ETV Verification Report Summaries - Continuous Ambient Fine Particulate ($PM_{2.5}$) Monitors

Met One BAM-1020		
Technology	Beta Attenuation	
Hourly Inter-Unit Precision		
	Phase I	Phase II
Slope	0.932	1.011
Intercept	-0.0004	-0.0016
r^2	0.873	0.991
24 Hour Inter-Unit Precision		
	Phase I	Phase II
Slope	0.973	1.018
Intercept	-0.0013	-0.0022
r^2	0.986	0.999
Comparability to FRM Phase I		
	Monitor 1	Monitor 2
Slope	1.169	1.142
Intercept	-0.0013	-0.0028
r^2	0.909	0.921
Comparability to FRM Phase II		
	Monitor 1	Monitor 2
Slope	1.094	1.111
Intercept	-0.0003	-0.0025
r^2	0.964	0.967
Comparability - Short Term (All Data - Phase II)		
	Monitor 1	Monitor 2
Slope	1.13	1.15
Intercept	0.002	0.000
r^2	0.939	0.936
Instrument Cost (USD)	$ 14,000	

R&P TEOM 1400a w/ SES		
Technology	Oscillating Microbalance	
Hourly Inter-Unit Precision		
	Phase I	Phase II
Slope	0.949	1.005
Intercept	1.87	-1.19
r^2	0.948	0.973
24 Hour Inter-Unit Precision		
	Phase I	Phase II
Slope	0.991	1.053
Intercept	1.04	-3.52
r^2	0.987	0.999
Comparability to FRM Phase I		
	Monitor 1	Monitor 2
Slope	0.964	0.927
Intercept	3.62	4.95
r^2	0.959	0.964
Comparability to FRM Phase II		
	Monitor 1	Monitor 2
Slope	0.933	0.978
Intercept	-18.4	-22.6
r^2	0.953	0.944
Comparability - Short Term (All Data - Phase II)		
	Monitor 1	Monitor 2
Slope	0.97	1.02
Intercept	-16.7	-20.8
r^2	0.914	0.920
Instrument Cost (USD)	N/A	

R&P TEOM 1400a		
Technology	Oscillating Microbalance	
Hourly Inter-Unit Precision		
	Phase I	Phase II
Slope	0.879	0.986
Intercept	1.22	-0.5
r^2	0.851	0.998
24 Hour Inter-Unit Precision		
	Phase I	Phase II
Slope	0.901	0.992
Intercept	0.87	-0.73
r^2	0.949	0.9995
Comparability to FRM Phase I		
	Monitor 1	Monitor 2
Slope	0.964	0.911
Intercept	2.21	1.85
r^2	0.945	0.935
Comparability to FRM Phase II		
	Monitor 1	Monitor 2
Slope	0.463	0.459
Intercept	-0.31	-1.1
r^2	0.915	0.915
Comparability - Short Term (All Data - Phase II)		
	Monitor 1	Monitor 2
Slope	0.555	0.552
Intercept	-6.2	-6.9
r^2	0.798	0.806
Instrument Cost (USD)	N/A	

Thermo Andersen CAMM		
Technology	Differential Pressure	
Hourly Inter-Unit Precision		
	Phase I	Phase II
Slope	N/A	0.903
Intercept	N/A	5.8
r^2	N/A	0.918
24 Hour Inter-Unit Precision		
	Phase I	Phase II
Slope	N/A	0.774
Intercept	N/A	16.1
r^2	N/A	0.93
Comparability to FRM Phase I		
	Monitor 1	Monitor 2
Slope	0.448	N/A
Intercept	13.5	N/A
r^2	0.386	N/A
Comparability to FRM Phase II		
	Monitor 1	Monitor 2
Slope	1.462	1.197
Intercept	-2.7	9.6
r^2	0.809	0.843
Comparability - Short Term (All Data - Phase II)		
	Monitor 1	Monitor 2
Slope	1.27	1.15
Intercept	13.1	15.6
r^2	0.716	0.666
Instrument Cost (USD)	$15,000	

TSI Model 3320		
Technology	Light Scattering	
15 Minute Inter-Unit Precision		
	Phase I	Phase II
Slope	0.67	1.234
Intercept	0.33	1.23
r^2	0.983	0.973
24 Hour Inter-Unit Precision		
	Phase I	Phase II
Slope	0.627	1.28
Intercept	0.8	0.32
r^2	0.972	0.998
Comparability to FRM Phase I		
	Monitor 1	Monitor 2
Slope	0.204	0.118
Intercept	7.4	5.0
r^2	0.100	0.093
Comparability to FRM Phase II		
	Monitor 1	Monitor 2
Slope	0.578	0.555
Intercept	-14.4	-9.2
r^2	0.803	0.762
Comparability - Short Term (All Data - Phase II)		
	Monitor 1	Monitor 2
Slope	0.489	0.556
Intercept	-3.1	-3.3
r^2	0.643	0.660
Instrument Cost (USD)	$ 40,000	

Test Sites & Dates:

Phase I - D.O.E. National Energy Technology Laboratory, Pittsburgh, Pennsylvania (August - September 2000)
Phase II - California Air Resources Board Station, Fresno, California (December 2000 - January 2001)

All ETV verification reports are available on the U.S. EPA Environmental Technology Verification Program website: http://www.epa.gov/etv/verifrpt.htm