I. INTRODUCTION AND RESULTS SUMMARY

Western Environmental Services and Testing, Inc. (Western Environmental) of Casper, Wyoming and Casper, Wyoming conducted stack emissions testing at Intermountain Power Service Corporation's facility near Delta, Utah on April 23 and 24, 2003.

The emissions of sulfuric acid mist including sulfur trioxide and sulfur dioxide were determined simultaneously from the inlet to the baghouse, the inlet to the scrubber, and the stack outlet on Unit #1. Average emissions of these tests are summarized in Table 1. Test parameters and detailed results are listed in Tables 2 through 4.

Table 1
Emission Summary
Unit #1

Parameter		Inlet To Baghouse	Inlet to Scrubber	Stack Outlet
Sulfuric Acid Mist				
	ppm	1.55	0.72	0.07
	Lbs/hr	39.985	22.165	2.227
Sulfur Dioxide				
	ppm	536.89	575.93	60.46
	Lbs/hr	9254.40	11572.79	1278.15

The sampling followed the procedures set forth in the Appendix to the Code of Federal Regulations, Title 40, Part 60.

Testing was coordinated by Mr. Rand Crafts, Intermountain Power Service Corporation and Mr. Scott Mortimer, Western Environmental.

IP9_000036

METHOD 5 - DETERMINATION OF PARTICULATE EMISSIONS - RESULTS

Plant Name	INTERMOUNTAIN GENERATING STATION	Date	9/14/2010
Sampling Location	UNIT 1 STACK	Project #	Unit #1
Operator	R Crafts	Stack Type	Circular

Historical Data						
Run Number		1	2	3	Average	
Run Start Time		8:10	11:05	13:47		hh:mm
Run Stop Time		10:16	13:12	15:52		hh:mm
Meter Calibration Factor	(Y)	1.017	1.017	1.017		
Pitot Tube Coefficient	(C_p)	0.867	0.867	0.867		
Actual Nozzle Diameter	(D_{na})	0.194	0.194	0.194		in
Stack Test Data						
Initial Meter Volume	(V_m)$_i$	490.178	591.695	690.542		ft^3
Final Meter Volume	(V_m)$_f$	588.983	690.153	788.395		ft^3
Total Meter Volume	(V_m)	98.805	98.458	97.853	98.372	ft^3
Total Sampling Time	(Θ)	120.0	120.0	120.0	120.0	min
Average Meter Temperature	(t_m)$_{avg}$	86.0	89.0	94.0	89.7	°F
Average Stack Temperature	(t_s)$_{avg}$	122.0	124.0	123.0	123.0	°F
Barometric Pressure	(P_b)	25.37	25.37	25.37	25.37	in Hg
Stack Static Pressure	(P_{static})	-1.10	-1.10	-1.10	-1.10	in H_2O
Absolute Stack Pressure	(P_s)	25.29	25.29	25.29	25.29	in Hg
Average Orifice Pressure Drop	(ΔH)$_{avg}$	1.80	1.77	1.74	1.77	in H_2O
Absolute Meter Pressure	(P_m)	25.50	25.50	25.50	25.50	in Hg
Avg Square Root Pitot Pressure	($\Delta p^{1/2}$)$_{avg}$	1.28	1.28	1.28	1.28	(in H_2O)$^{1/2}$
Moisture Content Data						
Impingers 1-3 Water Volume Gain	(V_n)	263.1	265.4	285.3	271.3	ml
Impinger 4 Silica Gel Weight Gain	(W_n)	19.0	19.3	13.4	17.2	g
Total Water Volume Collected	(V_{lc})	282.1	284.7	298.7	288.5	ml
Standard Water Vapor Volume	(V_w)$_{std}$	13.278	13.401	14.060	13.580	scf
Standard Meter Volume	(V_m)$_{std}$	82.792	82.043	80.796	81.877	dscf
Calculated Stack Moisture	($B_{ws(calc)}$)	13.8	14.0	14.8	14.2	%
Saturated Stack Moisture	($B_{ws(svp)}$)	14.4	15.2	14.8	14.8	%
Reported Stack Moisture Content	(B_{ws})	13.8	14.0	14.8	14.2	%
Gas Analysis Data						
Carbon Dioxide Percentage	(%CO_2)	13.5	13.6	13.7	13.6	%
Oxygen Percentage	(%O_2)	5.6	5.6	5.5	5.6	%
Carbon Monoxide Percentage	(%CO)	0.0	0.0	0.0	0.0	%
Nitrogen Percentage	(%N_2)	80.9	80.8	80.8	80.8	%
Dry Gas Molecular Weight	(M_d)	30.38	30.40	30.41	30.40	lb/lb-mole
Wet Stack Gas Molecular Weight	(M_s)	28.67	28.66	28.57	28.63	lb/lb-mole
Calculated Fuel Factor	(F_o)	1.133	1.125	1.124	1.127	
Fuel F-Factor	(F_d)	9780	9780	9780	9780	dscf/mmBtu
Percent Excess Air	(%EA)	35.5	35.6	34.7	35.3	%
Volumetric Flow Rate Data						
Average Stack Gas Velocity	(v_s)	85.00	85.16	85.22	85.13	ft/sec
Stack Cross-Sectional Area	(A_s)	615.75	615.75	615.75	615.75	ft^2
Actual Stack Flow Rate	(Q_a)	3140325	3146236	3148453	3145005	acfm
Dry Standard Stack Flow Rate	(Q_{sd})	2075774	2067750	2053475	2065666	dscfm
Percent of Isokinetic Rate	(I)	99.8	99.3	98.4	99.2	%
Emission Rate Data						
Mass of Particulate on Filter	(m_f)	-1.2000	-0.5000	-2.5000	-1.4	mg
Mass of Particulate in Acetone	(m_a')	27.8000	8.4000	12.2000	16.1	mg
Mass due to Acetone Blank	(W_a)	0.1000	0.1000	0.1000	0.1000	mg
Total Mass of Particulates	(m_n)	26.5	7.8	9.6	14.6	mg
Stack Particulate Concentration	(c_s)	0.0003	0.0001	0.0001	0.0002	g/dscf
	(c_s)	0.0046	0.0015	0.0015	0.0025	gr/dscf
Particulate Emission Rate	(E)	37.36	12.41	12.32	20.70	kg/hr
	(E)	87.9	26.0	32.3	48.7	lbs/hr
	(E)	0.0094	0.0028	0.0035	0.0052	lbs/mmBtu

METHOD 5 - DETERMINATION OF PARTICULATE EMISSIONS - RESULTS

Plant Name	INTERMOUNTAIN GENERATING STATION	Date	9/15/2010
Sampling Location	UNIT 2 STACK	Project #	Unit #2
Operator	R Crafts	Stack Type	Circular

Historical Data						
Run Number		1	2	3	Average	
Run Start Time		8:45	11:45	14:25		hh:mm
Run Stop Time		10:51	13:50	16:31		hh:mm
Meter Calibration Factor	(Y)	1.017	1.017	1.017		
Pitot Tube Coefficient	(C_p)	0.867	0.867	0.867		
Actual Nozzle Diameter	(D_{na})	0.194	0.194	0.194		in
Stack Test Data						
Initial Meter Volume	$(V_m)_i$	791.912	894.035	996.539		ft^3
Final Meter Volume	$(V_m)_f$	893.730	996.171	1099.220		ft^3
Total Meter Volume	(V_m)	101.818	102.136	102.681	102.212	ft^3
Total Sampling Time	(Θ)	120.0	120.0	120.0	120.0	min
Average Meter Temperature	$(t_m)_{avg}$	84.0	88.0	92.0	88.0	°F
Average Stack Temperature	$(t_s)_{avg}$	120.0	121.0	123.0	121.3	°F
Barometric Pressure	(P_b)	25.46	25.46	25.46	25.46	in Hg
Stack Static Pressure	(P_{static})	-1.10	-1.10	-1.10	-1.10	in H_2O
Absolute Stack Pressure	(P_s)	25.38	25.38	25.38	25.38	in Hg
Average Orifice Pressure Drop	$(\Delta H)_{avg}$	1.94	1.92	1.92	1.93	in H_2O
Absolute Meter Pressure	(P_m)	25.60	25.60	25.60	25.60	in Hg
Avg Square Root Pitot Pressure	$(\Delta p^{1/2})_{avg}$	1.35	1.35	1.34	1.35	$(in\ H_2O)^{1/2}$
Moisture Content Data						
Impingers 1-3 Water Volume Gain	(V_n)	252.6	257.3	269.5	259.8	ml
Impinger 4 Silica Gel Weight Gain	(W_n)	19.0	20.8	19.7	19.8	g
Total Water Volume Collected	(V_{lc})	271.6	278.1	289.2	279.6	ml
Standard Water Vapor Volume	$(V_w)_{std}$	12.784	13.090	13.613	13.162	scf
Standard Meter Volume	$(V_m)_{std}$	85.967	85.601	85.434	85.667	dscf
Calculated Stack Moisture	$(B_{ws(calc)})$	12.9	13.3	13.7	13.3	%
Saturated Stack Moisture	$(B_{ws(svp)})$	13.56	13.9	14.7	14.1	%
Reported Stack Moisture Content	(B_{ws})	12.9	13.3	13.7	13.3	%
Gas Analysis Data						
Carbon Dioxide Percentage	($\%CO_2$)	12.2	12.6	13.0	12.6	%
Oxygen Percentage	($\%O_2$)	6.9	6.6	6.3	6.6	%
Carbon Monoxide Percentage	(%CO)	0.0	0.0	0.0	0.0	%
Nitrogen Percentage	($\%N_2$)	80.9	80.8	80.7	80.8	%
Dry Gas Molecular Weight	(M_d)	30.23	30.28	30.33	30.28	lb/lb-mole
Wet Stack Gas Molecular Weight	(M_s)	28.65	28.65	28.64	28.65	lb/lb-mole
Calculated Fuel Factor	(F_o)	1.148	1.135	1.123	1.135	
Fuel F-Factor	(F_d)	9780	9780	9780	9780	dscf/mmBtu
Percent Excess Air	(%EA)	47.7	44.8	42.0	44.8	%
Volumetric Flow Rate Data						
Average Stack Gas Velocity	(v_s)	89.37	89.44	88.95	89.25	ft/sec
Stack Cross-Sectional Area	(A_s)	615.75	615.75	615.75	615.75	ft^2
Actual Stack Flow Rate	(Q_a)	3301775	3304361	3286258	3297465	acfm
Dry Standard Stack Flow Rate	(Q_{sd})	2220760	2208485	2178752	2202666	dscfm
Percent of Isokinetic Rate	(I)	96.9	96.9	98.1	97.3	%
Emission Rate Data						
Mass of Particulate on Filter	(m_f)	-1.7000	-2.1000	-1.0000	-1.6	mg
Mass of Particulate in Acetone	(m_a')	13.2000	10.1000	11.5000	11.6	mg
Mass due to Acetone Blank	(W_a)	0.1000	0.1000	0.1000	0.1000	mg
Total Mass of Particulates	(m_n)	11.4	7.9	10.4	9.9	mg
Stack Particulate Concentration	(c_s)	0.0001	0.0001	0.0001	0.0001	g/dscf
	(c_s)	0.0015	0.0015	0.0015	0.0015	gr/dscf
Particulate Emission Rate	(E)	13.32	13.25	13.07	13.21	kg/hr
	(E)	39.0	27.0	35.1	33.7	lbs/hr
	(E)	0.0043	0.0029	0.0038	0.0037	lbs/mmBtu

METHOD 5 - DETERMINATION OF PARTICULATE EMISSIONS - RESULTS

Plant Name	INTERMOUNTAIN GENERATING STATION	Date	9/15/2008
Sampling Location	UNIT 1 STACK	Project #	Unit #1
Operator	RON WESTLUND	Stack Type	Circular

Historical Data						
Run Number		1	2	3	Average	
Run Start Time		8:57	11:43	14:30		hh:mm
Run Stop Time		11:03	13:51	16:37		hh:mm
Meter Calibration Factor	(Y)	1.018	1.018	1.018		
Pitot Tube Coefficient	(C_p)	0.840	0.840	0.840		
Actual Nozzle Diameter	(D_{na})	0.194	0.194	0.194		in
Stack Test Data						
Initial Meter Volume	(V_m)$_i$	200.322	294.815	388.582		ft^3
Final Meter Volume	(V_m)$_f$	294.115	388.196	481.538		ft^3
Total Meter Volume	(V_m)	93.793	93.381	92.956	93.377	ft^3
Total Sampling Time	(Θ)	120.0	120.0	120.0	120.0	min
Average Meter Temperature	(t_m)$_{avg}$	80.0	84.0	84.0	82.7	°F
Average Stack Temperature	(t_s)$_{avg}$	124.0	125.0	125.0	124.7	°F
Barometric Pressure	(P_b)	25.10	25.10	25.10	25.10	in Hg
Stack Static Pressure	(P_{static})	-0.88	-0.88	-0.88	-0.88	in H_2O
Absolute Stack Pressure	(P_s)	25.04	25.04	25.04	25.04	in Hg
Average Orifice Pressure Drop	(ΔH)$_{avg}$	1.60	1.59	1.57	1.59	in H_2O
Absolute Meter Pressure	(P_m)	25.22	25.22	25.22	25.22	in Hg
Avg Square Root Pitot Pressure	($\Delta p^{1/2}$)$_{avg}$	1.24	1.24	1.24	1.24	(in H_2O)$^{1/2}$
Moisture Content Data						
Impingers 1-3 Water Volume Gain	(V_n)	266.7	261.4	268.8	265.6	ml
Impinger 4 Silica Gel Weight Gain	(W_n)	16.5	18.1	18.5	17.7	g
Total Water Volume Collected	(V_{lc})	283.2	279.5	287.3	283.3	ml
Standard Water Vapor Volume	(V_w)$_{std}$	13.330	13.156	13.523	13.336	scf
Standard Meter Volume	(V_m)$_{std}$	78.655	77.732	77.373	77.920	dscf
Calculated Stack Moisture	($B_{ws(calc)}$)	14.5	14.5	14.9	14.6	%
Saturated Stack Moisture	($B_{ws(svp)}$)	15.3	15.8	15.8	15.6	%
Reported Stack Moisture Content	(B_{ws})	14.5	14.5	14.9	14.6	%
Gas Analysis Data						
Carbon Dioxide Percentage	(%CO_2)	13.6	13.4	13.4	13.5	%
Oxygen Percentage	(%O_2)	5.1	5.4	5.4	5.3	%
Carbon Monoxide Percentage	(%CO)	0.0	0.0	0.0	0.0	%
Nitrogen Percentage	(%N_2)	81.3	81.2	81.2	81.2	%
Dry Gas Molecular Weight	(M_d)	30.38	30.36	30.36	30.37	lb/lb-mole
Wet Stack Gas Molecular Weight	(M_s)	28.58	28.57	28.52	28.56	lb/lb-mole
Calculated Fuel Factor	(F_o)	1.162	1.157	1.157	1.159	
Fuel F-Factor	(F_d)	9780	9780	9780	9780	dscf/mmBtu
Percent Excess Air	(%EA)	31.2	33.7	33.7	32.9	%
Volumetric Flow Rate Data						
Average Stack Gas Velocity	(v_s)	80.44	80.52	80.59	80.52	ft/sec
Stack Cross-Sectional Area	(A_s)	615.75	615.75	615.75	615.75	ft^2
Actual Stack Flow Rate	(Q_a)	2971856	2974811	2977398	2974688	acfm
Dry Standard Stack Flow Rate	(Q_{sd})	1922594	1921217	1913891	1919234	dscfm
Percent of Isokinetic Rate	(I)	102.3	101.2	101.1	101.5	%
Emission Rate Data						
Mass of Particulate on Filter	(m_f)	-1.6000	-1.2000	-1.3000	-1.4	mg
Mass of Particulate in Acetone	(m_a')	9.6000	8.5000	11.6000	9.9	mg
Mass due to Acetone Blank	(W_a)	0.1000	0.1000	0.1000	0.1000	mg
Total Mass of Particulates	(m_n)	7.9	7.2	10.2	8.4	mg
Stack Particulate Concentration	(c_s)	0.0001	0.0001	0.0001	0.0001	g/dscf
	(c_s)	0.0015	0.0015	0.0015	0.0015	gr/dscf
Particulate Emission Rate	(E)	11.54	11.53	11.48	11.52	kg/hr
	(E)	25.5	23.5	33.4	27.5	lbs/hr
	(E)	0.0029	0.0027	0.0038	0.0031	lbs/mmBtu

METHOD 5 - DETERMINATION OF PARTICULATE EMISSIONS - RESULTS

Plant Name	INTERMOUNTAIN GENERATING STATION	Date	9/16/2009
Sampling Location	UNIT 2 STACK	Project #	Unit #2
Operator	RON WESTLUND	Stack Type	Circular

Historical Data						
Run Number		1	2	3	Average	
Run Start Time		9:04	12:30	15:08		hh:mm
Run Stop Time		11:09	14:36	17:13		hh:mm
Meter Calibration Factor	(Y)	1.018	1.018	1.018		
Pitot Tube Coefficient	(C_p)	0.840	0.840	0.840		
Actual Nozzle Diameter	(D_{na})	0.194	0.194	0.194		in
Stack Test Data						
Initial Meter Volume	(V_m)$_i$	481.864	576.685	671.621		ft^3
Final Meter Volume	(V_m)$_f$	576.378	671.419	766.961		ft^3
Total Meter Volume	(V_m)	94.514	94.734	95.340	94.863	ft^3
Total Sampling Time	(Θ)	120.0	120.0	120.0	120.0	min
Average Meter Temperature	(t_m)$_{avg}$	78.0	84.0	88.0	83.3	°F
Average Stack Temperature	(t_s)$_{avg}$	123.0	122.0	123.0	122.7	°F
Barometric Pressure	(P_b)	25.19	25.19	25.19	25.19	in Hg
Stack Static Pressure	(P_{static})	-0.95	-0.95	-0.95	-0.95	in H_2O
Absolute Stack Pressure	(P_s)	25.12	25.12	25.12	25.12	in Hg
Average Orifice Pressure Drop	(ΔH)$_{avg}$	1.68	1.65	1.67	1.67	in H_2O
Absolute Meter Pressure	(P_m)	25.31	25.31	25.31	25.31	in Hg
Avg Square Root Pitot Pressure	($\Delta p^{1/2}$)$_{avg}$	1.27	1.26	1.26	1.26	$(in\ H_2O)^{1/2}$
Moisture Content Data						
Impingers 1-3 Water Volume Gain	(V_n)	253.5	248.7	252.9	251.7	ml
Impinger 4 Silica Gel Weight Gain	(W_n)	16.7	20.5	17.1	18.1	g
Total Water Volume Collected	(V_{lc})	270.2	269.2	270.0	269.8	ml
Standard Water Vapor Volume	(V_w)$_{std}$	12.718	12.671	12.709	12.699	scf
Standard Meter Volume	(V_m)$_{std}$	79.857	79.153	79.083	79.364	dscf
Calculated Stack Moisture	($B_{ws(calc)}$)	13.7	13.8	13.8	13.8	%
Saturated Stack Moisture	($B_{ws(svp)}$)	14.88	14.5	14.9	14.8	%
Reported Stack Moisture Content	(B_{ws})	13.7	13.8	13.8	13.8	%
Gas Analysis Data						
Carbon Dioxide Percentage	(%CO_2)	13.0	13.1	13.3	13.1	%
Oxygen Percentage	(%O_2)	6.0	6.0	5.8	5.9	%
Carbon Monoxide Percentage	(%CO)	0.0	0.0	0.0	0.0	%
Nitrogen Percentage	(%N_2)	81.0	80.9	80.9	80.9	%
Dry Gas Molecular Weight	(M_d)	30.32	30.34	30.36	30.34	lb/lb-mole
Wet Stack Gas Molecular Weight	(M_s)	28.63	28.64	28.65	28.64	lb/lb-mole
Calculated Fuel Factor	(F_o)	1.146	1.137	1.135	1.139	
Fuel F-Factor	(F_d)	9780	9780	9780	9780	dscf/mmBtu
Percent Excess Air	(%EA)	39.0	39.1	37.3	38.5	%
Volumetric Flow Rate Data						
Average Stack Gas Velocity	(v_s)	82.11	81.38	81.44	81.64	ft/sec
Stack Cross-Sectional Area	(A_s)	615.75	615.75	615.75	615.75	ft^2
Actual Stack Flow Rate	(Q_a)	3033554	3006584	3008801	3016313	acfm
Dry Standard Stack Flow Rate	(Q_{sd})	1990609	1974011	1972078	1978899	dscfm
Percent of Isokinetic Rate	(I)	100.4	100.3	100.3	100.3	%
Emission Rate Data						
Mass of Particulate on Filter	(m_f)	-2.6000	-0.7000	-1.9000	-1.7	mg
Mass of Particulate in Acetone	(m_a')	8.0000	9.5000	14.0000	10.5	mg
Mass due to Acetone Blank	(W_a)	0.1000	0.1000	0.1000	0.1000	mg
Total Mass of Particulates	(m_n)	5.3	8.7	12.0	8.7	mg
Stack Particulate Concentration	(c_s)	0.0001	0.0001	0.0002	0.0001	g/dscf
	(c_s)	0.0015	0.0015	0.0031	0.0020	gr/dscf
Particulate Emission Rate	(E)	11.94	11.84	23.66	15.81	kg/hr
	(E)	17.5	28.7	39.6	28.6	lbs/hr
	(E)	0.0020	0.0033	0.0045	0.0033	lbs/mmBtu

METHOD 5 - DETERMINATION OF PARTICULATE EMISSIONS - RESULTS

Plant Name	INTERMOUNTAIN GENERATING STATION	Date	9/16/2008
Sampling Location	UNIT 1 STACK	Project #	Unit #1
Operator	RON WESTLUND	Stack Type	Circular

Historical Data							
Run Number		1	2	3	4	Average	
Run Start Time		8:45	11:35	14:18	17:00		hh:mm
Run Stop Time		10:51	13:42	16:27	19:07		hh:mm
Meter Calibration Factor	(Y)	1.025	1.025	1.025	1.025		
Pitot Tube Coefficient	(C_p)	0.840	0.840	0.840	0.840		
Actual Nozzle Diameter	(D_{na})	0.194	0.194	0.194	0.194		in
Stack Test Data							
Initial Meter Volume	(V_m)$_i$	858.574	952.995	46.153	140.182		ft^3
Final Meter Volume	(V_m)$_f$	952.295	1045.667	139.637	233.014		ft^3
Total Meter Volume	(V_m)	93.721	92.672	93.484	92.832	93.200	ft^3
Total Sampling Time	(Θ)	120.0	120.0	120.0	120.0	120.0	min
Average Meter Temperature	(t_m)$_{avg}$	86.0	91.0	95.0	97.0	92.3	°F
Average Stack Temperature	(t_s)$_{avg}$	122.0	123.0	124.0	123.0	123.0	°F
Barometric Pressure	(P_b)	25.23	25.23	25.23	25.23	25.20	in Hg
Stack Static Pressure	(P_{static})	-0.88	-0.88	-0.88	-0.88	-0.90	in H_2O
Absolute Stack Pressure	(P_s)	25.17	25.17	25.17	25.17	25.20	in Hg
Average Orifice Pressure Drop	(ΔH)$_{avg}$	1.59	1.59	1.59	1.55	1.58	in H_2O
Absolute Meter Pressure	(P_m)	25.35	25.35	25.35	25.34	25.35	in Hg
Avg Square Root Pitot Pressure	($\Delta p^{1/2}$)$_{avg}$	1.21	1.21	1.22	1.21	1.21	$(in\ H_2O)^{1/2}$
Moisture Content Data							
Impingers 1-3 Water Volume Gain	(V_n)	242.1	245.2	253.9	243.7	246.2	ml
Impinger 4 Silica Gel Weight Gain	(W_n)	17.9	17.0	17.8	17.0	17.4	g
Total Water Volume Collected	(V_{tc})	260.0	262.2	271.7	260.7	263.7	ml
Standard Water Vapor Volume	(V_w)$_{std}$	12.238	12.342	12.789	12.271	12.400	scf
Standard Meter Volume	(V_m)$_{std}$	78.667	77.080	77.195	76.373	77.329	dscf
Calculated Stack Moisture	($B_{ws(calc)}$)	13.5	13.8	14.2	13.8	13.8	%
Saturated Stack Moisture	($B_{ws(svp)}$)	14.5	14.9	15.3	14.9	14.9	%
Reported Stack Moisture Content	(B_{ws})	13.5	13.8	14.2	13.8	13.8	%
Gas Analysis Data							
Carbon Dioxide Percentage	(%CO_2)	13.5	13.4	13.5	13.5	13.5	%
Oxygen Percentage	(%O_2)	5.4	5.5	5.4	5.4	5.4	%
Carbon Monoxide Percentage	(%CO)	0.0	0.0	0.0	0.0	0.0	%
Nitrogen Percentage	(%N_2)	81.1	81.1	81.1	81.1	81.1	%
Dry Gas Molecular Weight	(M_d)	30.38	30.36	30.38	30.38	30.40	lb/lb-mole
Wet Stack Gas Molecular Weight	(M_s)	28.71	28.65	28.62	28.67	28.66	lb/lb-mole
Calculated Fuel Factor	(F_o)	1.148	1.149	1.148	1.148	1.148	
Fuel F-Factor	(F_d)	9780	9780	9780	9780	9780	dscf/mmBtu
Percent Excess Air	(%EA)	33.7	34.6	33.7	33.7	33.9	%
Volumetric Flow Rate Data							
Average Stack Gas Velocity	(v_s)	77.98	78.13	78.88	78.10	78.27	ft/sec
Stack Cross-Sectional Area	(A_s)	615.75	615.75	615.75	615.75	615.75	ft^2
Actual Stack Flow Rate	(Q_a)	2880971	2886513	2914222	2885405	2891778	acfm
Dry Standard Stack Flow Rate	(Q_{sd})	1901900	1895692	1901746	1894964	1898576	dscfm
Percent of Isokinetic Rate	(I)	103.4	101.7	101.5	100.8	101.9	%
Emission Rate Data							
Mass of Particulate on Filter	(m_f)	-2.1500	-0.9000	-2.5000	-0.2000	-1.4000	mg
Mass of Particulate in Acetone	(m_a')	17.2000	9.0000	13.2000	22.0000	15.4000	mg
Mass due to Acetone Blank	(W_a)	0.0000	0.0000	0.0000	0.0000	0.0000	mg
Total Mass of Particulates	(m_n)	15.1	8.1	10.7	21.8	13.9	mg
Stack Particulate Concentration	(c_s)	0.0002	0.0001	0.0001	0.0003	0.0002	g/dscf
	(c_s)	0.0031	0.0015	0.0015	0.0046	0.0027	gr/dscf
Particulate Emission Rate	(E)	22.82	11.37	11.41	34.11	19.93	kg/hr
	(E)	48.3	26.4	34.9	71.5	45.3	lbs/hr
	(E)	0.0056	0.0031	0.0040	0.0083	0.0053	lbs/mmBtu

METHOD 5 - DETERMINATION OF PARTICULATE EMISSIONS - RESULTS

Plant Name	INTERMOUNTAIN GENERATING STATION	Date	9/17/2008
Sampling Location	UNIT 2 STACK	Project #	Unit #2
Operator	RON WESTLUND	Stack Type	Circular

Historical Data						
Run Number		1	2	3	Average	
Run Start Time		8:30	11:10	13:53		hh:mm
Run Stop Time		10:36	13:18	16:01		hh:mm
Meter Calibration Factor	(Y)	1.025	1.025	1.025		
Pitot Tube Coefficient	(C_p)	0.840	0.840	0.840		
Actual Nozzle Diameter	(D_{na})	0.194	0.194	0.194		in
Stack Test Data						
Initial Meter Volume	$(V_m)_i$	233.491	325.154	420.008		ft^3
Final Meter Volume	$(V_m)_f$	324.731	419.542	514.043		ft^3
Total Meter Volume	(V_m)	91.240	94.388	94.035	93.221	ft^3
Total Sampling Time	(Θ)	120.0	120.0	120.0	120.0	min
Average Meter Temperature	$(t_m)_{avg}$	88.0	92.0	95.0	91.0	°F
Average Stack Temperature	$(t_s)_{avg}$	122.0	123.0	123.0	122.7	°F
Barometric Pressure	(P_b)	25.17	25.17	25.17	25.17	in Hg
Stack Static Pressure	(P_{static})	-0.88	-0.88	-0.88	-0.88	in H_2O
Absolute Stack Pressure	(P_s)	25.11	25.11	25.11	25.11	in Hg
Average Orifice Pressure Drop	$(\Delta H)_{avg}$	1.53	1.62	1.61	1.59	in H_2O
Absolute Meter Pressure	(P_m)	25.28	25.29	25.29	25.29	in Hg
Avg Square Root Pitot Pressure	$(\Delta p^{1/2})_{avg}$	1.21	1.23	1.23	1.22	$(in\ H_2O)^{1/2}$
Moisture Content Data						
Impingers 1-3 Water Volume Gain	(V_n)	239.0	249.0	247.3	245.1	ml
Impinger 4 Silica Gel Weight Gain	(W_n)	16.7	17.0	17.1	16.9	g
Total Water Volume Collected	(V_{lc})	255.7	266.0	264.4	262.0	ml
Standard Water Vapor Volume	$(V_w)_{std}$	12.036	12.521	12.445	12.334	scf
Standard Meter Volume	$(V_m)_{std}$	76.390	78.187	77.471	77.349	dscf
Calculated Stack Moisture	$(B_{ws(calc)})$	13.6	13.8	13.8	13.7	%
Saturated Stack Moisture	$(B_{ws(sat)})$	14.48	14.9	14.9	14.8	%
Reported Stack Moisture Content	(B_{ws})	13.6	13.8	13.8	13.7	%
Gas Analysis Data						
Carbon Dioxide Percentage	($\%CO_2$)	13.3	13.3	13.4	13.3	%
Oxygen Percentage	($\%O_2$)	5.5	5.7	5.6	5.6	%
Carbon Monoxide Percentage	(%CO)	0.0	0.0	0.0	0.0	%
Nitrogen Percentage	($\%N_2$)	81.2	81.0	81.0	81.1	%
Dry Gas Molecular Weight	(M_d)	30.35	30.36	30.37	30.36	lb/lb-mole
Wet Stack Gas Molecular Weight	(M_s)	28.67	28.65	28.66	28.66	lb/lb-mole
Calculated Fuel Factor	(F_o)	1.158	1.143	1.142	1.148	
Fuel F-Factor	(F_d)	9780	9780	9780	9780	dscf/mmBtu
Percent Excess Air	(%EA)	34.5	36.3	35.5	35.4	%
Volumetric Flow Rate Data						
Average Stack Gas Velocity	(v_s)	78.13	79.51	79.50	79.05	ft/sec
Stack Cross-Sectional Area	(A_s)	615.75	615.75	615.75	615.75	ft^2
Actual Stack Flow Rate	(Q_a)	2886513	2937497	2937128	2920379	acfm
Dry Standard Stack Flow Rate	(Q_{sd})	1898818	1924577	1924334	1915910	dscfm
Percent of Isokinetic Rate	(I)	100.6	101.8	100.7	101.0	%
Emission Rate Data						
Mass of Particulate on Filter	(m_f)	-1.6000	-3.3000	-0.5000	-1.8	mg
Mass of Particulate in Acetone	(m_a')	11.2000	12.5000	7.6000	10.4	mg
Mass due to Acetone Blank	(W_a)	0.0000	0.0000	0.0000	0.0000	mg
Total Mass of Particulates	(m_n)	9.6	9.2	7.1	8.6	mg
Stack Particulate Concentration	(c_s)	0.0001	0.0001	0.0001	0.0001	g/dscf
	(c_s)	0.0015	0.0015	0.0015	0.0015	gr/dscf
Particulate Emission Rate	(E)	11.39	11.55	11.55	11.50	kg/hr
	(E)	31.6	30.0	23.3	28.3	lbs/hr
	(E)	0.0037	0.0035	0.0027	0.0033	lbs/mmBtu

METHOD 5 - DETERMINATION OF PARTICULATE EMISSIONS - RESULTS

Plant Name	INTERMOUNTAIN GENERATING STATION	Date	10/9/2007
Sampling Location	UNIT 1 STACK	Project #	Unit #1
Operator	RON WESTLUND	Stack Type	Circular

Historical Data						
Run Number		2	3	4	Average	
Run Start Time		11:35	14:44	16:07		hh:mm
Run Stop Time		13:43	16:50	18:21		hh:mm
Meter Calibration Factor	(Y)	1.061	1.061	1.061		
Pitot Tube Coefficient	(C_p)	0.840	0.840	0.840		
Actual Nozzle Diameter	(D_{na})	0.194	0.194	0.194		in
Stack Test Data						
Initial Meter Volume	(V_m)$_i$	30.103	117.430	523.065		ft^3
Final Meter Volume	(V_m)$_f$	115.284	203.365	612.630		ft^3
Total Meter Volume	(V_m)	85.181	85.935	89.565	86.894	ft^3
Total Sampling Time	(Θ)	120.0	120.0	120.0	120.0	min
Average Meter Temperature	(t_m)$_{avg}$	73.0	82.0	79.0	78.0	°F
Average Stack Temperature	(t_s)$_{avg}$	123.0	122.0	123.0	122.7	°F
Barometric Pressure	(P_b)	25.52	25.52	25.13	25.39	in Hg
Stack Static Pressure	(P_{static})	-1.05	-1.05	-0.70	-0.93	in H_2O
Absolute Stack Pressure	(P_s)	25.44	25.44	25.08	25.32	in Hg
Average Orifice Pressure Drop	(ΔH)$_{avg}$	1.31	1.30	1.44	1.35	in H_2O
Absolute Meter Pressure	(P_m)	25.62	25.62	25.24	25.49	in Hg
Avg Square Root Pitot Pressure	($\Delta p^{1/2}$)$_{avg}$	1.21	1.21	1.24	1.22	$(in\ H_2O)^{1/2}$
Moisture Content Data						
Impingers 1-3 Water Volume Gain	(V_n)	212.7	237.2	226.1	225.3	ml
Impinger 4 Silica Gel Weight Gain	(W_n)	22.3	13.4	16.3	17.3	g
Total Water Volume Collected	(V_{lc})	235.0	250.6	242.4	242.7	ml
Standard Water Vapor Volume	(V_w)$_{std}$	11.061	11.796	11.410	11.422	scf
Standard Meter Volume	(V_m)$_{std}$	76.621	76.013	78.484	77.039	dscf
Calculated Stack Moisture	($B_{ws(calc)}$)	12.6	13.4	12.7	12.9	%
Saturated Stack Moisture	($B_{ws(svp)}$)	14.7	14.3	14.9	14.6	%
Reported Stack Moisture Content	(B_{ws})	12.6	13.4	12.7	12.9	%
Gas Analysis Data						
Carbon Dioxide Percentage	(%CO_2)	13.3	13.3	13.4	13.3	%
Oxygen Percentage	(%O_2)	5.5	5.4	5.4	5.4	%
Carbon Monoxide Percentage	(%CO)	0.0	0.0	0.0	0.0	%
Nitrogen Percentage	(%N_2)	81.2	81.3	81.2	81.2	%
Dry Gas Molecular Weight	(M_d)	30.35	30.34	30.36	30.35	lb/lb-mole
Wet Stack Gas Molecular Weight	(M_s)	28.79	28.69	28.79	28.76	lb/lb-mole
Calculated Fuel Factor	(F_o)	1.158	1.165	1.157	1.160	
Fuel F-Factor	(F_d)	9780	9780	9780	9780	dscf/mmBtu
Percent Excess Air	(%EA)	34.5	33.6	33.7	33.9	%
Volumetric Flow Rate Data						
Average Stack Gas Velocity	(v_s)	77.52	77.59	80.01	78.37	ft/sec
Stack Cross-Sectional Area	(A_s)	615.75	615.75	615.75	615.75	ft^2
Actual Stack Flow Rate	(Q_a)	2863976	2866563	2955969	2895503	acfm
Dry Standard Stack Flow Rate	(Q_{sd})	1927533	1914899	1959050	1933827	dscfm
Percent of Isokinetic Rate	(I)	99.4	99.3	100.2	99.6	%
Emission Rate Data						
Mass of Particulate on Filter	(m_f)	-0.8000	-1.3000	-2.4000	-1.5	mg
Mass of Particulate in Acetone	(m_a')	10.3000	8.8000	15.7000	11.6	mg
Mass due to Acetone Blank	(W_a)	0.4000	0.4000	0.4000	0.4000	mg
Total Mass of Particulates	(m_n)	9.1	7.1	12.9	9.7	mg
Stack Particulate Concentration	(c_s)	0.0001	0.0001	0.0002	0.0001	g/dscf
	(c_s)	0.0015	0.0015	0.0031	0.0020	gr/dscf
Particulate Emission Rate	(E)	11.57	11.49	23.51	15.52	kg/hr
	(E)	30.3	23.7	42.6	32.2	lbs/hr
	(E)	0.0035	0.0027	0.0048	0.0037	lbs/mmBtu

METHOD 5 - DETERMINATION OF PARTICULATE EMISSIONS - RESULTS

Plant Name	INTERMOUNTAIN GENERATING STATION	Date	10/11/2007
Sampling Location	UNIT 2 STACK	Project #	Unit #2
Operator	RON WESTLUND	Stack Type	Circular

Historical Data						
Run Number		1	2	3	Average	
Run Start Time		7:40	10:33	13:20		hh:mm
Run Stop Time		9:47	12:39	15:27		hh:mm
Meter Calibration Factor	(Y)	1.061	1.061	1.061		
Pitot Tube Coefficient	(C_p)	0.840	0.840	0.840		
Actual Nozzle Diameter	(D_{na})	0.194	0.194	0.194		in
Stack Test Data						
Initial Meter Volume	(V_m)$_i$	255.317	343.944	433.835		ft^3
Final Meter Volume	(V_m)$_f$	343.267	432.536	522.314		ft^3
Total Meter Volume	(V_m)	87.950	88.592	88.479	88.340	ft^3
Total Sampling Time	(Θ)	120.0	120.0	120.0	120.0	min
Average Meter Temperature	(t_m)$_{avg}$	74.0	77.0	76.0	75.7	°F
Average Stack Temperature	(t_s)$_{avg}$	121.0	122.0	122.0	121.7	°F
Barometric Pressure	(P_b)	25.13	25.13	25.13	25.13	in Hg
Stack Static Pressure	(P_{static})	-0.85	-0.85	-0.85	-0.85	in H_2O
Absolute Stack Pressure	(P_s)	25.07	25.07	25.07	25.07	in Hg
Average Orifice Pressure Drop	(ΔH)$_{avg}$	1.46	1.45	1.44	1.45	in H_2O
Absolute Meter Pressure	(P_m)	25.24	25.24	25.24	25.24	in Hg
Avg Square Root Pitot Pressure	($\Delta p^{1/2}$)$_{avg}$	1.23	1.24	1.24	1.24	(in H_2O)$^{1/2}$
Moisture Content Data						
Impingers 1-3 Water Volume Gain	(V_n)	229.5	235.1	230.6	231.7	ml
Impinger 4 Silica Gel Weight Gain	(W_n)	16.1	19.7	16.4	17.4	g
Total Water Volume Collected	(V_{lc})	245.6	254.8	247.0	249.1	ml
Standard Water Vapor Volume	(V_w)$_{std}$	11.560	11.993	11.626	11.726	scf
Standard Meter Volume	(V_m)$_{std}$	77.795	77.923	77.966	77.895	dscf
Calculated Stack Moisture	($B_{ws(calc)}$)	12.9	13.3	13.0	13.1	%
Saturated Stack Moisture	($B_{ws(svp)}$)	14.11	14.5	14.5	14.4	%
Reported Stack Moisture Content	(B_{ws})	12.9	13.3	13.0	13.1	%
Gas Analysis Data						
Carbon Dioxide Percentage	(%CO_2)	13.2	13.4	13.3	13.3	%
Oxygen Percentage	(%O_2)	5.6	5.6	5.6	5.6	%
Carbon Monoxide Percentage	(%CO)	0.0	0.0	0.0	0.0	%
Nitrogen Percentage	(%N_2)	81.2	81.0	81.1	81.1	%
Dry Gas Molecular Weight	(M_d)	30.34	30.37	30.35	30.35	lb/lb-mole
Wet Stack Gas Molecular Weight	(M_s)	28.75	28.72	28.74	28.74	lb/lb-mole
Calculated Fuel Factor	(F_o)	1.159	1.142	1.150	1.150	
Fuel F-Factor	(F_d)	9780	9780	9780	9780	dscf/mmBtu
Percent Excess Air	(%EA)	35.4	35.5	35.4	35.4	%
Volumetric Flow Rate Data						
Average Stack Gas Velocity	(v_s)	79.30	80.06	80.03	79.80	ft/sec
Stack Cross-Sectional Area	(A_s)	615.75	615.75	615.75	615.75	ft^2
Actual Stack Flow Rate	(Q_a)	2929739	2957817	2956708	2948088	acfm
Dry Standard Stack Flow Rate	(Q_{sd})	1943111	1949369	1955381	1949287	dscfm
Percent of Isokinetic Rate	(I)	100.2	100.0	99.7	100.0	%
Emission Rate Data						
Mass of Particulate on Filter	(m_f)	-0.4000	-1.7000	-0.5000	-0.9	mg
Mass of Particulate in Acetone	(m_a')	9.8000	10.9000	13.8000	11.5	mg
Mass due to Acetone Blank	(W_a)	0.4000	0.4000	0.4000	0.4000	mg
Total Mass of Particulates	(m_n)	9.0	8.8	12.9	10.2	mg
Stack Particulate Concentration	(c_s)	0.0001	0.0001	0.0002	0.0001	g/dscf
	(c_s)	0.0015	0.0015	0.0031	0.0020	gr/dscf
Particulate Emission Rate	(E)	11.66	11.70	23.46	15.61	kg/hr
	(E)	29.7	29.1	42.8	33.9	lbs/hr
	(E)	0.0034	0.0033	0.0049	0.0039	lbs/mmBtu

METHOD 5 - DETERMINATION OF PARTICULATE EMISSIONS - RESULTS

Plant Name	INTERMOUNTAIN GENERATING STATION	Date	9/26/2006
Sampling Location	UNIT 1 STACK	Project #	Unit #1
Operator	RON WESTLUND	Stack Type	Circular

Historical Data						
Run Number		1	2	3	Average	
Run Start Time		8:50	11:47	14:40		hh:mm
Run Stop Time		10:56	13:56	16:44		hh:mm
Meter Calibration Factor	(Y)	1.061	1.061	1.061		
Pitot Tube Coefficient	(C_p)	0.895	0.895	0.895		
Actual Nozzle Diameter	(D_{na})	0.194	0.194	0.194		in
Stack Test Data						
Initial Meter Volume	$(V_m)_i$	134.124	225.629	318.348		ft^3
Final Meter Volume	$(V_m)_f$	225.033	317.824	410.791		ft^3
Total Meter Volume	(V_m)	90.909	92.195	92.443	91.849	ft^3
Total Sampling Time	(Θ)	120.0	120.0	120.0	120.0	min
Average Meter Temperature	$(t_m)_{avg}$	73.0	79.0	84.0	78.7	°F
Average Stack Temperature	$(t_s)_{avg}$	121.0	121.0	121.0	121.0	°F
Barometric Pressure	(P_b)	25.24	25.24	25.24	25.24	in Hg
Stack Static Pressure	(P_{static})	-1.10	-1.10	-1.10	-1.10	in H_2O
Absolute Stack Pressure	(P_s)	25.16	25.16	25.16	25.16	in Hg
Average Orifice Pressure Drop	$(\Delta H)_{avg}$	1.53	1.56	1.57	1.55	in H_2O
Absolute Meter Pressure	(P_m)	25.35	25.35	25.36	25.35	in Hg
Avg Square Root Pitot Pressure	$(\Delta p^{1/2})_{avg}$	1.21	1.21	1.20	1.21	$(in\ H_2O)^{1/2}$
Moisture Content Data						
Impingers 1-3 Water Volume Gain	(V_n)	230.0	236.3	234.1	233.5	ml
Impinger 4 Silica Gel Weight Gain	(W_n)	19.7	17.1	18.5	18.4	g
Total Water Volume Collected	(V_{lc})	249.7	253.4	252.6	251.9	ml
Standard Water Vapor Volume	$(V_w)_{std}$	11.753	11.928	11.890	11.857	scf
Standard Meter Volume	$(V_m)_{std}$	80.931	81.169	80.642	80.914	dscf
Calculated Stack Moisture	$(B_{ws(calc)})$	12.7	12.8	12.8	12.8	%
Saturated Stack Moisture	$(B_{ws(svp)})$	14.1	14.1	14.1	14.1	%
Reported Stack Moisture Content	(B_{ws})	12.7	12.8	12.8	12.8	%
Gas Analysis Data						
Carbon Dioxide Percentage	($\%CO_2$)	13.6	13.5	13.6	13.6	%
Oxygen Percentage	($\%O_2$)	5.3	5.3	5.2	5.3	%
Carbon Monoxide Percentage	(%CO)	0.0	0.0	0.0	0.0	%
Nitrogen Percentage	($\%N_2$)	81.1	81.2	81.2	81.2	%
Dry Gas Molecular Weight	(M_d)	30.39	30.37	30.38	30.38	lb/lb-mole
Wet Stack Gas Molecular Weight	(M_s)	28.82	28.79	28.80	28.80	lb/lb-mole
Calculated Fuel Factor	(F_o)	1.147	1.156	1.154	1.152	
Fuel F-Factor	(F_d)	9780	9780	9780	9780	dscf/mmBtu
Percent Excess Air	(%EA)	32.9	32.8	32.0	32.6	%
Volumetric Flow Rate Data						
Average Stack Gas Velocity	(v_s)	82.87	82.92	82.22	82.67	ft/sec
Stack Cross-Sectional Area	(A_s)	615.75	615.75	615.75	615.75	ft^2
Actual Stack Flow Rate	(Q_a)	3061632	3063479	3037618	3054243	acfm
Dry Standard Stack Flow Rate	(Q_{sd})	2042557	2041448	2024214	2036073	dscfm
Percent of Isokinetic Rate	(I)	99.1	99.4	99.7	99.4	%
Emission Rate Data						
Mass of Particulate on Filter	(m_f)	-2.4000	0.0000	-2.5000	-1.6	mg
Mass of Particulate in Acetone	(m_a')	11.8000	9.2000	9.9000	10.3	mg
Mass due to Acetone Blank	(W_a)	0.0000	0.0000	0.0000	0.0000	mg
Total Mass of Particulates	(m_n)	9.4	9.2	7.4	8.7	mg
Stack Particulate Concentration	(c_s)	0.0001	0.0001	0.0001	0.0001	g/dscf
	(c_s)	0.0015	0.0015	0.0015	0.0015	gr/dscf
Particulate Emission Rate	(E)	12.26	12.25	12.15	12.22	kg/hr
	(E)	31.4	30.6	24.6	28.9	lbs/hr
	(E)	0.0034	0.0033	0.0026	0.0031	lbs/mmBtu

METHOD 5 - DETERMINATION OF PARTICULATE EMISSIONS - RESULTS

Plant Name	INTERMOUNTAIN GENERATING STATION	Date	9/27/2006
Sampling Location	UNIT 2 STACK	Project #	Unit #2
Operator	RON WESTLUND	Stack Type	Circular

Historical Data						
Run Number		1	2	3	Average	
Run Start Time		9:13	12:17	15:10		hh:mm
Run Stop Time		11:19	14:23	17:14		hh:mm
Meter Calibration Factor	(Y)	1.061	1.061	1.061		
Pitot Tube Coefficient	(C_p)	0.895	0.895	0.895		
Actual Nozzle Diameter	(D_{na})	0.194	0.194	0.194		in
Stack Test Data						
Initial Meter Volume	(V_m)$_i$	412.858	506.593	601.251		ft^3
Final Meter Volume	(V_m)$_f$	505.435	600.255	697.062		ft^3
Total Meter Volume	(V_m)	92.577	93.662	95.811	94.017	ft^3
Total Sampling Time	(Θ)	120.0	120.0	120.0	120.0	min
Average Meter Temperature	(t_m)$_{avg}$	75.0	82.0	86.0	81.0	°F
Average Stack Temperature	(t_s)$_{avg}$	121.0	121.0	122.0	121.3	°F
Barometric Pressure	(P_b)	25.24	25.24	25.24	25.24	in Hg
Stack Static Pressure	(P_{static})	-1.00	-1.00	-1.00	-1.00	in H_2O
Absolute Stack Pressure	(P_s)	25.17	25.17	25.17	25.17	in Hg
Average Orifice Pressure Drop	(ΔH)$_{avg}$	1.62	1.64	1.70	1.65	in H_2O
Absolute Meter Pressure	(P_m)	25.36	25.36	25.37	25.36	in Hg
Avg Square Root Pitot Pressure	($\Delta p^{1/2}$)$_{avg}$	1.22	1.21	1.23	1.22	$(in\ H_2O)^{1/2}$
Moisture Content Data						
Impingers 1-3 Water Volume Gain	(V_n)	232.9	241.3	244.8	239.7	ml
Impinger 4 Silica Gel Weight Gain	(W_n)	20.6	17.8	18.8	19.1	g
Total Water Volume Collected	(V_{lc})	253.5	259.1	263.6	258.7	ml
Standard Water Vapor Volume	(V_w)$_{std}$	11.932	12.196	12.408	12.179	scf
Standard Meter Volume	(V_m)$_{std}$	82.129	82.023	83.305	82.486	dscf
Calculated Stack Moisture	($B_{ws(calc)}$)	12.7	12.9	13.0	12.9	%
Saturated Stack Moisture	($B_{ws(svp)}$)	14.06	14.1	14.4	14.2	%
Reported Stack Moisture Content	(B_{ws})	12.7	12.9	13.0	12.9	%
Gas Analysis Data						
Carbon Dioxide Percentage	(%CO_2)	13.5	13.4	13.5	13.5	%
Oxygen Percentage	(%O_2)	5.4	5.5	5.5	5.5	%
Carbon Monoxide Percentage	(%CO)	0.0	0.0	0.0	0.0	%
Nitrogen Percentage	(%N_2)	81.1	81.1	81.0	81.1	%
Dry Gas Molecular Weight	(M_d)	30.38	30.36	30.38	30.37	lb/lb-mole
Wet Stack Gas Molecular Weight	(M_s)	28.81	28.77	28.77	28.78	lb/lb-mole
Calculated Fuel Factor	(F_o)	1.148	1.149	1.141	1.146	
Fuel F-Factor	(F_d)	9780	9780	9780	9780	dscf/mmBtu
Percent Excess Air	(%EA)	33.7	34.6	34.6	34.3	%
Volumetric Flow Rate Data						
Average Stack Gas Velocity	(v_s)	83.56	82.93	84.37	83.62	ft/sec
Stack Cross-Sectional Area	(A_s)	615.75	615.75	615.75	615.75	ft^2
Actual Stack Flow Rate	(Q_a)	3087124	3063849	3117050	3089341	acfm
Dry Standard Stack Flow Rate	(Q_{sd})	2060382	2040163	2069643	2056729	dscfm
Percent of Isokinetic Rate	(I)	99.7	100.6	100.6	100.3	%
Emission Rate Data						
Mass of Particulate on Filter	(m_f)	-0.8000	-3.4000	-0.5000	-1.6	mg
Mass of Particulate in Acetone	(m_a')	8.1000	9.9000	7.4000	8.5	mg
Mass due to Acetone Blank	(W_a)	0.0000	0.0000	0.0000	0.0000	mg
Total Mass of Particulates	(m_n)	7.3	6.5	6.9	6.9	mg
Stack Particulate Concentration	(c_s)	0.0001	0.0001	0.0001	0.0001	g/dscf
	(c_s)	0.0015	0.0015	0.0015	0.0015	gr/dscf
Particulate Emission Rate	(E)	12.36	12.24	12.42	12.34	kg/hr
	(E)	24.2	21.4	22.7	22.8	lbs/hr
	(E)	0.0026	0.0023	0.0024	0.0024	lbs/mmBtu

METHOD 5 - DETERMINATION OF PARTICULATE EMISSIONS - RESULTS

Plant Name	INTERMOUNTAIN GENERATING STATION	Date	10/4/2005
Sampling Location	UNIT 1 STACK	Project #	Unit #1
Operator	RON WESTLUND	Stack Type	Circular

Historical Data						
Run Number		1	2	3	Average	
Run Start Time		12:22	15:27	18:23		hh:mm
Run Stop Time		14:37	17:35	20:30		hh:mm
Meter Calibration Factor	(Y)	1.071	1.071	1.071		
Pitot Tube Coefficient	(C_p)	0.894	0.894	0.894		
Actual Nozzle Diameter	(D_{na})	0.194	0.194	0.194		in
Stack Test Data						
Initial Meter Volume	$(V_m)_i$	347.348	436.742	528.640		ft^3
Final Meter Volume	$(V_m)_f$	436.283	528.341	618.756		ft^3
Total Meter Volume	(V_m)	88.935	91.599	90.116	90.217	ft^3
Total Sampling Time	(Θ)	120.0	120.0	120.0	120.0	min
Average Meter Temperature	$(t_m)_{avg}$	69.0	68.0	76.0	71.0	°F
Average Stack Temperature	$(t_s)_{avg}$	120.0	120.0	120.0	120.0	°F
Barometric Pressure	(P_b)	24.98	24.98	24.98	24.98	in Hg
Stack Static Pressure	(P_{static})	-1.20	-1.20	-1.20	-1.20	in H_2O
Absolute Stack Pressure	(P_s)	24.89	24.89	24.89	24.89	in Hg
Average Orifice Pressure Drop	$(\Delta H)_{avg}$	1.45	1.54	1.47	1.49	in H_2O
Absolute Meter Pressure	(P_m)	25.09	25.09	25.09	25.09	in Hg
Avg Square Root Pitot Pressure	$(\Delta p^{1/2})_{avg}$	1.21	1.23	1.20	1.21	$(in\ H_2O)^{1/2}$
Moisture Content Data						
Impingers 1-3 Water Volume Gain	(V_n)	228.0	233.1	221.1	227.4	ml
Impinger 4 Silica Gel Weight Gain	(W_n)	16.2	19.6	17.1	17.6	g
Total Water Volume Collected	(V_{lc})	244.2	252.7	238.2	245.0	ml
Standard Water Vapor Volume	$(V_w)_{std}$	11.494	11.895	11.212	11.534	scf
Standard Meter Volume	$(V_m)_{std}$	79.680	82.243	79.688	80.537	dscf
Calculated Stack Moisture	$(B_{ws(calc)})$	12.6	12.6	12.3	12.5	%
Saturated Stack Moisture	$(B_{ws(sat)})$	13.8	13.8	13.8	13.8	%
Reported Stack Moisture Content	(B_{ws})	12.6	12.6	12.3	12.5	%
Gas Analysis Data						
Carbon Dioxide Percentage	($\%CO_2$)	13.5	13.6	13.9	13.7	%
Oxygen Percentage	($\%O_2$)	5.6	5.4	5.2	5.4	%
Carbon Monoxide Percentage	(%CO)	0.0	0.0	0.0	0.0	%
Nitrogen Percentage	($\%N_2$)	80.9	81.0	80.9	80.9	%
Dry Gas Molecular Weight	(M_d)	30.38	30.39	30.43	30.40	lb/lb-mole
Wet Stack Gas Molecular Weight	(M_s)	28.82	28.83	28.90	28.85	lb/lb-mole
Calculated Fuel Factor	(F_o)	1.133	1.140	1.129	1.134	
Fuel F-Factor	(F_d)	9780	9780	9780	9780	dscf/mmBtu
Percent Excess Air	(%EA)	35.5	33.8	32.2	33.8	%
Volumetric Flow Rate Data						
Average Stack Gas Velocity	(v_s)	83.16	84.52	82.35	83.34	ft/sec
Stack Cross-Sectional Area	(A_s)	615.75	615.75	615.75	615.75	ft^2
Actual Stack Flow Rate	(Q_a)	3072346	3122591	3042421	3079119	acfm
Dry Standard Stack Flow Rate	(Q_{sd})	2033531	2066788	2020636	2040318	dscfm
Percent of Isokinetic Rate	(I)	98.0	99.6	98.7	98.8	%
Emission Rate Data						
Mass of Particulate on Filter	(m_f)	-1.4000	-2.1000	-1.0000	-1.5	mg
Mass of Particulate in Acetone	(m_a')	10.1000	10.6000	9.6000	10.1	mg
Mass due to Acetone Blank	(W_a)	0.0000	0.0000	0.0000	0.0000	mg
Total Mass of Particulates	(m_n)	8.7	8.5	8.6	8.6	mg
Stack Particulate Concentration	(c_s)	0.0001	0.0001	0.0001	0.0001	g/dscf
	(c_s)	0.0015	0.0015	0.0015	0.0015	gr/dscf
Particulate Emission Rate	(E)	12.20	12.40	12.12	12.24	kg/hr
	(E)	29.4	28.3	28.8	28.8	lbs/hr
	(E)	0.0032	0.0030	0.0031	0.0031	lbs/mmBtu

METHOD 5 - DETERMINATION OF PARTICULATE EMISSIONS - RESULTS

Plant Name	INTERMOUNTAIN GENERATING STATION	Date	10/5/2005
Sampling Location	UNIT 2 STACK	Project #	Unit #2
Operator	RON WESTLUND	Stack Type	Circular

Historical Data						
Run Number		1	2	3	Average	
Run Start Time		9:08	12:12	15:14		hh:mm
Run Stop Time		11:16	14:20	17:21		hh:mm
Meter Calibration Factor	(Y)	1.071	1.071	1.071		
Pitot Tube Coefficient	(C_p)	0.894	0.894	0.894		
Actual Nozzle Diameter	(D_{na})	0.194	0.194	0.194		in
Stack Test Data						
Initial Meter Volume	(V_m)$_i$	619.391	717.267	817.635		ft^3
Final Meter Volume	(V_m)$_f$	716.792	817.173	916.640		ft^3
Total Meter Volume	(V_m)	97.401	99.906	99.005	98.771	ft^3
Total Sampling Time	(Θ)	120.0	120.0	120.0	120.0	min
Average Meter Temperature	(t_m)$_{avg}$	70.0	74.0	78.0	74.0	°F
Average Stack Temperature	(t_s)$_{avg}$	119.0	120.0	121.0	120.0	°F
Barometric Pressure	(P_b)	25.28	25.28	25.28	25.28	in Hg
Stack Static Pressure	(P_{static})	-0.97	-0.97	-0.97	-0.97	in H_2O
Absolute Stack Pressure	(P_s)	25.21	25.21	25.21	25.21	in Hg
Average Orifice Pressure Drop	(ΔH)$_{avg}$	1.77	1.85	1.81	1.81	in H_2O
Absolute Meter Pressure	(P_m)	25.41	25.42	25.41	25.41	in Hg
Avg Square Root Pitot Pressure	($\Delta p^{1/2}$)$_{avg}$	1.32	1.34	1.30	1.32	(in H_2O)$^{1/2}$
Moisture Content Data						
Impingers 1-3 Water Volume Gain	(V_n)	238.6	250.5	248.9	246.0	ml
Impinger 4 Silica Gel Weight Gain	(W_n)	18.9	20.8	21.2	20.3	g
Total Water Volume Collected	(V_{lc})	257.5	271.3	270.1	266.3	ml
Standard Water Vapor Volume	(V_w)$_{std}$	12.121	12.770	12.714	12.535	scf
Standard Meter Volume	(V_m)$_{std}$	88.223	89.835	88.353	88.804	dscf
Calculated Stack Moisture	($B_{ws(calc)}$)	12.1	12.4	12.6	12.4	%
Saturated Stack Moisture	($B_{ws(svp)}$)	13.28	13.6	14.0	13.6	%
Reported Stack Moisture Content	(B_{ws})	12.1	12.4	12.6	12.4	%
Gas Analysis Data						
Carbon Dioxide Percentage	(%CO_2)	13.2	13.4	13.4	13.3	%
Oxygen Percentage	(%O_2)	5.9	5.7	5.8	5.8	%
Carbon Monoxide Percentage	(%CO)	0.0	0.0	0.0	0.0	%
Nitrogen Percentage	(%N_2)	80.9	80.9	80.8	80.9	%
Dry Gas Molecular Weight	(M_d)	30.35	30.37	30.38	30.37	lb/lb-mole
Wet Stack Gas Molecular Weight	(M_s)	28.86	28.84	28.82	28.84	lb/lb-mole
Calculated Fuel Factor	(F_o)	1.136	1.134	1.127	1.132	
Fuel F-Factor	(F_d)	9780	9780	9780	9780	dscf/mmBtu
Percent Excess Air	(%EA)	38.2	36.4	37.3	37.3	%
Volumetric Flow Rate Data						
Average Stack Gas Velocity	(v_s)	90.00	91.47	88.85	90.11	ft/sec
Stack Cross-Sectional Area	(A_s)	615.75	615.75	615.75	615.75	ft^2
Actual Stack Flow Rate	(Q_a)	3325050	3379359	3282563	3328991	acfm
Dry Standard Stack Flow Rate	(Q_{sd})	2245710	2270678	2196815	2237734	dscfm
Percent of Isokinetic Rate	(I)	98.2	99.0	100.6	99.3	%
Emission Rate Data						
Mass of Particulate on Filter	(m_f)	-3.3333	-0.2000	-0.7000	-1.4	mg
Mass of Particulate in Acetone	(m_a')	7.1000	14.2000	9.9000	10.4	mg
Mass due to Acetone Blank	(W_a)	0.0000	0.0000	0.0000	0.0000	mg
Total Mass of Particulates	(m_n)	3.8	14.0	9.2	9.0	mg
Stack Particulate Concentration	(c_s)	0.0000	0.0002	0.0001	0.0001	g/dscf
	(c_s)	0.0000	0.0031	0.0015	0.0015	gr/dscf
Particulate Emission Rate	(E)	0.00	27.25	13.18	13.48	kg/hr
	(E)	12.8	46.8	30.3	30.0	lbs/hr
	(E)	0.0013	0.0046	0.0031	0.0030	lbs/mmBtu

METHOD 5 - DETERMINATION OF PARTICULATE EMISSIONS - RESULTS

Plant Name	INTERMOUNTAIN GENERATING STATION	Date	10/5/2004
Sampling Location	UNIT 1 STACK	Project #	Unit #1
Operator	RON WESTLUND	Stack Type	Circular

Historical Data						
Run Number		1	2	3	Average	
Run Start Time		8:49	11:40	14:28		hh:mm
Run Stop Time		10:58	13:50	16:36		hh:mm
Meter Calibration Factor	(Y)	1.002	1.002	1.002		
Pitot Tube Coefficient	(C_p)	0.855	0.855	0.855		
Actual Nozzle Diameter	(D_{na})	0.194	0.194	0.194		in
Stack Test Data						
Initial Meter Volume	(V_m)$_i$	608.418	703.367	800.215		ft^3
Final Meter Volume	(V_m)$_f$	703.014	799.665	895.057		ft^3
Total Meter Volume	(V_m)	94.596	96.298	94.842	95.245	ft^3
Total Sampling Time	(Θ)	120.0	120.0	120.0	120.0	min
Average Meter Temperature	(t_m)$_{avg}$	76.0	79.0	83.0	79.3	°F
Average Stack Temperature	(t_s)$_{avg}$	122.0	124.0	123.0	123.0	°F
Barometric Pressure	(P_b)	25.14	25.14	25.14	25.14	in Hg
Stack Static Pressure	(P_{static})	-1.00	-1.00	-1.00	-1.00	in H_2O
Absolute Stack Pressure	(P_s)	25.07	25.07	25.07	25.07	in Hg
Average Orifice Pressure Drop	(ΔH)$_{avg}$	1.65	1.79	1.63	1.69	in H_2O
Absolute Meter Pressure	(P_m)	25.26	25.27	25.26	25.26	in Hg
Avg Square Root Pitot Pressure	($\Delta p^{1/2}$)$_{avg}$	1.22	1.24	1.22	1.23	(in H_2O)$^{1/2}$
Moisture Content Data						
Impingers 1-3 Water Volume Gain	(V_n)	250.1	267.7	258.3	258.7	ml
Impinger 4 Silica Gel Weight Gain	(W_n)	17.0	18.6	18.1	17.9	g
Total Water Volume Collected	(V_{lc})	267.1	286.3	276.4	276.6	ml
Standard Water Vapor Volume	(V_w)$_{std}$	12.572	13.476	13.010	13.019	scf
Standard Meter Volume	(V_m)$_{std}$	78.801	79.805	77.983	78.863	dscf
Calculated Stack Moisture	($B_{ws(calc)}$)	13.8	14.4	14.3	14.2	%
Saturated Stack Moisture	($B_{ws(svp)}$)	14.5	15.3	14.9	14.9	%
Reported Stack Moisture Content	(B_{ws})	13.8	14.4	14.3	14.2	%
Gas Analysis Data						
Carbon Dioxide Percentage	(%CO_2)	13.5	13.7	13.9	13.7	%
Oxygen Percentage	(%O_2)	5.4	5.1	5.1	5.2	%
Carbon Monoxide Percentage	(%CO)	0.0	0.0	0.0	0.0	%
Nitrogen Percentage	(%N_2)	81.1	81.2	81.0	81.1	%
Dry Gas Molecular Weight	(M_d)	30.38	30.40	30.43	30.40	lb/lb-mole
Wet Stack Gas Molecular Weight	(M_s)	28.67	28.61	28.65	28.64	lb/lb-mole
Calculated Fuel Factor	(F_o)	1.148	1.153	1.137	1.146	
Fuel F-Factor	(F_d)	9780	9780	9780	9780	dscf/mmBtu
Percent Excess Air	(%EA)	33.7	31.2	31.3	32.1	%
Volumetric Flow Rate Data						
Average Stack Gas Velocity	(v_s)	80.24	81.78	80.34	80.79	ft/sec
Stack Cross-Sectional Area	(A_s)	615.75	615.75	615.75	615.75	ft^2
Actual Stack Flow Rate	(Q_a)	2964467	3021362	2968161	2984663	acfm
Dry Standard Stack Flow Rate	(Q_{sd})	1942484	1959252	1930307	1944014	dscfm
Percent of Isokinetic Rate	(I)	101.4	101.9	101.0	101.4	%
Emission Rate Data						
Mass of Particulate on Filter	(m_f)	-2.8000	-0.9000	-2.5000	-2.1	mg
Mass of Particulate in Acetone	(m_a')	13.0000	9.0000	8.9000	10.3	mg
Mass due to Acetone Blank	(W_a)	0.0000	0.0000	0.0000	0.0000	mg
Total Mass of Particulates	(m_n)	10.2	8.1	6.4	8.2	mg
Stack Particulate Concentration	(c_s)	0.0001	0.0001	0.0001	0.0001	g/dscf
	(c_s)	0.0015	0.0015	0.0015	0.0015	gr/dscf
Particulate Emission Rate	(E)	11.65	11.76	11.58	11.66	kg/hr
	(E)	33.3	26.3	21.0	26.9	lbs/hr
	(E)	0.0038	0.0029	0.0023	0.0030	lbs/mmBtu

METHOD 5 - DETERMINATION OF PARTICULATE EMISSIONS - RESULTS

Plant Name	INTERMOUNTAIN GENERATING STATION	Date	10/6/2004
Sampling Location	UNIT 2 STACK	Project #	Unit #2
Operator	RON WESTLUND	Stack Type	Circular

Historical Data						
Run Number		1	2	3	Average	
Run Start Time		8:43	11:33	14:21		hh:mm
Run Stop Time		10:51	13:41	16:29		hh:mm
Meter Calibration Factor	(Y)	1.002	1.002	1.002		
Pitot Tube Coefficient	(C_p)	0.855	0.855	0.855		
Actual Nozzle Diameter	(D_{na})	0.194	0.194	0.194		in
Stack Test Data						
Initial Meter Volume	(V_m)i	895.650	992.370	91.600		ft^3
Final Meter Volume	(V_m)f	991.582	1091.032	190.692		ft^3
Total Meter Volume	(V_m)	95.932	98.662	99.092	97.895	ft^3
Total Sampling Time	(Θ)	120.0	120.0	120.0	120.0	min
Average Meter Temperature	(t_m)avg	74.0	79.0	83.0	78.7	°F
Average Stack Temperature	(t_s)avg	119.0	121.0	121.0	120.3	°F
Barometric Pressure	(P_b)	25.15	25.15	25.15	25.15	in Hg
Stack Static Pressure	(P_{static})	-0.87	-0.87	-0.87	-0.87	in H_2O
Absolute Stack Pressure	(P_s)	25.09	25.09	25.09	25.09	in Hg
Average Orifice Pressure Drop	(ΔH)avg	1.72	1.80	1.80	1.77	in H_2O
Absolute Meter Pressure	(P_m)	25.28	25.28	25.28	25.28	in Hg
Avg Square Root Pitot Pressure	($\Delta p^{1/2}$)avg	1.25	1.28	1.27	1.27	(in H_2O)$^{1/2}$
Moisture Content Data						
Impingers 1-3 Water Volume Gain	(V_n)	227.8	250.1	250.6	242.8	ml
Impinger 4 Silica Gel Weight Gain	(W_n)	21.6	19.3	18.4	19.8	g
Total Water Volume Collected	(V_{lc})	249.4	269.4	269.0	262.6	ml
Standard Water Vapor Volume	(V_{wi})std	11.739	12.681	12.662	12.361	scf
Standard Meter Volume	(V_m)std	80.261	81.798	81.550	81.203	dscf
Calculated Stack Moisture	($B_{ws(calc)}$)	12.8	13.4	13.4	13.2	%
Saturated Stack Moisture	($B_{ws(svp)}$)	13.34	14.1	14.1	13.8	%
Reported Stack Moisture Content	(B_{ws})	12.8	13.4	13.4	13.2	%
Gas Analysis Data						
Carbon Dioxide Percentage	(%CO_2)	13.2	13.1	12.9	13.1	%
Oxygen Percentage	(%O_2)	5.8	6.0	6.0	5.9	%
Carbon Monoxide Percentage	(%CO)	0.0	0.0	0.0	0.0	%
Nitrogen Percentage	(%N_2)	81.0	80.9	81.1	81.0	%
Dry Gas Molecular Weight	(M_d)	30.34	30.34	30.30	30.33	lb/lb-mole
Wet Stack Gas Molecular Weight	(M_s)	28.76	28.69	28.65	28.70	lb/lb-mole
Calculated Fuel Factor	(F_o)	1.144	1.137	1.155	1.145	
Fuel F-Factor	(F_d)	9780	9780	9780	9780	dscf/mmBtu
Percent Excess Air	(%EA)	37.2	39.1	38.9	38.4	%
Volumetric Flow Rate Data						
Average Stack Gas Velocity	(v_s)	81.84	84.06	83.46	83.12	ft/sec
Stack Cross-Sectional Area	(A_s)	615.75	615.75	615.75	615.75	ft^2
Actual Stack Flow Rate	(Q_s)	3023579	3105597	3083430	3070869	acfm
Dry Standard Stack Flow Rate	(Q_{sd})	2016193	2049556	2034927	2033559	dscfm
Percent of Isokinetic Rate	(I)	99.5	99.8	100.3	99.9	%
Emission Rate Data						
Mass of Particulate on Filter	(m_f)	-0.8000	-3.6000	-0.5000	-1.6	mg
Mass of Particulate in Acetone	(m_a')	11.0000	11.7000	9.1000	10.6	mg
Mass due to Acetone Blank	(W_a)	0.0000	0.0000	0.0000	0.0000	mg
Total Mass of Particulates	(m_n)	10.2	8.1	8.6	9.0	mg
Stack Particulate Concentration	(c_s)	0.0001	0.0001	0.0001	0.0001	g/dscf
	(c_s)	0.0015	0.0015	0.0015	0.0015	gr/dscf
Particulate Emission Rate	(E)	12.10	12.30	12.21	12.20	kg/hr
	(E)	33.9	26.8	28.4	29.7	lbs/hr
	(E)	0.0038	0.0030	0.0032	0.0033	lbs/mmBtu

METHOD 5 - DETERMINATION OF PARTICULATE EMISSIONS - RESULTS

Plant Name	INTERMOUNTAIN GENERATING STATION	Date	10/7/2003
Sampling Location	UNIT 1 STACK	Project #	Unit #1
Operator	RON WESTLUND	Stack Type	Circular

Historical Data						
Run Number		1	2	3	Average	
Run Start Time		08:30	11:30	14:16		hh:mm
Run Stop Time		10:39	13:37	16:25		hh:mm
Meter Calibration Factor	(Y)	1.012	1.012	1.012		
Pitot Tube Coefficient	(C_p)	0.873	0.873	0.873		
Actual Nozzle Diameter	(D_{na})	0.194	0.194	0.194		in
Stack Test Data						
Initial Meter Volume	$(V_m)_i$	926.835	22.654	117.638		ft^3
Final Metar Volume	$(V_m)_f$	1022.323	117.374	214.230		ft^3
Total Meter Volume	(V_m)	95.488	94.720	96.592	95.600	ft^3
Total Sampling Time	(Θ)	120.0	120.0	120.0	120.0	min
Average Meter Temperature	$(t_m)_{avg}$	81.0	86.0	90.0	85.7	°F
Average Stack Temperature	$(t_s)_{avg}$	123.0	124.0	123.0	123.3	°F
Barometric Pressure	(P_b)	25.04	25.04	25.04	25.04	in Hg
Stack Static Pressure	(P_{static})	-1.00	-1.00	-1.00	-1.00	in H_2O
Absolute Stack Presaure	(P_s)	24.97	24.97	24.97	24.97	in Hg
Average Orifice Pressure Drop	$(\Delta H)_{avg}$	1.73	1.67	1.73	1.71	in H_2O
Absolute Meter Pressure	(P_m)	25.17	25.16	25.17	25.17	in Hg
Avg Square Root Pitot Pressure	$(\Delta p^{1/2})_{avg}$	1.23	1.20	1.21	1.21	$(in\ H_2O)^{1/2}$
Moisture Content Data						
Impingers 1-3 Water Volume Gain	(V_n)	258.7	258.6	254.4	257.2	ml
Impinger 4 Silica Gel Weight Gain	(W_n)	17.3	18.3	20.4	18.7	g
Total Water Volume Collected	(V_{tc})	276.0	276.9	274.8	275.9	ml
Standard Water Vapor Volume	$(V_w)_{std}$	12.991	13.034	12.935	12.987	scf
Standard Meter Volume	$(V_m)_{std}$	79.299	77.927	78.903	78.710	dscf
Calculated Stack Moisture	$(B_{ws(calc)})$	14.1	14.3	14.1	14.2	%
Saturated Stack Moisture	$(B_{ws(svp)})$	15.0	15.4	15.0	15.1	%
Reported Stack Moisture Content	(B_{ws})	14.1	14.3	14.1	14.2	%
Gas Analysis Data						
Carbon Dioxide Percentage	($\%CO_2$)	13.7	13.8	13.8	13.8	%
Oxygen Percentage	($\%O_2$)	5.2	5.1	5.1	5.1	%
Carbon Monoxide Percentage	(%CO)	0.0	0.0	0.0	0.0	%
Nitrogen Percentage	($\%N_2$)	81.1	81.1	81.1	81.1	%
Dry Gas Molecular Weight	(M_d)	30.40	30.41	30.41	30.41	lb/lb-mole
Wet Stack Gas Molecular Weight	(M_s)	28.65	28.64	28.66	28.65	lb/lb-mole
Calculated Fuel Factor	(F_o)	1.146	1.145	1.145	1.145	
Fuel F-Factor	(F_d)	9780	9780	9780	9780	dscf/mmBtu
Percent Excess Air	(%EA)	32.1	31.3	31.3	31.6	%
Volumetric Flow Rate Data						
Average Stack Gas Velocity	(v_s)	82.87	80.93	81.51	81.77	ft/sec
Stack Cross-Sectional Area	(A_s)	615.75	615.75	615.75	615.75	ft^2
Actual Stack Flow Rate	(Q_s)	3061632	2989959	3011387	3020993	acfm
Dry Standard Stack Flow Rate	(Q_{sd})	1987781	1933410	1955159	1958783	dscfm
Percent of Isokinetic Rate	(I)	99.7	100.8	100.9	100.5	%
Emission Rate Data						
Mass of Particulate on Filter	(m_f)	-0.8000	0.5000	0.5000	0.1	mg
Mass of Particulate in Acetone	(m_a')	11.9000	9.7000	11.6000	11.1	mg
Mass due to Acetone Blank	(W_a)	0.1000	0.1000	0.1000	0.1000	mg
Total Mass of Particulates	(m_n)	11.0	10.1	12.0	11.0	mg
Stack Particulate Concentration	(c_s)	0.0001	0.0001	0.0002	0.0001	g/dscf
	(c_s)	0.0015	0.0015	0.0031	0.0020	gr/dscf
Particulate Emission Rate	(E)	11.93	11.60	23.46	15.66	kg/hr
	(E)	36.5	33.1	39.3	36.3	lbs/hr
	(E)	0.0040	0.0037	0.0043	0.0040	lbs/mmBtu

METHOD 5 - DETERMINATION OF PARTICULATE EMISSIONS - RESULTS

Plant Name	INTERMOUNTAIN GENERATING STATION	Date	10/8/2003
Sampling Location	UNIT 2 STACK	Project #	Unit #2
Operator	RON WESTLUND	Stack Type	Circular

Historical Data						
Run Number		1	2	3	Average	
Run Start Time		08:37	11:45	15:13		hh:mm
Run Stop Time		10:44	14:37	17:22		hh:mm
Meter Calibration Factor	(Y)	1.012	1.012	1.012		
Pitot Tube Coefficient	(C_p)	0.874	0.874	0.874		
Actual Nozzle Diameter	(D_{na})	0.194	0.194	0.194		in
Stack Test Data						
Initial Meter Volume	$(V_m)_i$	214.551	313.713	411.380		ft^3
Final Meter Volume	$(V_m)_f$	310.884	411.092	509.923		ft^3
Total Meter Volume	(V_m)	96.333	97.379	98.543	97.418	ft^3
Total Sampling Time	(Θ)	120.0	120.0	120.0	120.0	min
Average Meter Temperature	$(t_m)_{avg}$	93.0	85.0	91.0	89.7	°F
Average Stack Temperature	$(t_s)_{avg}$	124.0	124.0	124.0	124.0	°F
Barometric Pressure	(P_b)	25.00	25.00	25.00	25.00	in Hg
Stack Static Pressure	(P_{static})	-0.90	-0.90	-0.90	-0.90	in H_2O
Absolute Stack Pressure	(P_s)	24.93	24.93	24.93	24.93	in Hg
Average Orifice Pressure Drop	$(\Delta H)_{avg}$	1.69	1.76	1.78	1.74	in H_2O
Absolute Meter Pressure	(P_m)	25.12	25.13	25.13	25.13	in Hg
Avg Square Root Pitot Pressure	$(\Delta p^{1/2})_{avg}$	1.21	1.24	1.24	1.23	$(in\ H_2O)^{1/2}$
Moisture Content Data						
Impingers 1-3 Water Volume Gain	(V_h)	251.8	264.5	268.6	261.6	ml
Impinger 4 Silica Gel Weight Gain	(W_h)	19.5	20.0	18.9	19.5	g
Total Water Volume Collected	(V_{lc})	271.3	284.5	287.5	281.1	ml
Standard Water Vapor Volume	$(V_w)_{std}$	12.770	13.391	13.533	13.231	scf
Standard Meter Volume	$(V_m)_{std}$	78.131	80.155	80.234	79.507	dscf
Calculated Stack Moisture	$(B_{ws(calc)})$	14.0	14.3	14.4	14.2	%
Saturated Stack Moisture	$(B_{ws(sat)})$	15.41	15.4	15.4	15.4	%
Reported Stack Moisture Content	(B_{ws})	14.0	14.3	14.4	14.2	%
Gas Analysis Data						
Carbon Dioxide Percentage	($\%CO_2$)	11.0	12.4	12.8	12.1	%
Oxygen Percentage	($\%O_2$)	8.4	6.8	6.1	7.1	%
Carbon Monoxide Percentage	(%CO)	0.0	0.0	0.0	0.0	%
Nitrogen Percentage	($\%N_2$)	80.6	80.8	81.1	80.8	%
Dry Gas Molecular Weight	(M_d)	30.10	30.26	30.29	30.22	lb/lb-mole
Wet Stack Gas Molecular Weight	(M_s)	28.41	28.51	28.52	28.48	lb/lb-mole
Calculated Fuel Factor	(F_o)	1.136	1.137	1.156	1.143	
Fuel F-Factor	(F_d)	9780	9780	9780	9780	dscf/mmBtu
Percent Excess Air	(%EA)	65.2	46.8	39.8	50.6	%
Volumetric Flow Rate Data						
Average Stack Gas Velocity	(v_s)	82.10	83.98	83.97	83.35	ft/sec
Stack Cross-Sectional Area	(A_s)	615.75	615.75	615.75	615.75	ft^2
Actual Stack Flow Rate	(Q_s)	3033185	3102641	3102272	3079366	acfm
Dry Standard Stack Flow Rate	(Q_{sd})	1965075	2003061	2000485	1989540	dscfm
Percent of Isokinetic Rate	(I)	99.5	100.1	100.3	100.0	%
Emission Rate Data						
Mass of Particulate on Filter	(m_f)	-1.0000	1.0000	0.2000	0.1	mg
Mass of Particulate in Acetone	(m_a')	12.2000	13.7000	12.4000	12.8	mg
Mass due to Acetone Blank	(W_a)	0.1000	0.1000	0.1000	0.1000	mg
Total Mass of Particulates	(m_n)	11.1	14.6	12.5	12.7	mg
Stack Particulate Concentration	(c_s)	0.0001	0.0002	0.0002	0.0002	g/dscf
	(c_s)	0.0015	0.0031	0.0031	0.0026	gr/dscf
Particulate Emission Rate	(E)	11.79	24.04	24.01	19.95	kg/hr
	(E)	36.9	48.3	41.2	42.1	lbs/hr
	(E)	0.0051	0.0058	0.0047	0.0052	lbs/mmBtu

METHOD 5 - DETERMINATION OF PARTICULATE EMISSIONS - RESULTS

Plant Name	INTERMOUNTAIN GENERATING STATION	Date	10/8/2002
Sampling Location	UNIT 1 STACK	Project #	Compliance #1
Operator	RON WESTLUND	Stack Type	Circular

Historical Data						
Run Number		1	2	3	Average	
Run Start Time		09:09	12:44	15:46		hh:mm
Run Stop Time		11:17	14:55	18:20		hh:mm
Meter Calibration Factor	(Y)	1.011	1.011	1.011		
Pitot Tube Coefficient	(C_p)	0.777	0.777	0.777		
Actual Nozzle Diameter	(D_{na})	0.194	0.194	0.194		in
Stack Test Data						
Initial Meter Volume	(V_m)$_i$	76.048	155.840	234.156		ft^3
Final Meter Volume	(V_m)$_f$	155.621	233.975	317.006		ft^3
Total Meter Volume	(V_m)	79.573	78.135	82.850	80.186	ft^3
Total Sampling Time	(Θ)	120.0	120.0	120.0	120.0	min
Average Meter Temperature	(t_m)$_{avg}$	74.0	79.0	81.0	78.0	°F
Average Stack Temperature	(t_s)$_{avg}$	120.0	120.0	122.0	120.7	°F
Barometric Pressure	(P_b)	25.15	25.15	25.15	25.15	in Hg
Stack Static Pressure	(P_{static})	-1.00	-1.00	-1.00	-1.00	in H_2O
Absolute Stack Pressure	(P_s)	25.08	25.08	25.08	25.08	in Hg
Average Orifice Pressure Drop	(ΔH)$_{avg}$	1.22	1.18	1.34	1.25	in H_2O
Absolute Meter Pressure	(P_m)	25.24	25.24	25.25	25.24	in Hg
Avg Square Root Pitot Pressure	($\Delta p^{1/2}$)$_{avg}$	1.15	1.13	1.19	1.16	(in H_2O)$^{1/2}$
Moisture Content Data						
Impingers 1-3 Water Volume Gain	(V_n)	245.4	237.1	258.5	247.0	ml
Impinger 4 Silica Gel Weight Gain	(W_n)	18.1	21.8	18.7	19.5	g
Total Water Volume Collected	(V_{lc})	263.5	258.9	277.2	266.5	ml
Standard Water Vapor Volume	(V_w)$_{std}$	12.403	12.186	13.048	12.546	scf
Standard Meter Volume	(V_m)$_{std}$	67.075	65.244	68.957	67.092	dscf
Calculated Stack Moisture	($B_{ws(calc)}$)	15.6	15.7	15.9	15.7	%
Saturated Stack Moisture	($B_{ws(svp)}$)	13.7	13.7	14.5	14.0	%
Reported Stack Moisture Content	(B_{ws})	13.7	13.7	14.5	14.0	%
Gas Analysis Data						
Carbon Dioxide Percentage	(%CO_2)	13.8	13.4	13.4	13.5	%
Oxygen Percentage	(%O_2)	5.2	5.7	5.7	5.5	%
Carbon Monoxide Percentage	(%CO)	0.0	0.0	0.0	0.0	%
Nitrogen Percentage	(%N_2)	81.0	80.9	80.9	80.9	%
Dry Gas Molecular Weight	(M_d)	30.42	30.37	30.37	30.39	lb/lb-mole
Wet Stack Gas Molecular Weight	(M_s)	28.48	28.43	28.40	28.44	lb/lb-mole
Calculated Fuel Factor	(F_o)	1.138	1.134	1.134	1.135	
Fuel F-Factor	(F_d)	9780	9780	9780	9780	dscf/mmBtu
Percent Excess Air	(%EA)	32.1	36.4	36.4	35.0	%
Volumetric Flow Rate Data						
Average Stack Gas Velocity	(v_s)	68.84	67.70	71.45	69.33	ft/sec
Stack Cross-Sectional Area	(A_s)	615.75	615.75	615.75	615.75	ft^2
Actual Stack Flow Rate	(Q_s)	2543294	2501177	2639720	2561397	acfm
Dry Standard Stack Flow Rate	(Q_{sd})	1637989	1608955	1688227	1645057	dscfm
Percent of Isokinetic Rate	(I)	102.4	101.5	102.2	102.0	%
Emission Rate Data						
Mass of Particulate on Filter	(m_f)	-0.7000	-0.2000	-0.2000	-0.4	mg
Mass of Particulate in Acetone	(m_a')	7.0000	9.4000	7.4000	7.9	mg
Mass due to Acetone Blank	(W_a)	0.0000	0.0000	0.0000	0.0000	mg
Total Mass of Particulates	(m_n)	6.3	9.2	7.2	7.6	mg
Stack Particulate Concentration	(c_s)	0.0001	0.0001	0.0001	0.0001	g/dscf
	(c_s)	0.0015	0.0015	0.0015	0.0015	gr/dscf
Particulate Emission Rate	(E)	9.83	9.65	10.13	9.87	kg/hr
	(E)	20.4	30.0	23.3	24.6	lbs/hr
	(E)	0.0027	0.0042	0.0031	0.0033	lbs/mmBtu

METHOD 5 - DETERMINATION OF PARTICULATE EMISSIONS - RESULTS

Plant Name	INTERMOUNTAIN GENERATING STATION	Date	10/9/2002
Sampling Location	UNIT 2 STACK	Project #	Compliance #2
Operator	RON WESTLUND	Stack Type	Circular

Historical Data						
Run Number		1	2	3	Average	
Run Start Time		10:06	13:12	16:20		hh:mm
Run Stop Time		12:16	15:22	18:28		hh:mm
Meter Calibration Factor	(Y)	1.011	1.011	1.011		
Pitot Tube Coefficient	(C_p)	0.777	0.777	0.777		
Actual Nozzle Diameter	(D_{na})	0.194	0.194	0.194		in
Stack Test Data						
Initial Meter Volume	$(V_m)_i$	332.350	414.939	498.252		ft^3
Final Meter Volume	$(V_m)_f$	414.064	497.948	581.478		ft^3
Total Meter Volume	(V_m)	81.714	83.009	83.226	82.650	ft^3
Total Sampling Time	(Θ)	120.0	120.0	120.0	120.0	min
Average Meter Temperature	$(t_m)_{avg}$	74.0	80.0	83.0	79.0	°F
Average Stack Temperature	$(t_s)_{avg}$	120.0	122.0	122.0	121.3	°F
Barometric Pressure	(P_b)	25.13	25.13	25.13	25.13	in Hg
Stack Static Pressure	(P_{static})	-1.10	-1.10	-1.10	-1.10	in H_2O
Absolute Stack Pressure	(P_s)	25.05	25.05	25.05	25.05	in Hg
Average Orifice Pressure Drop	$(\Delta H)_{avg}$	1.29	1.34	1.33	1.32	in H_2O
Absolute Meter Pressure	(P_m)	25.22	25.23	25.23	25.23	in Hg
Avg Square Root Pitot Pressure	$(\Delta p^{1/2})_{avg}$	1.18	1.19	1.19	1.19	$(in\ H_2O)^{1/2}$
Moisture Content Data						
Impingers 1-3 Water Volume Gain	(V_n)	234.2	253.5	252.1	246.6	ml
Impinger 4 Silica Gel Weight Gain	(W_n)	25.3	18.4	18.2	20.6	g
Total Water Volume Collected	(V_{lc})	259.5	271.9	270.3	267.2	ml
Standard Water Vapor Volume	$(V_w)_{std}$	12.215	12.798	12.723	12.579	scf
Standard Meter Volume	$(V_m)_{std}$	68.839	69.163	68.959	68.987	dscf
Calculated Stack Moisture	$(B_{ws(calc)})$	15.1	15.6	15.6	15.4	%
Saturated Stack Moisture	$(B_{ws(svp)})$	13.74	14.5	14.5	14.2	%
Reported Stack Moisture Content	(B_{ws})	13.7	14.5	14.5	14.2	%
Gas Analysis Data						
Carbon Dioxide Percentage	($\%CO_2$)	13.3	13.4	13.5	13.4	%
Oxygen Percentage	($\%O_2$)	5.8	5.7	5.6	5.7	%
Carbon Monoxide Percentage	(%CO)	0.0	0.0	0.0	0.0	%
Nitrogen Percentage	($\%N_2$)	80.9	80.9	80.9	80.9	%
Dry Gas Molecular Weight	(M_d)	30.36	30.37	30.38	30.37	lb/lb-mole
Wet Stack Gas Molecular Weight	(M_s)	28.49	28.44	28.45	28.46	lb/lb-mole
Calculated Fuel Factor	(F_o)	1.135	1.134	1.133	1.134	
Fuel F-Factor	(F_d)	9780	9780	9780	9780	dscf/mmBtu
Percent Excess Air	(%EA)	37.3	36.4	35.5	36.4	%
Volumetric Flow Rate Data						
Average Stack Gas Velocity	(v_s)	70.66	71.45	71.43	71.18	ft/sec
Stack Cross-Sectional Area	(A_s)	615.75	615.75	615.75	615.75	ft^2
Actual Stack Flow Rate	(Q_a)	2610534	2639720	2638981	2629745	acfm
Dry Standard Stack Flow Rate	(Q_{sd})	1689231	1692222	1691749	1691067	dscfm
Percent of Isokinetic Rate	(I)	101.9	102.2	101.9	102.0	%
Emission Rate Data						
Mass of Particulate on Filter	(m_f)	-1.6000	-0.1000	-0.6000	-0.8	mg
Mass of Particulate in Acetone	(m_a')	11.3000	5.9000	7.3000	8.2	mg
Mass due to Acetone Blank	(W_a)	0.0000	0.0000	0.0000	0.0000	mg
Total Mass of Particulates	(m_n)	9.7	5.8	6.7	7.4	mg
Stack Particulate Concentration	(c_s)	0.0001	0.0001	0.0001	0.0001	g/dscf
	(c_s)	0.0015	0.0015	0.0015	0.0015	gr/dscf
Particulate Emission Rate	(E)	10.14	10.15	10.15	10.15	kg/hr
	(E)	31.5	18.8	21.7	24.0	lbs/hr
	(E)	0.0042	0.0025	0.0029	0.0032	lbs/mmBtu

METHOD 5 - DETERMINATION OF PARTICULATE EMISSIONS - RESULTS

Plant Name	INTERMOUNTAIN GENERATING STATION	Date	10/10/2001
Sampling Location	UNIT 1 STACK	Project #	COMPLIANCE #1
Operator	RON WESTLUND	Stack Type	Circular

Historical Data						
Run Number		1	2	3	Average	
Run Start Time		9:30	13:15	16:27		hh:mm
Run Stop Time		11:40	15:28	18:38		hh:mm
Meter Calibration Factor	(Y)	1.033	1.033	1.033		
Pitot Tube Coefficient	(C_p)	0.871	0.871	0.871		
Actual Nozzle Diameter	(D_{na})	0.182	0.182	0.182		in
Stack Test Data						
Initial Meter Volume	(V_m)$_i$	540.792	613.156	686.681		ft^3
Final Meter Volume	(V_m)$_f$	612.940	686.486	757.948		ft^3
Total Meter Volume	(V_m)	72.148	73.330	71.267	72.248	ft^3
Total Sampling Time	(Θ)	120.0	120.0	120.0	120.0	min
Average Meter Temperature	(t_m)$_{avg}$	63.2	68.0	70.9	67.4	°F
Average Stack Temperature	(t_s)$_{avg}$	116.9	117.8	118.7	117.8	°F
Barometric Pressure	(P_b)	25.31	25.31	25.31	25.31	in Hg
Stack Static Pressure	(P_{static})	-1.20	-1.20	-1.20	-1.20	in H_2O
Absolute Stack Pressure	(P_s)	25.22	25.22	25.22	25.22	in Hg
Average Orifice Pressure Drop	(ΔH)$_{avg}$	1.07	1.11	1.05	1.07	in H_2O
Absolute Meter Pressure	(P_m)	25.39	25.39	25.39	25.39	in Hg
Avg Square Root Pitot Pressure	($\Delta p^{1/2}$)$_{avg}$	1.10	1.10	1.07	1.09	(in H_2O)$^{1/2}$
Moisture Content Data						
Impingers 1-3 Water Volume Gain	(V_n)	174.5	180.9	178.8	178.1	ml
Impinger 4 Silica Gel Weight Gain	(W_n)	12.3	12.9	13.1	12.8	g
Total Water Volume Collected	(V_{lc})	186.8	193.8	191.9	190.9	ml
Standard Water Vapor Volume	(V_w)$_{std}$	8.794	9.123	9.034	8.984	scf
Standard Meter Volume	(V_m)$_{std}$	63.799	64.259	62.098	63.385	dscf
Calculated Stack Moisture	($B_{ws(calc)}$)	12.1	12.4	12.7	12.4	%
Saturated Stack Moisture	($B_{ws(avp)}$)	12.52	12.8	13.1	12.8	%
Reported Stack Moisture Content	(B_{ws})	12.1	12.4	12.7	12.4	%
Gas Analysis Data						
Carbon Dioxide Percentage	(%CO_2)	13.6	13.8	14.0	13.8	%
Oxygen Percentage	(%O_2)	5.4	5.1	4.9	5.1	%
Carbon Monoxide Percentage	(%CO)	0.0	0.0	0.0	0.0	%
Nitrogen Percentage	(%N_2)	81.0	81.1	81.1	81.1	%
Dry Gas Molecular Weight	(M_d)	30.39	30.42	30.43	30.41	lb/lb-mole
Wet Stack Gas Molecular Weight	(M_s)	28.89	28.87	28.86	28.87	lb/lb-mole
Calculated Fuel Factor	(F_o)	1.142	1.145	1.145	1.144	
Fuel F-Factor	(F_d)	9780	9780	9780	9780	dscf/mmBtu
Percent Excess Air	(%EA)	33.5	31.0	29.4	31.3	%
Volumetric Flow Rate Data						
Average Stack Gas Velocity	(v_s)	73.01	72.95	71.16	72.37	ft/sec
Stack Cross-Sectional Area	(A_s)	615.75	615.75	615.75	615.75	ft^2
Actual Stack Flow Rate	(Q_a)	2697468	2695113	2629007	2673863	acfm
Dry Standard Stack Flow Rate	(Q_{sd})	1828994	1817878	1765325	1804066	dscfm
Percent of Isokinetic Rate	(I)	99.1	100.4	100.0	99.8	%
Emission Rate Data						
Mass of Particulate on Filter	(m_f)	-0.5000	-1.0500	0.4000	-0.4	mg
Mass of Particulate in Acetone	(m_a)	8.3000	6.8500	6.5500	7.2	mg
Mass due to Acetone Blank	(W_a)	0.1000	0.1000	0.1000	0.1000	mg
Total Mass of Particulates	(m_n)	7.7	5.7	6.9	6.7	mg
Stack Particulate Concentration	(c_s)	0.0001	0.0001	0.0001	0.0001	g/dscf
	(c_s)	0.0019	0.0014	0.0017	0.0016	gr/dscf
Particulate Emission Rate	(E)	13.24	9.68	11.68	11.53	kg/hr
	(E)	29.2	21.3	25.8	25.4	lbs/hr
	(E)	0.0035	0.0025	0.0031	0.0030	lbs/mmBtu

METHOD 5 - DETERMINATION OF PARTICULATE EMISSIONS - RESULTS

Plant Name	INTERMOUNTAIN GENERATING STATION	Date	10/11/2001
Sampling Location	UNIT 2 STACK	Project #	COMPLIANCE #2
Operator	RON WESTLUND	Stack Type	Circular

Historical Data						
Run Number		1	2	3	Average	
Run Start Time		9:40	12:58	16:11		hh:mm
Run Stop Time		11:54	15:10	18:31		hh:mm
Meter Calibration Factor	(Y)	1.033	1.033	1.033		
Pitot Tube Coefficient	(C_p)	0.871	0.871	0.871		
Actual Nozzle Diameter	(D_{na})	0.182	0.182	0.182		in
Stack Test Data						
Initial Meter Volume	(V_m)i	758.233	830.904	905.650		ft^3
Final Meter Volume	(V_m)f	830.700	904.905	979.572		ft^3
Total Meter Volume	(V_m)	72.467	74.001	73.922	73.463	ft^3
Total Sampling Time	(Θ)	120.0	120.0	120.0	120.0	min
Average Meter Temperature	(t_m)avg	64.8	68.9	70.1	67.9	°F
Average Stack Temperature	(t_s)avg	117.6	119.9	119.8	119.1	°F
Barometric Pressure	(P_b)	25.10	25.10	25.10	25.10	in Hg
Stack Static Pressure	(P_{static})	-0.88	-0.88	-0.88	-0.88	in H_2O
Absolute Stack Pressure	(P_s)	25.04	25.04	25.04	25.04	in Hg
Average Orifice Pressure Drop	(ΔH)avg	1.08	1.12	1.13	1.11	in H_2O
Absolute Meter Pressure	(P_m)	25.18	25.18	25.18	25.18	in Hg
Avg Square Root Pitot Pressure	($\Delta p^{1/2}$)avg	1.10	1.12	1.12	1.11	$(in\ H_2O)^{1/2}$
Moisture Content Data						
Impingers 1-3 Water Volume Gain	(V_n)	180.6	196.5	189.8	189.0	ml
Impinger 4 Silica Gel Weight Gain	(W_n)	12.5	11.2	14.2	12.6	g
Total Water Volume Collected	(V_{tc})	193.1	207.7	204.0	201.6	ml
Standard Water Vapor Volume	(V_w)std	9.090	9.777	9.603	9.490	scf
Standard Meter Volume	(V_m)std	63.352	64.201	63.995	63.849	dscf
Calculated Stack Moisture	($B_{ws(calc)}$)	12.5	13.2	13.0	12.9	%
Saturated Stack Moisture	($B_{ws(sat)}$)	12.85	13.7	13.6	13.4	%
Reported Stack Moisture Content	(B_{ws})	12.5	13.2	13.0	12.9	%
Gas Analysis Data						
Carbon Dioxide Percentage	(%CO_2)	13.8	13.8	13.7	13.8	%
Oxygen Percentage	(%O_2)	5.1	5.2	5.2	5.2	%
Carbon Monoxide Percentage	(%CO)	0.0	0.0	0.0	0.0	%
Nitrogen Percentage	(%N_2)	81.0	81.0	81.0	81.0	%
Dry Gas Molecular Weight	(M_d)	30.42	30.41	30.41	30.41	lb/lb-mole
Wet Stack Gas Molecular Weight	(M_s)	28.86	28.77	28.79	28.81	lb/lb-mole
Calculated Fuel Factor	(F_o)	1.140	1.140	1.141	1.140	
Fuel F-Factor	(F_d)	9780	9780	9780	9780	dscf/mmBtu
Percent Excess Air	(%EA)	31.6	31.8	32.4	31.9	%
Volumetric Flow Rate Data						
Average Stack Gas Velocity	(v_s)	73.25	74.61	74.76	74.21	ft/sec
Stack Cross-Sectional Area	(A_s)	615.75	615.75	615.75	615.75	ft^2
Actual Stack Flow Rate	(Q_s)	2706309	2756455	2761841	2741535	acfm
Dry Standard Stack Flow Rate	(Q_{sd})	1810323	1822414	1830060	1820932	dscfm
Percent of Isokinetic Rate	(I)	99.4	100.1	99.4	99.6	%
Emission Rate Data						
Mass of Particulate on Filter	(m_f)	0.5000	-0.2000	0.2000	0.2	mg
Mass of Particulate in Acetone	(m_a')	5.0500	5.4	5.1000	5.2	mg
Mass due to Acetone Blank	(W_a)	0.1000	0.1000	0.1000	0.1000	mg
Total Mass of Particulates	(m_n)	5.4	5.1	5.2	5.3	mg
Stack Particulate Concentration	(c_s)	0.0001	0.0001	0.0001	0.0001	g/dscf
	(c_s)	0.0013	0.0012	0.0013	0.0013	gr/dscf
Particulate Emission Rate	(E)	9.34	8.69	8.92	8.98	kg/hr
	(E)	20.6	19.1	19.7	19.8	lbs/hr
	(E)	0.0025	0.0023	0.0023	0.0024	lbs/mmBtu

METHOD 5 - DETERMINATION OF PARTICULATE EMISSIONS - RESULTS

Plant Name	INTERMOUNTAIN GENERATING STATION	Date	10/25/2000
Sampling Location	UNIT 1 STACK	Project #	COMPLIANCE #1
Operator	RON WESTLUND	Stack Type	Circular

Historical Data						
Run Number		1	2	3	Average	
Run Start Time		10:50	13:35	16:28		hh:mm
Run Stop Time		12:58	15:46	18:38		hh:mm
Meter Calibration Factor	(Y)	1.041	1.041	1.041		
Pitot Tube Coefficient	(C_p)	0.846	0.846	0.846		
Actual Nozzle Diameter	(D_{na})	0.182	0.182	0.182		in
Stack Test Data						
Initial Meter Volume	(V_m)$_i$	2.740	80.275	156.721		ft^3
Final Meter Volume	(V_m)$_f$	79.652	156.455	232.929		ft^3
Total Meter Volume	(V_m)	76.912	76.180	76.208	76.433	ft^3
Total Sampling Time	(Θ)	120.0	120.0	120.0	120.0	min
Average Meter Temperature	(t_m)$_{avg}$	65.1	70.1	71.8	69.0	°F
Average Stack Temperature	(t_s)$_{avg}$	119.5	120.3	121.7	120.5	°F
Barometric Pressure	(P_b)	25.17	25.17	25.17	25.17	in Hg
Stack Static Pressure	(P_{static})	-1.15	-1.15	-1.15	-1.15	in H_2O
Absolute Stack Pressure	(P_s)	25.09	25.09	25.09	25.09	in Hg
Average Orifice Pressure Drop	(ΔH)$_{avg}$	1.20	1.16	1.17	1.18	in H_2O
Absolute Meter Pressure	(P_m)	25.26	25.26	25.26	25.26	in Hg
Avg Square Root Pitot Pressure	($\Delta p^{1/2}$)$_{avg}$	1.21	1.19	1.20	1.20	(in H_2O)$^{1/2}$
Moisture Content Data						
Impingers 1-3 Water Volume Gain	(V_n)	206.7	207.6	216.8	210.4	ml
Impinger 4 Silica Gel Weight Gain	(W_h)	14.2	13.8	13.7	13.9	g
Total Water Volume Collected	(V_{lc})	220.9	221.4	230.5	224.3	ml
Standard Water Vapor Volume	(V_w)$_{std}$	10.399	10.422	10.851	10.557	scf
Standard Meter Volume	(V_m)$_{std}$	67.839	66.650	66.467	67.019	dscf
Calculated Stack Moisture	($B_{ws(calc)}$)	13.3	13.5	14.0	13.6	%
Saturated Stack Moisture	($B_{ws(sat)}$)	13.53	13.8	14.4	13.9	%
Reported Stack Moisture Content	(B_{ws})	13.3	13.5	14.0	13.6	%
Gas Analysis Data						
Carbon Dioxide Percentage	(%CO_2)	12.9	12.9	13.2	13.0	%
Oxygen Percentage	(%O_2)	6.1	6.3	5.8	6.1	%
Carbon Monoxide Percentage	(%CO)	0.0	0.0	0.0	0.0	%
Nitrogen Percentage	(%N_2)	80.9	80.9	81.0	80.9	%
Dry Gas Molecular Weight	(M_d)	30.31	30.31	30.35	30.32	lb/lb-mole
Wet Stack Gas Molecular Weight	(M_s)	28.68	28.64	28.62	28.65	lb/lb-mole
Calculated Fuel Factor	(F_o)	1.142	1.137	1.141	1.140	
Fuel F-Factor	(F_d)	9780	9780	9780	9780	dscf/mmBtu
Percent Excess Air	(%EA)	40.3	41.6	37.2	39.7	%
Volumetric Flow Rate Data						
Average Stack Gas Velocity	(v_s)	78.69	77.60	77.98	78.09	ft/sec
Stack Cross-Sectional Area	(A_s)	615.75	615.75	615.75	615.75	ft^2
Actual Stack Flow Rate	(Q_a)	2907215	2866803	2880817	2884945	acfm
Dry Standard Stack Flow Rate	(Q_{sd})	1926037	1891103	1884786	1900642	dscfm
Percent of Isokinetic Rate	(I)	100.2	100.1	100.2	100.2	%
Emission Rate Data						
Mass of Particulate on Filter	(m_f)	-0.9000	-0.1000	-0.5000	-0.5	mg
Mass of Particulate in Acetone	(m_a')	6.9000	31.5000	11.0000	16.5	mg
Mass due to Acetone Blank	(W_a)	0.1000	0.1000	0.1000	0.1000	mg
Total Mass of Particulates	(m_n)	5.9000	31.3	10.4	15.9	mg
Stack Particulate Concentration	(c_s)	0.0001	0.0005	0.0002	0.0002	g/dscf
	(c_s)	0.0013	0.0072	0.0024	0.0037	gr/dscf
Particulate Emission Rate	(E)	10.04	53.29	17.69	27.01	kg/hr
	(E)	22.1	117.5	39.0	59.5	lbs/hr
	(E)	0.0027	0.0145	0.0047	0.0073	lbs/mmBtu

METHOD 5 - DETERMINATION OF PARTICULATE EMISSIONS - RESULTS

Plant Name	INTERMOUNTAIN GENERATING STATION	Date	10/26/2000
Sampling Location	UNIT 2 STACK	Project #	COMPLIANCE #2
Operator	RON WESTLUND	Stack Type	Circular

Historical Data						
Run Number		1	2	3	Average	
Run Start Time		9:15	12:10	15:20		hh:mm
Run Stop Time		11:25	14:30	17:33		hh:mm
Meter Calibration Factor	(Y)	1.041	1.041	1.041		
Pitot Tube Coefficient	(C_p)	0.846	0.846	0.846		
Actual Nozzle Diameter	(D_{na})	0.182	0.182	0.182		in
Stack Test Data						
Initial Meter Volume	(V_m)$_i$	233.319	309.429	389.015		ft^3
Final Meter Volume	(V_m)$_f$	308.095	387.355	464.539		ft^3
Total Meter Volume	(V_m)	74.776	77.926	75.524	76.075	ft^3
Total Sampling Time	(Θ)	120.0	120.0	120.0	120.0	min
Average Meter Temperature	(t_m)$_{avg}$	67.5	71.8	74.6	71.3	°F
Average Stack Temperature	(t_s)$_{avg}$	120.4	121.5	121.8	121.2	°F
Barometric Pressure	(P_b)	25.08	25.08	25.08	25.08	in Hg
Stack Static Pressure	(P_{static})	-1.02	-1.02	-1.02	-1.02	in H_2O
Absolute Stack Pressure	(P_s)	25.01	25.01	25.01	25.01	in Hg
Average Orifice Pressure Drop	(ΔH)$_{avg}$	1.12	1.22	1.13	1.16	in H_2O
Absolute Meter Pressure	(P_m)	25.16	25.17	25.16	25.17	in Hg
Avg Square Root Pitot Pressure	($\Delta p^{1/2}$)$_{avg}$	1.17	1.22	1.18	1.19	$(in\ H_2O)^{1/2}$
Moisture Content Data						
Impingers 1-3 Water Volume Gain	(V_n)	207.5	195.3	211.2	204.6	ml
Impinger 4 Silica Gel Weight Gain	(W_n)	14.0	13.6	13.3	13.6	g
Total Water Volume Collected	(V_{lc})	221.5	208.9	224.5	218.3	ml
Standard Water Vapor Volume	(V_w)$_{std}$	10.425	9.835	10.566	10.275	scf
Standard Meter Volume	(V_m)$_{std}$	65.500	67.734	65.281	66.171	dscf
Calculated Stack Moisture	($B_{ws(calc)}$)	13.7	12.7	13.9	13.4	%
Saturated Stack Moisture	($B_{ws(svp)}$)	13.92	14.3	14.4	14.2	%
Reported Stack Moisture Content	(B_{ws})	13.7	12.7	13.9	13.4	%
Gas Analysis Data						
Carbon Dioxide Percentage	(%CO_2)	13.2	13.0	13.4	13.2	%
Oxygen Percentage	(%O_2)	5.7	6.1	5.8	5.9	%
Carbon Monoxide Percentage	(%CO)	0.0	0.0	0.0	0.0	%
Nitrogen Percentage	(%N_2)	81.0	80.9	80.8	80.9	%
Dry Gas Molecular Weight	(M_d)	30.35	30.33	30.37	30.35	lb/lb-mole
Wet Stack Gas Molecular Weight	(M_s)	28.65	28.76	28.65	28.69	lb/lb-mole
Calculated Fuel Factor	(F_o)	1.146	1.136	1.130	1.137	
Fuel F-Factor	(F_d)	9780	9780	9780	9780	dscf/mmBtu
Percent Excess Air	(%EA)	36.6	40.3	37.3	38.1	%
Volumetric Flow Rate Data						
Average Stack Gas Velocity	(v_s)	76.21	79.36	76.67	77.41	ft/sec
Stack Cross-Sectional Area	(A_s)	615.75	615.75	615.75	615.75	ft^2
Actual Stack Flow Rate	(Q_a)	2815599	2931954	2832543	2860032	acfm
Dry Standard Stack Flow Rate	(Q_{sd})	1846651	1942797	1849204	1879551	dscfm
Percent of Isokinetic Rate	(I)	100.8	99.1	100.3	100.1	%
Emission Rate Data						
Mass of Particulate on Filter	(m_f)	-0.3000	0.8000	-0.3000	0.1	mg
Mass of Particulate in Acetone	(m_a)	8.1000	10.9	5.5000	8.2	mg
Mass due to Acetone Blank	(W_a)	0.1000	0.1000	0.1000	0.1000	mg
Total Mass of Particulates	(m_n)	7.7	11.6	5.1	8.1	mg
Stack Particulate Concentration	(c_s)	0.0001	0.0002	0.0001	0.0001	g/dscf
	(c_s)	0.0018	0.0026	0.0012	0.0019	gr/dscf
Particulate Emission Rate	(E)	13.03	19.96	8.67	13.89	kg/hr
	(E)	28.7	44.0	19.1	30.6	lbs/hr
	(E)	0.0035	0.0052	0.0023	0.0037	lbs/mmBtu

METHOD 5 - DETERMINATION OF PARTICULATE EMISSIONS - RESULTS

Plant Name	INTERMOUNTAIN GENERATING STATION	Date	9/28/1999
Sampling Location	UNIT 1 STACK	Project #	COMPLIANCE #1
Operator	RON WESTLUND	Stack Type	Circular

Historical Data						
Run Number		1	2	3	Average	
Run Start Time		8:55	12:20	15:30		hh:mm
Run Stop Time		11:10	14:35	17:45		hh:mm
Meter Calibration Factor	(Y)	0.999	0.999	0.999		
Pitot Tube Coefficient	(C_p)	0.872	0.872	0.872		
Actual Nozzle Diameter	(D_{na})	0.182	0.182	0.182		in
Stack Test Data						
Initial Meter Volume	(V_{mi})	166.298	243.482	320.225		ft^3
Final Meter Volume	(V_{mf})	243.258	319.956	398.069		ft^3
Total Meter Volume	(V_m)	76.960	76.474	77.844	77.093	ft^3
Total Sampling Time	(Θ)	120.0	120.0	120.0	120.0	min
Average Meter Temperature	(t_m)$_{avg}$	65.8	71.5	74.2	70.5	°F
Average Stack Temperature	(t_s)$_{avg}$	118.7	118.1	119.0	118.6	°F
Barometric Pressure	(P_b)	25.34	25.34	25.34	25.34	in Hg
Stack Static Pressure	(P_{static})	-1.20	-0.92	-0.92	-1.01	in H_2O
Absolute Stack Pressure	(P_s)	25.25	25.27	25.27	25.27	in Hg
Average Orifice Pressure Drop	(ΔH)$_{avg}$	1.17	1.15	1.20	1.17	in H_2O
Absolute Meter Pressure	(P_m)	25.43	25.42	25.43	25.43	in Hg
Avg Square Root Pitot Pressure	($\Delta p^{1/2}$)$_{avg}$	1.12	1.12	1.13	1.12	$(in\ H_2O)^{1/2}$
Moisture Content Data						
Impingers 1-3 Water Volume Gain	(V_n)	189.4	179.8	195.4	188.2	ml
Impinger 4 Silica Gel Weight Gain	(W_h)	14.2	14.4	15.2	14.6	g
Total Water Volume Collected	(V_{tc})	203.6	194.3	210.6	202.8	ml
Standard Water Vapor Volume	(V_w)$_{std}$	9.584	9.144	9.915	9.548	scf
Standard Meter Volume	(V_m)$_{std}$	65.578	64.466	65.302	65.115	dscf
Calculated Stack Moisture	($B_{ws(calc)}$)	12.8	12.4	13.2	12.8	%
Saturated Stack Moisture	($B_{ws(evp)}$)	13.13	12.9	13.2	13.1	%
Reported Stack Moisture Content	(B_{ws})	12.8	12.4	13.2	12.8	%
Gas Analysis Data						
Carbon Dioxide Percentage	(%CO_2)	13.0	13.2	13.2	13.2	%
Oxygen Percentage	(%O_2)	5.6	5.6	5.8	5.7	%
Carbon Monoxide Percentage	(%CO)	0.0	0.0	0.0	0.0	%
Nitrogen Percentage	(%N_2)	81.4	81.1	81.0	81.2	%
Dry Gas Molecular Weight	(M_d)	30.31	30.34	30.35	30.33	lb/lb-mole
Wet Stack Gas Molecular Weight	(M_s)	28.74	28.81	28.72	28.76	lb/lb-mole
Calculated Fuel Factor	(F_o)	1.174	1.154	1.144	1.157	
Fuel F-Factor	(F_d)	9780	9780	9780	9780	dscf/mmBtu
Percent Excess Air	(%EA)	35.3	35.7	36.9	36.0	%
Volumetric Flow Rate Data						
Average Stack Gas Velocity	(v_s)	74.79	74.14	75.20	74.71	ft/sec
Stack Cross-Sectional Area	(A_s)	615.75	615.75	615.75	615.75	ft^2
Actual Stack Flow Rate	(Q_a)	2763009	2739042	2778155	2760069	acfm
Dry Standard Stack Flow Rate	(Q_{sd})	1856434	1850631	1857828	1854964	dscfm
Percent of Isokinetic Rate	(I)	100.4	99.0	99.9	99.7	%
Emission Rate Data						
Mass of Particulate on Filter	(m_f)	-0.4	0.3	0.1	0.0	mg
Mass of Particulate in Acetone	(m_a)	11.1	11.1	10.0	10.7	mg
Mass due to Acetone Blank	(W_a)	0.0006	0.0006	0.0006	0.0006	mg
Total Mass of Particulates	(m_n)	10.7	11.3	10.1	10.7	mg
Stack Particulate Concentration	(c_s)	0.0002	0.0002	0.0002	0.0002	g/dscf
	(c_s)	0.0025	0.0027	0.0024	0.0025	gr/dscf
Particulate Emission Rate	(E)	18.17	19.55	17.24	18.32	kg/hr
	(E)	40.1	43.1	38.0	40.4	lbs/hr
	(E)	0.0048	0.0052	0.0046	0.0049	lbs/mmBtu

METHOD 3 - GAS ANALYSIS FOR THE DETERMINATION OF DRY MOLECULAR WEIGHT

Plant Name	INTERMOUNTAIN GENERATING STATION				Date	09/29/1999	
Sampling Location	UNIT 2 STACK				Project #	COMPLIANCE #2	
Operator	RON WESTLUND				# of Ports Used	2	
Fuel Type	COAL, BITUMINOUS		Minimum Fuel Factor		1.083	Maximum Fuel Factor	1.230
Orsat Leak Check	☑	PreTest	☑	PostTest	Orsat Identification	39-507	

Gas Analysis Data

Run Number		1		Run Start Time		10:05	Run Stop Time		13:25
Sample Analysis Time	Carbon Dioxide Volume (V_{CO2})	Oxygen Volume (V_{O2})	Carbon Monoxide Volume (V_{CO})	Carbon Dioxide Concentra. ($\%CO_2$)	Oxygen Concentra. ($\%O_2$)	Carbon Monoxide Concentra. (%CO)	Nitrogen Concentra. ($\%N_2$)	Dry Molecular Weight (M_d)	Molecular Weight Deviation (ΔM_d)
hh:mm	ml	ml	ml	percent	percent	percent	percent	lb/lb-mole	lb/lb-mole
14:15	13.3	19.0		13.3	5.7	0.0	81.0	30.36	0.01
14:25	13.1	18.9		13.1	5.8	0.0	81.1	30.33	-0.02
14:35	13.3	19.1		13.3	5.8	0.0	80.9	30.36	0.01
Results			Averages	13.2	5.8	0.0	81.0	30.35	
Average Calculated Fuel Factor			$(F_o)_{avg}$	1.144		Molecular Wt Deviation < 0.3?			☑
Average Excess Air			$(\%EA)_{avg}$	36.9	percent	Fuel Factor in Handbook Range?			☑

Gas Analysis Data

Run Number		2		Run Start Time		14:15	Run Stop Time		16:30
Sample Analysis Time	Carbon Dioxide Volume (V_{CO2})	Oxygen Volume (V_{O2})	Carbon Monoxide Volume (V_{CO})	Carbon Dioxide Concentra. ($\%CO_2$)	Oxygen Concentra. ($\%O_2$)	Carbon Monoxide Concentra. (%CO)	Nitrogen Concentra. ($\%N_2$)	Dry Molecular Weight (M_d)	Molecular Weight Deviation (ΔM_d)
hh:mm	ml	ml	ml	percent	percent	percent	percent	lb/lb-mole	lb/lb-mole
17:15	13.6	19.2		13.6	5.6	0.0	80.8	30.40	0.02
17:25	13.4	18.9		13.4	5.5	0.0	81.1	30.36	-0.01
17:35	13.4	19.0		13.4	5.6	0.0	81.0	30.37	-0.01
Results			Averages	13.5	5.6	0.0	81.0	30.38	
Average Calculated Fuel Factor			$(F_o)_{avg}$	1.139		Molecular Wt Deviation < 0.3?			☑
Average Excess Air			$(\%EA)_{avg}$	35.2	percent	Fuel Factor in Handbook Range?			☑

Gas Analysis Data

Run Number		3		Run Start Time		17:25	Run Stop Time		19:40
Sample Analysis Time	Carbon Dioxide Volume (V_{CO2})	Oxygen Volume (V_{O2})	Carbon Monoxide Volume (V_{CO})	Carbon Dioxide Concentra. ($\%CO_2$)	Oxygen Concentra. ($\%O_2$)	Carbon Monoxide Concentra. (%CO)	Nitrogen Concentra. ($\%N_2$)	Dry Molecular Weight (M_d)	Molecular Weight Deviation (ΔM_d)
hh:mm	ml	ml	ml	percent	percent	percent	percent	lb/lb-mole	lb/lb-mole
20:20	13.5	19.1		13.5	5.6	0.0	80.9	30.38	0.01
20:30	13.5	19.0		13.5	5.5	0.0	81.0	30.38	0.00
20:40	13.4	19.0		13.4	5.6	0.0	81.0	30.37	-0.01
Results			Averages	13.5	5.6	0.0	81.0	30.38	
Average Calculated Fuel Factor			$(F_o)_{avg}$	1.139		Molecular Wt Deviation < 0.3?			☑
Average Excess Air			$(\%EA)_{avg}$	35.2	percent	Fuel Factor in Handbook Range?			☑

Fuel Factor Fo

Fuel Type	Minimum	Maximum
Coal, Anthracite	1.016	1.130
Coal, Lignite	1.016	1.130
Coal, Bituminous	1.083	1.230
Oil, Distillate	1.260	1.413
Oil, Residual	1.210	1.370
Gas, Natural	1.600	1.836
Gas, Propane	1.434	1.586
Gas, Butane	1.405	1.553
Wood	1.000	1.120
Wood Bark	1.003	1.130

Formulas Used

$\%CO_2 = V_{CO2}$

$\%O_2 = V_{O2} - V_{CO2}$

$\%CO = V_{CO} - V_{O2}$

$\%N_2 = 100 - \%CO_2 - \%O_2 - \%CO$

$M_d = .44(\%CO_2) + .32(\%O_2) + .28(\%N_2 + \%CO)$

$\Delta M_d = M_d - M_{davg}$

$F_o = (20.9 - \%O_2 - .5\%CO)/(\%CO_2 + \%CO)$

$\%EA = 100(\%O_2 - .5\%CO)/(.264\%N_2 - (\%O_2 - .5\%CO))$

AMERICAN ENVIRONMENTAL TESTING, INCORPORATED
6823 South 3600 West
Spanish Fork, Utah 84660

TABLE 4.1.3
(FIELD AND LABORATORY DATA SUMMARY)

Plant: IPSC
Source: Unit #1
Method: EPA #5B - 202
Date: 9/22/98

Symbol	Description	Units	Run #1	Run #2	Run #3
V_m	Volume Dry Gas (DGM)	Ft^3	104.497	106.333	103.63
	Sampled @ Meter Conditions	Iso	96.2417	97.9327	95.4432
P_{bar}	Barometric Pressure	"Hg	25.21	25.23	25.25
ΔH	Average Pressure Drop Across the Orifice Meter	$"H_20$	1.62	1.64	1.59
t_m	DGM Temperature	°F	86.63	92.08	94.38
T_m	Absolute DGM Temperature	°R	546.63	552.08	554.38
Y	Meter Coefficient	dimensionless	0.921	0.921	0.921
V_w	Total H_20 Collected, Impingers & Silica Gel	g	264.9	273.1	256.8
CO_2	Orsat Analysis	%	12.50	12.30	12.70
O_2	Orsat Analysis	%	5.80	5.90	6.10
$N_2 + CO$	Orsat Analysis	%	81.70	81.80	81.20
D_n	Nozzle Diameter	inches	0.195	0.195	0.195
t_s	Stack Temperature	°F	109.50	110.75	111.17
T_s	Absolute Stack Temperature	°R	569.50	570.75	571.17
Sqrt ΔP	Velocity Head of Stack Gas	$"H_20$	1.1860	1.1862	1.1680
C_p	Pitot Tube Coefficient	dimensionless	0.8718	0.8718	0.8718
P_g	Static Pressure	$"H_20$	-0.92	-0.92	-0.92
P_s	Absolute Stack Pressure	"Hg	25.14	25.16	25.18
A_s	Stack Area	Ft^2	615.75	615.75	615.75
ϕ	Stack diameter	inches	336	336	336
T_t	Net Time of Test	minute	120	120	120
M_n	Total Sample Collected	mg	16.1	13.4	19.3

AMERICAN ENVIRONMENTAL TESTING, INCORPORATED
6823 South 3600 West
Spanish Fork, Utah 84660

TABLE 4.1.5
(CALCULATED COMPLIANCE CRITERIA)

Plant: IPSC
Source: Unit #1
Method: EPA #5B - 202
Date: 9/22/98

Symbol	Description	Units	Run #1	Run #2	Run #3
$V_{m\ std}$	Volume Dry gas	dscf/min	0.6556	0.6610	0.6420
	Sampled @ Standard conditions	dscf	78.6681	79.3244	77.0394
$V_{w\ gas}$	Volume of Water Vapor Collected @ Standard Conditions Across Orifice Meter	scf	12.4688	12.8548	12.088
B_{ws}	Proportion by Volume of Water Vapor in Gas Stream		0.1368	0.1395	0.1356
M_d	Dry Molecular Weight	lb/lb mole	30.2320	30.204	30.2760
M_s	Wet Molecular Weight	lb/lb mole	28.5585	28.5021	28.6111
V_s	Stack Gas Velocity	ft/sec	78.72	78.86	77.51
Q_{sd}	Volumetric Flow Rate Dry Basis @ Standard Conditions	dscf/h	1.1736E+08	1.1704E+08	1.1554E+08
ISO	Isokinetic Variation	%	99.5552	100.6103	98.9793
C_s	Concentration of Particulate Matter in Stack Gas @ Dry Basis	g/dscf	2.0466E-04	1.6893E-04	2.5052E-04
Emr	Emission Rates	lbs/dscf	4.5119E-07	3.7242E-07	5.5231E-07
		gr/dscf	0.0032	0.0026	0.0039
		g/dscm	7.3092E-03	6.0331E-03	8.9472E-03
		lbs/hr	52.9498	43.5889	63.8156
		T/hr of Coal	339.31	339.86	339.11
		Btu/lbs	12708	12708	12708
		lbs/mmBtu's	0.0061	0.0050	0.0074

AMERICAN ENVIRONMENTAL TESTING, INCORPORATED
6823 South 3600 West
Spanish Fork, Utah 84660

TABLE 4.1.4
(FIELD AND LABORATORY DATA SUMMARY)

Plant: IPSC
Source: Unit #2
Method: EPA #5B - 202
Date: 9/23/98

Symbol	Description	Units	Run #1	Run #2	Run #3
V_m	Volume Dry Gas (DGM)	Ft^3	103.018	106.562	107.362
	Sampled @ Meter	Iso	94.8796	98.1436	98.8804
	Conditions				
P_{bar}	Barometric Pressure	"Hg	25.2	25.21	25.23
ΔH	Average Pressure	"H_2O	1.63	1.71	1.71
	Drop Across the				
	Orifice Meter				
t_m	DGM Temperature	°F	89.96	95.46	100.71
T_m	Absolute DGM Temperature	°R	549.96	555.46	560.71
Y	Meter Coefficient	dimensionless	0.921	0.921	0.921
V_w	Total H_2O Collected,	g	273.2	271.5	269.7
	Impingers & Silica Gel				
CO_2	Orsat Analysis	%	13.10	12.60	12.40
O_2	Orsat Analysis	%	5.50	6.20	6.30
N_2 + CO	Orsat Analysis	%	81.40	81.20	81.30
D_n	Nozzle Diameter	inches	0.195	0.195	0.195
t_s	Stack Temperature	°F	111.25	111.50	111.25
T_s	Absolute Stack Temperature	°R	571.25	571.50	571.25
Sqrt ΔP	Velocity Head of	"H_2O	1.1849	1.2063	1.2035
	Stack Gas				
C_p	Pitot Tube Coefficient	dimensionless	0.8718	0.8718	0.8718
P_g	Static Pressure	"H_2O	-0.64	-0.64	-0.64
P_s	Absolute Stack Pressure	"Hg	25.15	25.16	25.18
A_s	Stack Area	Ft^2	615.75	615.75	615.75
ϕ	Stack diameter	inches	336	336	336
T_t	Net Time of Test	minute	120	120	120
M_n	Total Sample Collected	mg	2.8	11	15.3

AMERICAN ENVIRONMENTAL TESTING, INCORPORATED
6823 South 3600 West
Spanish Fork, Utah 84660

TABLE 4.1.6
(CALCULATED COMPLIANCE CRITERIA)

Plant: IPSC
Source: Unit #2
Method: EPA #5B - 202
Date: 9/23/98

Symbol	Description	Units	Run #1	Run #2	Run #3
$V_{m\ std}$	Volume Dry gas	dscf/min	0.6421	0.6580	0.6573
	Sampled @ Standard conditions	dscf	77.0555	78.9654	78.8770
$V_{w\ gas}$	Volume of Water Vapor Collected @ Standard Conditions Across Orifice Meter	scf	12.8595	12.7795	12.695
B_{ws}	Proportion by Volume of Water Vapor in Gas Stream		0.1430	0.1393	0.1386
M_d	Dry Molecular Weight	lb/lb mole	30.3160	30.264	30.2360
M_s	Wet Molecular Weight	lb/lb mole	28.5546	28.5557	28.5397
V_s	Stack Gas Velocity	ft/sec	78.76	80.18	79.97
Q_{sd}	Volumetric Flow Rate Dry Basis @ Standard Conditions	dscf/h	1.1625E+08	1.1886E+08	1.1878E+08
ISO	Isokinetic Variation	%	98.4401	98.6232	98.5771
C_s	Concentration of Particulate Matter in Stack Gas @ Dry Basis	g/dscf	3.6337E-05	1.3930E-04	1.9397E-04
Emr	Emission Rates	lbs/dscf	8.0110E-08	3.0711E-07	4.2764E-07
		gr/dscf	0.0006	0.0021	0.0030
		g/dscm	1.2978E-03	4.9751E-03	6.9276E-03
		lbs/hr	9.3130	36.5029	50.7960
		T/hr of Coal	341.08	345.69	346.08
		Btu/lbs	12739	12739	12739
		lbs/mmBtu's	0.0011	0.0041	0.0058

AMERICAN ENVIRONMENTAL TESTING, INCORPORATED
565 So. Birch Drive 801-266-7111
Spanish Fork, Utah 84660

TABLE 4.1.3
(FIELD AND LABORATORY DATA SUMMARY)

Plant: Intermountain Power Service
Source: Unit #1 Boiler Stack
Type: EPA Method #5B
Date: October 31, 1996

Symbol	Description	Units	Test #1	Test #2	Test #3
Vm	Volume dry gas	Ft3	92.595	91.816	91.276
	sampled @ meter	lso	86.021	85.297	84.795
	conditions				
Pb	Barometric Pres	"Hg abs	25.41	25.37	25.52
ΔH	Average Pres	"H2O	1.3332	1.2498	1.2979
	drop across the				
	orifice meter				
Tm	Average gas	°R	530.67	523.12	533.54
	meter temp	°F	70.67	63.12	73.54
Yi	Meter Coefficient		0.929	0.929	0.929
Vw	Total H2O	ml	172	221.2	211.2
	collected, impingers				
	& silica gel				
CO2		%	13.4	13.7	13.6
O2		%	6.3	6	6.1
N2 + CO		%	80.3	80.3	80.3
Rn	Nozzle Dia.	in.	0.188	0.188	0.188
Ts	Stack Temp	°R	579.42	579.58	577.08
		°F	119.42	119.58	117.08
Sqr rt ΔP	Velocity head	"H2O	1.1724	1.1428	1.1502
	of stack gas				
Cp	Pitot Tube		0.8689	0.8689	0.8689
	Coefficient				
Ps	Static Pres	"H2O	-0.72	-0.72	-0.72
Pabs	Absolute Pres	"Hg	25.36	25.32	25.47
As	Area stack	Ft2	615.746	615.746	615.746
	Stack in inches		336	336	336
Tt	Net time	min.	120	120	120
	of test				
Mn	total		19	24.6	20.6

AMERICAN ENVIRONMENTAL TESTING, INCORPORATED
565 So. Birch Drive 801-266-7111
Spanish Fork, Utah 84660

TABLE 4.1.5
(CALCULATED COMPLIANCE CRITERIA)

Plant: Intermountain Power Service
Source: Unit #1 Boiler Stack
Type: EPA Method #5B
Date: October 31, 1996

SYMBOL	DESCRIPTION	UNITS	Test #1	Test #2	Test #3
Vm std	Volume dry gas	dscfm	0.6078	0.6103	0.5984
	sampled @ standard	dscf	72.9385	73.2349	71.8132
	Conditions				
Vw gas	Volume water	scf	8.096	10.4119	9.9412
	vapor collected @				
	standard conditions				
Bws	Proportion by		0.0999	0.1245	0.1216
	volume of water				
	vapor in gas stream				
	dimensionless				
Md	Dry molecular	lb/lb mole	30.396	30.432	30.42
	weight				
Ms	Wet molecular	lb/lb mole	29.1575	28.8845	28.9098
	weight				
Vs	Stack gas	ft/sec	77.0975	75.5741	75.6456
	velocity				
Qs	Volumetric flow	ft3/hr	1.188	1.1306	1.1471
	rate dry basis		x E +8	x E +8	x E +8
	standard conditions				
Iso	Isokinetic	%	98.0975	103.4946	100.0289
	variation				
Cs	Conc. Particulate	lb/scf	2.6049	3.3591	2.8686
	matter in stack		x E -4	x E -4	x E -4
	gas dry basis				
Emr	Emission Rates	lbs/dscf	5.7428	7.4053	6.324
			x E -7	x E -7	x E -7
		gr/dscf	0.004	0.0052	0.0044
		lbs/hr	68.2244	83.7267	72.5417
	Sample Time	hours	2.5	2.22	2.2
	Coal Feed:	per sample time	807.2	708.2	694.4
		tons/hr	322.88	319.01	315.64
		Btu/lb	11864	11864	11864
		lbs/hr	645760	638018.02	631272.73
		lbs/MMBtu	0.0089051	0.011061	0.00969
		MMBTU/hr	7661.3	7569.4	7489.4

AMERICAN ENVIRONMENTAL TESTING, INCORPORATED
565 So. Birch Drive 801-266-7111
Spanish Fork, Utah 84660

TABLE 4.1.4
(FIELD AND LABORATORY DATA SUMMARY)

Plant: Intermountain Power Service
Source: Unit #2 Boiler Stack
Type: EPA Method #5B
Date: October 30, 1996

Symbol	Description	Units	Test #1	Test #2	Test #3
Vm	Volume dry gas	Ft3	91.335	91.802	93.091
	sampled @ meter	Iso	84.850	85.284	86.482
	conditions				
Pb	Barometric Pres	"Hg abs	25.4	25.2	25.01
ΔH	Average Pres	"H2O	1.2209	1.241	1.2412
	drop across the				
	orifice meter				
Tm	Average gas	°R	531.88	535.5	539.83
	meter temp	°F	71.88	75.5	79.83
Yi	Meter Coefficient		0.929	0.929	0.929
Vw	Total H2O	ml	186.9	224.9	222.2
	collected, impingers				
	& silica gel				
CO2		%	13.2	14.5	14
O2		%	5.7	5.1	5.7
N2 + CO		%	81.1	80.4	80.3
Rn	Nozzle Dia.	in.	0.188	0.188	0.188
Ts	Stack Temp	°R	579.92	578.58	579.25
		°F	119.92	118.58	119.25
Sqr rt ΔP	Velocity head	"H2O	1.1208	1.1243	1.1208
	of stack gas				
Cp	Pitot Tube		0.8689	0.8689	0.8689
	Coefficient				
Ps	Static Pres	"H2O	-0.84	-0.84	-0.84
Pabs	Absolute Pres	"Hg	25.34	25.14	24.95
As	Area stack	Ft2	615.746	615.746	615.746
	Stack in inches		336	336	336
Tt	Net time	min.	120	120	120
	of test				
Mn	total		17.8	17.6	14.5

AMERICAN ENVIRONMENTAL TESTING, INCORPORATED
565 So. Birch Drive 801-266-7111
Spanish Fork, Utah 84660

TABLE 4.1.6
(CALCULATED COMPLIANCE CRITERIA)

Plant: Intermountain Power Service
Source: Unit #2 Boiler Stack
Type: EPA Method #5B
Date: October 30, 1996

SYMBOL	DESCRIPTION	UNITS	Test #1	Test #2	Test #3
Vm std	Volume dry gas	dscfm	0.5978	0.5921	0.5911
	sampled @ standard	dscf	71.7312	71.0522	70.9346
	Conditions				
Vw gas	Volume water	scf	8.7974	10.586	10.459
	vapor collected @				
	standard conditions				
Bws	Proportion by		0.1092	0.1297	0.1285
	volume of water				
	vapor in gas stream				
	dimensionless				
Md	Dry molecular	lb/lb mole	30.34	30.524	30.468
	weight				
Ms	Wet molecular	lb/lb mole	28.9919	28.9	28.8659
	weight				
Vs	Stack gas	ft/sec	73.9732	74.5277	74.6677
	velocity				
Qs	Volumetric flow	ft3/hr	1.1262	1.1024	1.0964
	rate dry basis		x E +8	x E +8	x E +8
	standard conditions				
Iso	Isokinetic	%	101.7658	102.9783	103.3765
	variation				
Cs	Conc. Particulat	lb/scf	2.4815	2.4771	2.0441
	matter in stack		x E -4	x E -4	x E -4
	gas dry basis				
Emr	Emission Rates	lbs/dscf	5.4707	5.4609	4.5065
			x E -7	x E -7	x E -7
		gr/dscf	0.0038	0.0038	0.0032
		lbs/hr	61.6117	60.2024	49.4075
	Sample Time	hours	2.17	2.1	2.2
	Coal Feed:	per sample time	700.1	674.3	709
		tons/hr	322.63	321.1	322.27
		Btu/lb	11998	11998	11998
		lbs/hr	645253.46	642190.48	644545.45
		lbs/MMBtu	0.0079584	0.0078134	0.006389
		MMBTU/hr	7741.8	7705	7733.3

IP9_000068

Table IV
Complete Results
INTERMOUNTAIN POWER SERVICE CORP
DELTA, UT
UNIT #1

Symbol	Description	Dimensions			
RUN #			1	2	3
FILTER #			1301	1302	1303
DATE			9/24/91	9/24/91	9/24/91
BEGIN	TIME TEST BEGAN		0908	1225	1520
END	TIME TEST ENDED		1114	1436	1727
Pb	Barometric Pressure	In. Hg Abs	25.37	25.37	25.37
dH	Orifice Pressure Drop	In. H2O	1.128	1.126	1.107
Y	Meter Calibration Y Factor		1.0040	1.0040	1.0040
Vm	Volume Gas Sampled--Meter Conditions	cf	77.943	78.473	79.978
Tm	Ave. Meter Temperature	Deg. F	78.9	84.6	90.6
dPsrt	Sq. Root Velocity Head	Root In. H2O	1.1132	1.1042	1.1069
Wtwc	Weight Water Collected	Grams	208.6	211.3	218.2
Tt	Duration of Test	Minutes	120	120	120
Cp	Pitot Tube Coefficient		0.84	0.84	0.84
Dn	Nozzle Diameter	Inches	0.1880	0.1875	0.1875
CO2	Volume % Carbon Dioxide	Percent	13.60	13.87	14.17
O2	Volume % Oxygen	Percent	4.90	5.00	5.03
CO	Volume % Carbon Monoxide	Percent	0.00	0.00	0.00
N2	Volume % Nitrogen	Percent	81.50	81.30	80.80
Vmstd	Volume Gas Sample (Standard)	dscf	65.225	64.981	65.502
Vw	Volume Water Vapor	scf	9.835	9.963	10.288
Bwo	Fraction H2O in Stack Gas		0.131	0.133	0.136
Xd	Fraction of Dry Gas		0.869	0.867	0.864
Md	Molecular Wt Dry Gas	lb/lb mole	30.3720	30.4668	30.4684
Ms	Molecular Wt Stack Gas	lb/lb mole	28.7508	28.8095	28.7759
%I	Percent Isokinetic	Percent	99.7	101.5	103.0
Ts	Ave. Stack Temperature	Deg. F	134.9	141.0	148.8
As	Stack Cross Section Area	Square ft.	611.252	611.252	611.252
Pg	Stack Static Pressure	In. H2O	-1.30	-1.30	-1.30
Pp	Barometric Pressure at Sample Point	In. Hg Abs	25.37	25.37	25.37
Ps	Stack Pressure	In. Hg Abs	25.274	25.274	25.274
Qs	Stack Gas Volume (Standard)	dcfm	1723258.1	1700095.1	1688801.2
Qa	Stack Gas Volume (Actual)	cfm	2652744.9	2642060.4	2667209.2
Vs	Velocity of Exhaust Gas	fpm	4339.9	4322.4	4363.5
WF	Filter Weight Particulate	Milligrams	-0.5	-0.6	-3.2
WP	Probe Wash Weight Particulate	Milligrams	12.8	13.6	14.3
Mf	Total Front Half Particulate (Filter & Probe)	Milligrams	12.3	13.0	11.1
Mcond	Mass of Condensibles	Milligrams	15.4	15.9	20.5
Cf	Particulate Concentration (Front)	lb/dscf	4.16E-07	4.41E-07	3.74E-07
Ccond	Condensible Concentration	lb/dscf	5.21E-07	5.39E-07	6.90E-07
ERf	Emission Rate Particulate (Front)	lb/mmBtu	0.0053	0.0057	0.0048
ERcond	Emission Rate Condensibles	lb/mmBtu	0.007	0.007	0.009

Table IV
Complete Results
INTERMOUNTAIN POWER SERVICE CORP
DELTA, UT
UNIT #2

Symbol	Description	Dimensions			
RUN #			1	2	3
FILTER #			1304	1306	1307
DATE			9/24/91	9/24/91	9/24/91
BEGIN	TIME TEST BEGAN		0931	1252	1610
END	TIME TEST ENDED		1143	1507	1823
Pb	Barometric Pressure	In. Hg Abs	25.37	25.37	25.37
dH	Orifice Pressure Drop	In. H20	0.842	0.923	0.845
Y	Meter Calibration Y Factor		0.9996	0.9996	0.9996
Vm	Volume Gas Sampled--Meter Conditions	cf	84.364	87.800	85.045
Tm	Ave. Meter Temperature	Deg. F	77.8	80.8	84.3
dPsrt	Sq. Root Velocity Head	Root In. H20	1.1429	1.2050	1.1597
Wtwc	Weight Water Collected	Grams	224.2	222.0	222.0
Tt	Duration of Test	Minutes	120	120	120
Cp	Pitot Tube Coefficient		0.84	0.84	0.84
Dn	Nozzle Diameter	Inches	0.1875	0.1880	0.1875
CO2	Volume % Carbon Dioxide	Percent	12.20	13.27	13.53
O2	Volume % Oxygen	Percent	7.00	5.83	5.60
CO	Volume % Carbon Monoxide	Percent	0.00	0.00	0.00
N2	Volume % Nitrogen	Percent	81.80	80.90	80.87
Vmstd	Volume Gas Sample (Standard)	dscf	70.374	72.851	70.096
Vw	Volume Water Vapor	scf	10.571	10.467	10.467
Bwo	Fraction H20 in Stack Gas		0.131	0.126	0.130
Xd	Fraction of Dry Gas		0.869	0.874	0.870
Md	Molecular Wt Dry Gas	lb/lb mole	30.5120	30.3564	30.3888
Ms	Molecular Wt Stack Gas	lb/lb mole	28.8780	28.8041	28.7792
%I	Percent Isokinetic	Percent	105.7	102.5	103.6
Ts	Ave. Stack Temperature	Deg. F	136.7	135.9	137.6
As	Stack Cross Section Area	Square ft.	611.252	611.252	611.252
Pq	Stack Static Pressure	In. H20	-1.50	-1.50	-1.50
Pp	Barometric Pressure at Sample Point	In. Hg Abs	25.37	25.37	25.37
Ps	Stack Pressure	In. Hg Abs	25.260	25.260	25.260
Qs	Stack Gas Volume (Standard)	dcfm	1768164.6	1878548.9	1797259.7
Qa	Stack Gas Volume (Actual)	cfm	2722417.2	2872095.1	2769260.7
Vs	Velocity of Exhaust Gas	fpm	4453.8	4698.7	4530.5
WF	Filter Weight Particulate	Milligrams	0.5	-3.3	-2.8
WP	Probe Wash Weight Particulate	Milligrams	16.2	11.8	12.5
Mf	Total Front Half Particulate (Filter & Probe)	Milligrams	16.7	8.5	9.7
Mcond	Mass of Condensibles	Milligrams	29.4	13.4	19.8
Cf	Particulate Concentration (Front)	lb/dscf	5.23E-07	2.57E-07	3.05E-07
Ccond	Condensible Concentration	lb/dscf	9.21E-07	4.06E-07	6.23E-07
ERf	Particulate Emission Rate (Front)	lb/mmBtu	0.0077	0.0035	0.0041
ERcond	Condensible Emission Rate	lb/mmBtu	0.014	0.006	0.008