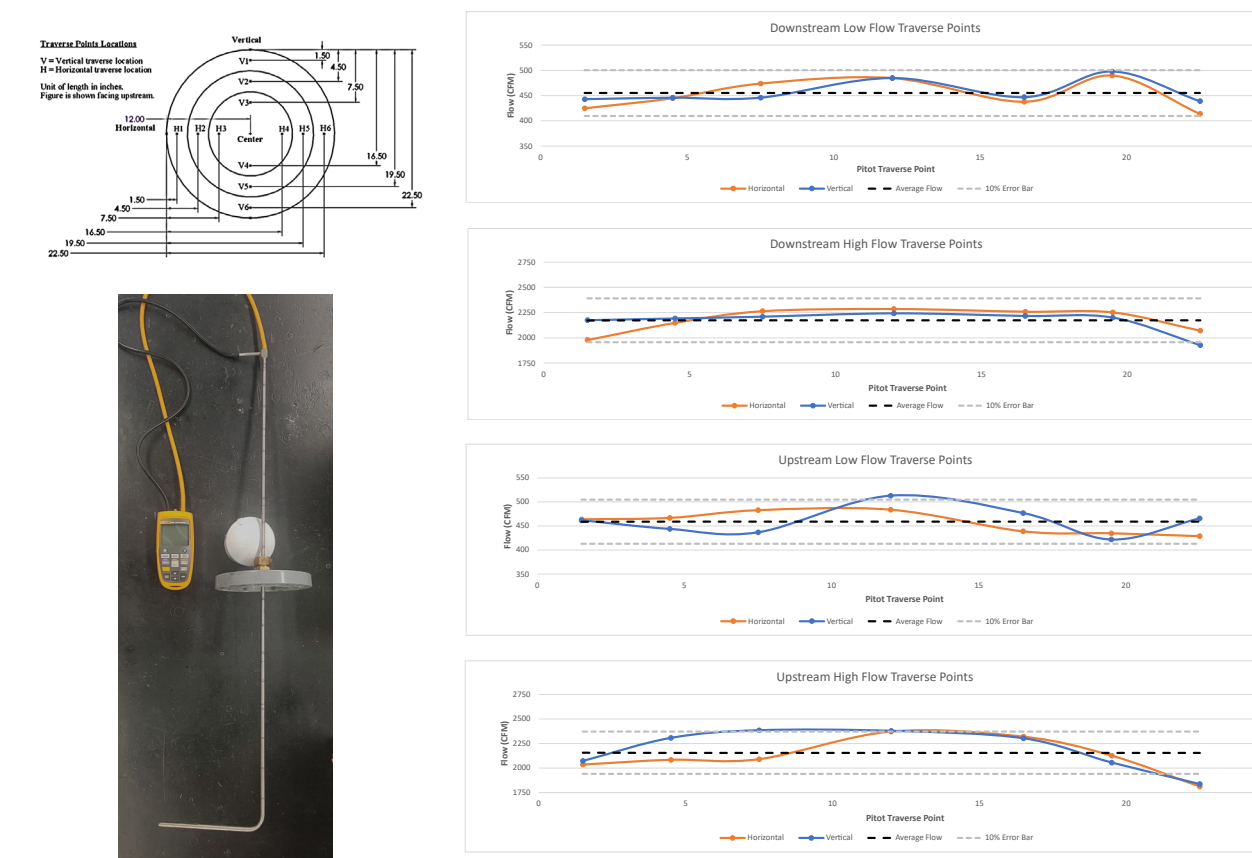
Sampling Configuration



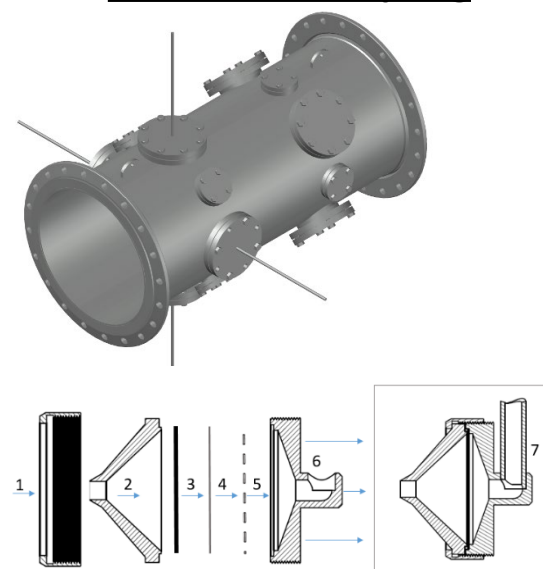
Aerosol Measurement Instrumentation

Instrument	Particles/cc (min)	Particles/cc (max)	Particle Size Distribution (µm)
TSI Model 3938 SMPS	1	1x10 ⁷	0.024 – 1
TSI Model 3321 APS	1	1x10 ³	0.3 – 20
TSI Model 3340 LAS	<0.02	1.8x10 ⁴	0.90 – 7.5
ATI Photometer Model 2i	0 µg/L	600 µg/L	N/A
Diluters for SMPS, LAS, and APS (100:1 and 20:1)	N/A	N/A	N/A

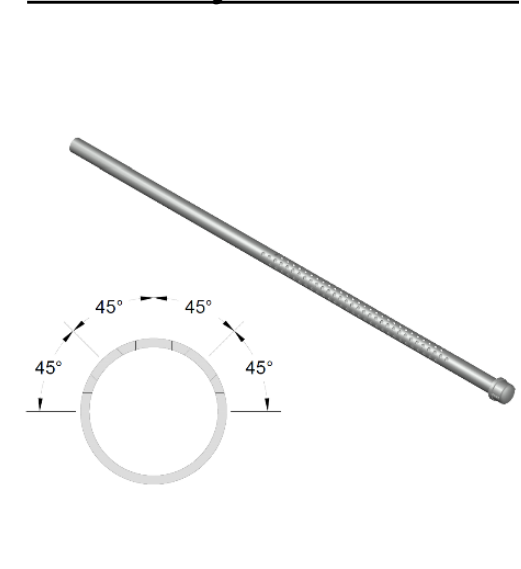
Preliminary Pitot Traverse Analysis



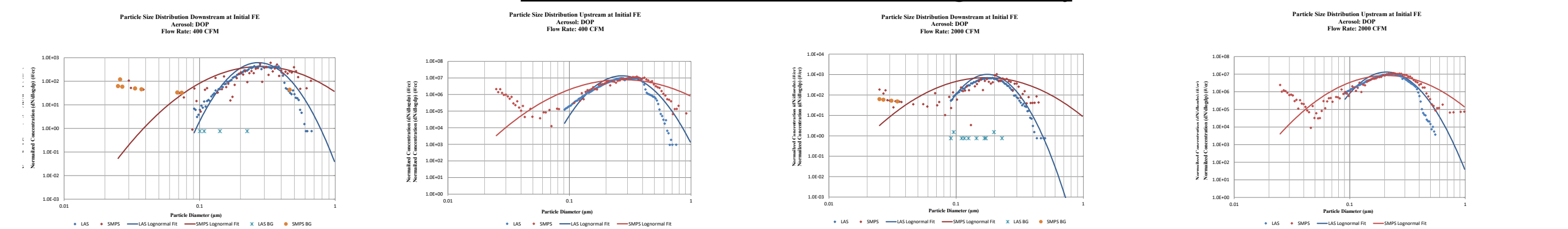
Flat Sheet Sampling



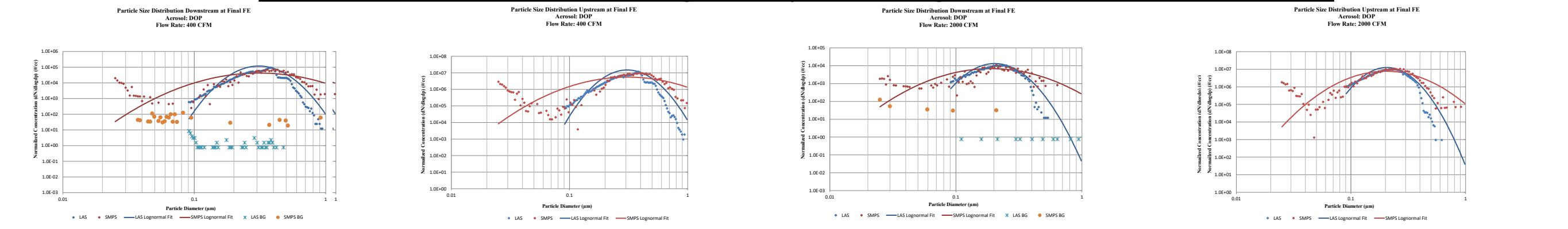
Aerosol Injection Manifold



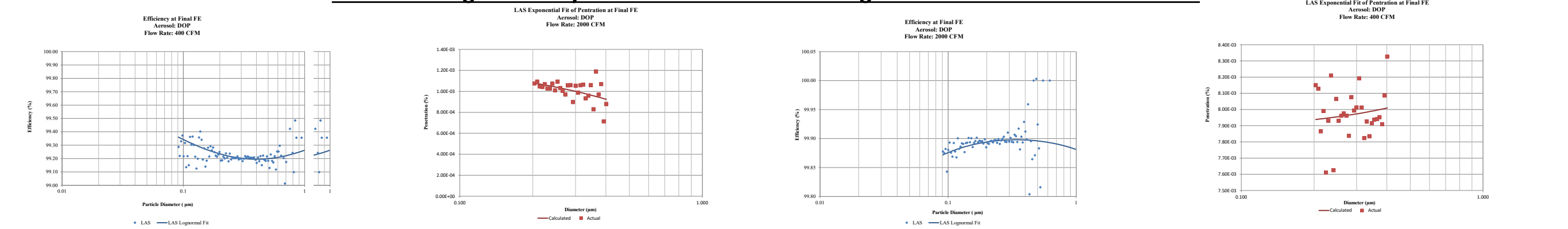
Particle Size Distribution at Initial Filtering Efficiency



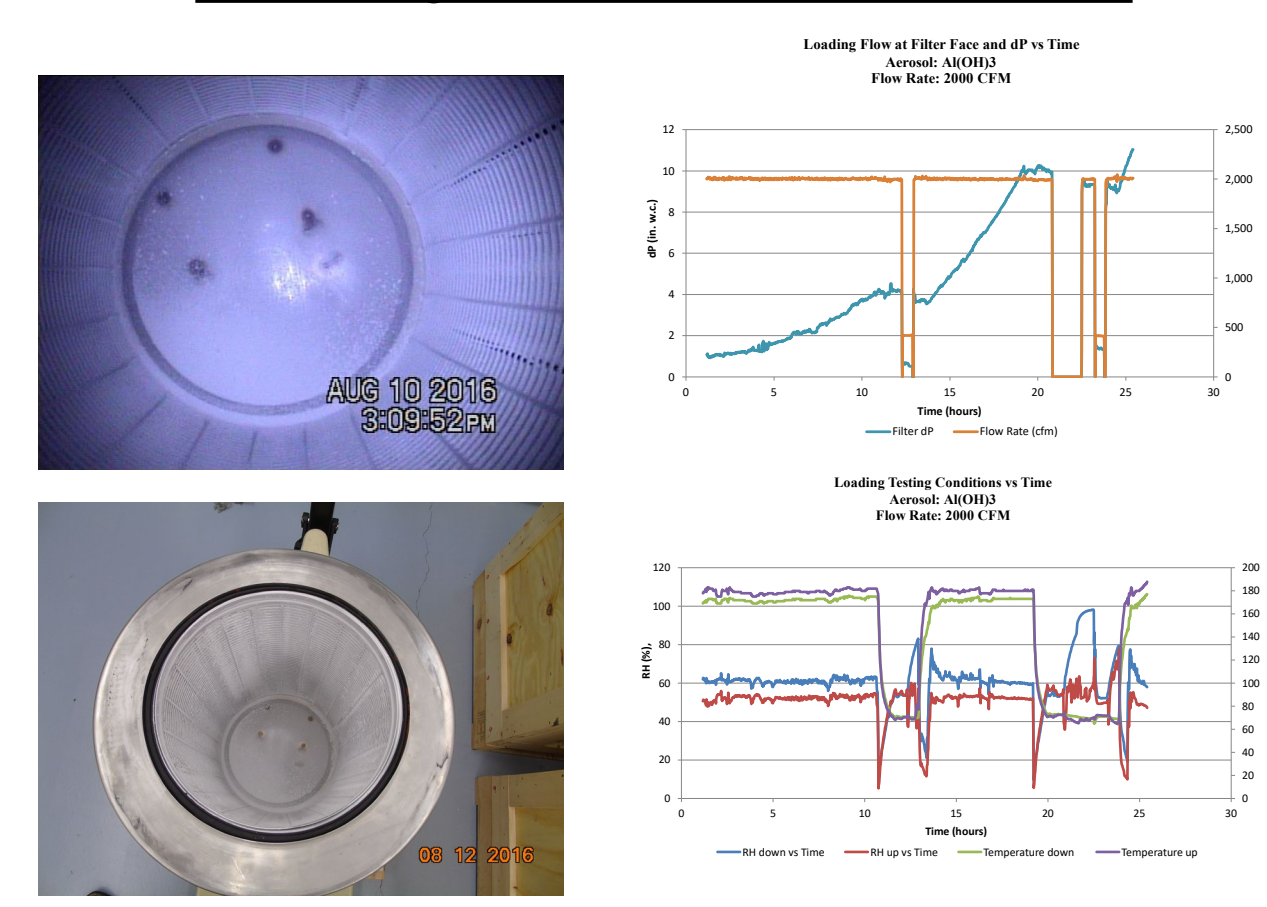
Particle Size Distribution at Final Filtering Efficiency after Loading to 10 in. w. c. at Elevated Conditions



Final Filtering Efficiency at 10 in. w. c. after Loading to 10 in. w. c. at Elevated Conditions



Filter Loading to 10 in. w. c. at Elevated Conditions



Radial Flow Filter Housings

