October 31, 1991

Mr. Robert L. Kappelmann
Chairman, Clean Air Task Force
Large Public Power Council
Jacksonville Electric Authority
21 West Church Street
Jacksonville, Florida 32202

Dear Mr. Kappelmann:

Results of Relative Accuracy Test Audit (RATA) Bias Test
Intermountain Generating Station (IGS) Units 1 and 2

In response to your letter dated October 10, 1991, we are providing the results of our recent RATA tests and bias correction test.

RATA data from 1989 to 1991 was used in the test. Seven of the twelve monitors (58 percent) passed the bias test using the 1989 RATA data. Four monitors (33 percent) passed using the 1990 RATA data. Eight monitors (67 percent) passed using the 1991 RATA data. Ten of the twelve monitors (83 percent), passed using the 1991 daily cal error data.

Of the monitors that failed the bias test, the percentage adjustments ranged from 2.89 percent to 10.02 percent for Units 1 and 2, based on the 1989 RATA data, 0.79 percent to 3.49 percent based on the 1990 RATA data, and 1.59 percent to 2.19 percent based on the 1991 RATA data. The percentage adjustment on one monitor using the daily cal error data was 0.8 percent. The percent adjustment was applied only to monitors with positive differences (i.e., those that were under reporting emissions relative to the reference method. Those over reporting are indicated by a plus sign in the percent correction column).

1 of 12

Enclosure 1 is the RATA, bias and daily cal error data summaries, and Enclosure 2 is a letter from Mr. S. Gale Chapman to Mr. Bruce E. Blowey, dated October 28, 1991, discussing in more detail the results of the bias test as applied to IGS's Units 1 and 2 RATA's and daily cal error data. More importantly, the letter provides some suggestions for low emitting units such as IGS.

If you have any questions or if further information is required, please contact me at (213) 481-8676 or Mr. David R. Rice at (213) 481-4589.

Sincerely

ORIGINAL SIGNED
JOHN W. SCHUMANN

JOHN W. SCHUMANN
Manager of Research and Development

DRR:alg

Enclosures

c: w/Enclosures
Mr. David R. Rice

bc: w/Enclosures
B. E. Blowey
B. H. Fujikawa
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91 000629 CD

2 of 12

Enclosure 1

Relative Accuracy and Bias Test Summary
Intermountain Generating Station

Relative accuracy (RA) at Intermountain Generating Station (IGS) is reported in lbs/mmbtu. Both ppm and lbs/mmbtu RA numbers are shown on the RATA and Bias Test Summary sheets.

In 40 CFR Pt. 60, App. B, Spec. 2, (4.3), the RA of the CEMS must be no greater than 20 percent of the mean value of the RM test data in terms of the units of the emission standard...for units below .20 lbs/mmbtu.

This method of calculating RA was used on the following.

Unit 1 1989 Stack SO2 - 7.27 %
Unit 2 1989 Stack SO2 - 3.6 %
Unit 1 1990 Stack SO2 - 11.5 %
Unit 2 1990 Stack SO2 - 6.99 %

These RA numbers do not appear on the RATA and Bias Test Summary Sheets.

Let me know if you need any more information.

Lynn Banks

3.712

UNIT 1 1991
RATA and Bias Test Summary

Inlet		RM avg.	CEM avg.	d	CC	P/F	% Correction	RA	RA (ppm)
SO2	(ppm)	350.9111	344.2778	6.633	8.4896	P	-	4.8	4.3
O2	(%)	4.6889	4.6667	0.0222	0.0722	P	-	2.0	-
NOx	(lbs/mmbtu)	0.3812	0.4067	0.0244	0.0113	F	(+)	9.6	-
Stack									
SO2	(ppm)	22.3333	21.3333	1	1.3141	P	-	9.7	10.4
O2	(%)	5.14	5.03	0.11	0.0823	F	2.19	3.7	-
NOx	(lbs/mmbtu)	0.3939	0.3928	0.0011	0.0026	P	-	0.9	-

UNIT 2 1991
RATA and Bias Test Summary

Inlet		RM avg.	CEM avg.	d	CC	P/F	% Correction	RA	RA (ppm)
SO2	(ppm)	323.3222	328.9444	5.6222	3.4263	F	(+)	2.8	2.8
O2	(%)	5.3056	5.3778	0.0722	0.0924	P	-	3.1	-
NOx	(lbs/mmbtu)	0.4353	0.4367	0.0013	0.0036	P	-	1.1	-
Stack									
SO2	(ppm)	28.4111	28	0.4111	0.7287	P	-	3.9	4.0
O2	(%)	5.45	5.5278	0.0778	0.1465	P	-	4.1	-
NOx	(lbs/mmbtu)	0.4216	0.415	0.0066	0.003	F	1.59	2.3	-

UNIT 1 1990
RATA and Bias Test Summary

Inlet		RM avg.	CEM avg.	d	CC	P/F	% Correction	RA	RA (ppm)
SO2	(ppm)	407.8111	431.8889	24.078	16.4674	F	(+)	8.7	9.9
O2	(%)	5.2722	5.0944	0.1778	0.0512	F	3.49	4.3	-
NOx	(lbs/mmbtu)	0.466	0.4856	0.0196	0.0043	F	(+)	5.1	-
Stack									
SO2	(ppm)	29.94	31.9444	2.0044	5.7799	P	-	26.5	26.0
O2	(%)	5.2546	5.2136	0.0409	0.033	F	0.79	1.4	-
NOx	(lbs/mmbtu)	0.4714	0.4889	0.0174	0.0035	F	(+)	4.4	-

UNIT 2 1990
RATA and Bias Test Summary

Inlet		RM avg.	CEM avg.	d	CC	P/F	% Correction	RA	RA (ppm)
SO2	(ppm)	426.4444	420.2778	6.1666	5.0258	F	1.47	1.8	2.6
O2	(%)	5.0388	5.1833	0.1444	0.065	F	(+)	4.2	-
NOx	(lbs/mmbtu)	0.3582	0.3656	0.0074	0.0033	F	(+)	3.0	-
Stack									
SO2	(ppm)	22.6222	21.8333	0.7889	3.0738	P	-	20.9	17.1
O2	(%)	5.4778	5.4667	0.0111	0.0631	P	-	1.4	-
NOx	(lbs/mmbtu)	0.38711	0.3878	0.0007	0.0043	P	-	1.3	-

UNIT 1 1989
RATA and Bias Test Summary

Inlet		RM avg.	CEM avg.	d	CC	P/F	% Correction	RA	RA (ppm)
SO2	(ppm)	381.9333	371.2222	10.711	10.3219	F	2.89	5.5	5.5
O2	(%)	4.95	4.8222	0.1278	0.1502	P	-	5.6	-
NOx	(lbs/mmbtu)	0.3783	0.3728	0.0061	0.0096	P	-	4.15	-
Stack									
SO2	(ppm)	34.4111	31.2778	3.1333	1.7638	F	10.02	14.7	14.2
O2	(%)	5.097	5.2167	0.12	0.21058	P	-	6.49	-
NOx	(lbs/mmbtu)	0.4011	0.3967	0.0044	0.00503	P	-	2.4	-

UNIT 2 1989
RATA and Bias Test Summary

Inlet		RM avg.	CEM avg.	d	CC	P/F	% Correction	RA	RA (ppm)
SO2	(ppm)	439.6556	423.9444	15.711	23.5206	P	-	8.6	8.9
O2	(%)	4.9222	4.9444	0.0222	0.058	P	-	1.63	-
NOx	(lbs/mmbtu)	0.3373	0.3217	0.0156	0.00273	F	4.85	5.5	-
Stack									
SO2	(ppm)	19.9222	19.6111	0.3111	1.4818	P	-	11.0	9.0
O2	(%)	5.2	5.4278	0.2278	0.0982	F	(+)	6.3	-
NOx	(lbs/mmbtu)	0.3843	0.3933	0.009	0.0048	F	(+)	3.58	-

BIAS TEST **UNIT 1** **INLET**

Daily Cal Error Data

Date	SO2 Gas	CEM	diff.	O2 Gas	CEM	diff.	NOx Gas	CEM	diff.
9/1/91	415	417	-2	7.7	7.8	-0.1	686	688	-2
9/2/91	415	415	0	7.7	7.7	0.0	686	655	31
9/3/91	415	416	-1	7.7	7.7	0.0	686	654	32
9/4/91	415	416	-1	7.7	7.7	0.0	686	671	15
9/5/91	415	410	5	7.7	7.8	-0.1	686	655	31
9/6/91	415	411	4	7.7	7.8	-0.1	686	659	27
9/7/91	415	388	27	7.7	7.8	-0.1	686	782	-96
9/8/91	415	419	-4	7.7	7.8	-0.1	686	728	-42
9/9/91	415	417	-2	7.7	7.8	-0.1	686	679	7
9/10/91	415	419	-4	7.7	7.8	-0.1	686	681	5
9/11/91	415	406	9	7.7	7.8	-0.1	686	782	-96
9/12/91	415	419	-4	7.7	7.8	-0.1	686	678	8
9/13/91	415	419	-4	7.7	7.9	-0.2	686	670	16
9/14/91	415	424	-9	7.7	7.8	-0.1	686	664	22
9/15/91	415	417	-2	7.7	7.9	-0.2	686	674	12
9/16/91	415	417	-2	7.7	7.7	0.0	686	684	2
9/17/91	415	413	2	7.7	7.8	-0.1	686	692	-6
9/18/91	415	414	1	7.7	7.9	-0.2	686	692	-6
9/19/91	415	417	-2	7.7	7.9	-0.2	686	685	1
9/20/91	415	414	1	7.7	7.9	-0.2	686	692	-6
9/21/91	415	425	-10	7.7	7.9	-0.2	686	642	44
9/22/91	415	419	-4	7.7	7.9	-0.2	686	724	-38
9/23/91	415	417	-2	7.7	7.9	-0.2	686	720	-34
9/24/91	411	413	-2	7.7	7.9	-0.2	686	684	2
9/25/91	411	409	2	7.7	7.9	-0.2	686	681	5
9/26/91	411	399	12	7.7	7.7	0.0	686	708	-22
9/27/91	411	406	5	7.7	7.7	0.0	686	676	10
9/28/91	411	411	0	7.7	7.7	0.0	686	682	4
9/29/91	411	399	12	7.7	7.8	-0.1	686	729	-43
9/30/91	411	410	1	7.7	7.8	-0.1	686	716	-30
Average	414.067	413.200		7.700	7.810		686.000	690.900	
Avg. d	0.867			-0.110			-4.900		
S. Dev.	7.055			0.076			33.440		
CC	2.630			0.028			12.467		
RA	0.845			1.796			2.532		
BIAS	PASS			FAIL			PASS		

Gas is Primary Standard

7 of 12

BIAS TEST UNIT 2 INLET
Daily Cal Error Data

Date	SO2 Gas	CEM	diff.	O2 Gas	CEM	diff.	NOx Gas	CEM	diff.
9/1/91	414	408	6	7.6	7.7	-0.1	671	668	3
9/2/91	414	406	8	7.6	7.6	0.0	671	664	7
9/3/91	414	412	2	7.6	7.6	0.0	671	665	6
9/4/91	414	426	-12	7.6	7.6	0.0	671	673	-2
9/5/91	414	417	-3	7.6	7.5	0.1	671	672	-1
9/6/91	414	408	6	7.6	7.6	0.0	671	667	4
9/7/91	414	398	16	7.6	7.6	0.0	671	664	7
9/8/91	414	406	8	7.6	7.6	0.0	671	664	7
9/9/91	414	396	18	7.6	7.6	0.0	671	659	12
9/10/91	414	387	27	7.6	7.6	0.0	671	660	11
9/11/91	414	416	-2	7.6	7.6	0.0	671	671	0
9/12/91	414	410	4	7.6	7.6	0.0	671	672	-1
9/13/91	414	410	4	7.6	7.6	0.0	671	669	2
9/14/91	414	406	8	7.6	7.6	0.0	671	668	3
9/15/91	414	410	4	7.6	7.6	0.0	671	674	-3
9/16/91	414	407	7	7.6	7.6	0.0	671	671	0
9/17/91	414	415	-1	7.6	7.6	0.0	671	668	3
9/18/91	414	417	-3	7.6	7.6	0.0	671	665	6
9/19/91	414	417	-3	7.6	7.6	0.0	671	663	8
9/20/91	414	417	-3	7.6	7.6	0.0	671	660	11
9/21/91	414	399	15	7.6	7.6	0.0	671	656	15
9/22/91	414	413	1	7.6	7.6	0.0	671	662	9
9/23/91	414	417	-3	7.6	7.6	0.0	671	666	5
9/24/91	414	414	0	7.6	7.6	0.0	671	663	8
9/25/91	406	407	-1	7.9	7.9	0.0	671	662	9
9/26/91	406	406	0	7.9	7.9	0.0	671	671	0
9/27/91	406	404	2	7.9	7.9	0.0	671	672	-1
9/28/91	406	417	-11	7.9	7.9	0.0	671	662	9
9/29/91	406	427	-21	7.9	8.0	-0.1	671	661	10
9/30/91	406	442	-36	7.9	8.0	-0.1	671	658	13
Average	412.400	411.167		7.660	7.667		671.000	665.667	
Avg. d	1.233			-0.007			5.333		
S. Dev.	11.614			0.037			4.929		
CC	4.330			0.014			1.838		
RA	1.349			0.265			1.069		
BIAS	PASS			PASS			FAIL		

Gas is Primary Standard

9/10

BIAS TEST
Daily Cal Error Data

UNIT 1 OUTLET

Date	SO2 Gas	CEM	diff.	O2 Gas	CEM	diff.	NOx Gas	CEM	diff.
9/1/91	80	81	-1	7.8	7.8	0.0	675	666	9
9/2/91	80	80	0	7.8	7.8	0.0	675	668	7
9/3/91	80	80	0	7.8	7.8	0.0	675	674	1
9/4/91	80	78	2	7.8	7.8	0.0	675	674	1
9/5/91	80	75	5	7.8	7.8	0.0	675	671	4
9/6/91	80	81	-1	7.8	7.8	0.0	675	675	0
9/7/91	80	80	0	7.8	7.8	0.0	675	671	4
9/8/91	80	78	2	7.8	7.8	0.0	675	674	1
9/9/91	80	82	-2	7.8	7.9	-0.1	675	669	6
9/10/91	80	81	-1	7.8	7.8	0.0	675	675	0
9/11/91	80	79	1	7.8	7.8	0.0	675	674	1
9/12/91	80	77	3	7.8	7.8	0.0	675	675	0
9/13/91	80	76	4	7.8	7.8	0.0	675	672	3
9/14/91	80	80	0	7.8	7.8	0.0	675	675	0
9/15/91	80	79	1	7.8	7.8	0.0	675	681	-6
9/16/91	80	82	-2	7.8	7.8	0.0	675	676	-1
9/17/91	80	78	2	7.8	7.8	0.0	675	674	1
9/18/91	80	74	6	7.8	7.8	0.0	675	671	4
9/19/91	80	80	0	7.8	7.8	0.0	675	677	-2
9/20/91	80	87	-7	7.8	7.8	0.0	675	679	-4
9/21/91	80	80	0	7.8	7.8	0.0	675	676	-1
9/22/91	80	81	-1	7.8	7.8	0.0	675	690	-15
9/23/91	80	81	-1	7.8	7.8	0.0	675	688	-13
9/24/91	80	82	-2	7.8	7.8	0.0	675	685	-10
9/25/91	80	82	-2	7.8	7.8	0.0	675	681	-6
9/26/91	80	81	-1	7.8	7.8	0.0	675	674	1
9/27/91	80	81	-1	7.8	7.8	0.0	675	674	1
9/28/91	80	82	-2	7.8	7.8	0.0	675	668	7
9/29/91	80	83	-3	7.8	7.8	0.0	675	671	4
9/30/91	80	84	-4	7.8	7.8	0.0	675	675	0
Average	80.000	80.167		7.800	7.803		675.000	675.100	
Avg. d	-0.167			-0.003			-0.100		
S. Dev.	2.627			0.018			5.517		
CC	0.979			0.007			2.057		
RA	1.433			0.130			0.320		
BIAS	PASS			PASS			PASS		

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9 of 12

BIAS TEST UNIT 2 OUTLET
Daily Cal Error Data

Date	SO2 Gas	CEM	diff.	O2 Gas	CEM	diff.	NOx Gas	CEM	diff.
9/1/91	75	73	2	8.0	8.1	-0.1	637	613	24
9/2/91	75	72	3	8.0	8.1	-0.1	637	612	25
9/3/91	75	77	-2	8.0	8.1	-0.1	637	620	17
9/4/91	75	75	0	8.0	8.1	-0.1	637	614	23
9/5/91	75	75	0	8.0	8.0	0.0	637	617	20
9/6/91	75	75	0	8.0	8.0	0.0	637	634	3
9/7/91	75	82	-7	8.0	8.1	-0.1	637	631	6
9/8/91	75	83	-8	8.0	7.6	0.4	637	642	-5
9/9/91	75	78	-3	8.0	8.0	0.0	637	632	5
9/10/91	75	75	0	8.0	8.0	0.0	637	637	0
9/11/91	75	74	1	8.0	8.0	0.0	637	635	2
9/12/91	75	75	0	8.0	8.0	0.0	637	636	1
9/13/91	75	72	3	8.0	8.0	0.0	637	641	-4
9/14/91	75	73	2	8.0	8.0	0.0	637	636	1
9/15/91	75	74	1	8.0	8.0	0.0	637	636	1
9/16/91	75	77	-2	8.0	7.9	0.1	637	639	-2
9/17/91	75	72	3	8.0	8.0	0.0	637	643	-6
9/18/91	75	70	5	8.0	8.0	0.0	637	643	-6
9/19/91	75	77	-2	8.0	8.0	0.0	637	639	-2
9/20/91	75	76	-1	8.0	8.0	0.0	637	646	-9
9/21/91	75	74	1	8.0	8.0	0.0	637	639	-2
9/22/91	75	73	2	8.0	8.0	0.0	637	643	-6
9/23/91	75	72	3	8.0	7.9	0.1	637	646	-9
9/24/91	75	72	3	8.0	7.9	0.1	637	651	-14
9/25/91	75	79	-4	8.0	8.0	0.0	637	645	-8
9/26/91	75	77	-2	8.0	8.0	0.0	637	645	-8
9/27/91	75	78	-3	8.0	8.0	0.0	637	640	-3
9/28/91	75	77	-2	8.0	8.0	0.0	637	630	7
9/29/91	75	77	-2	8.0	8.0	0.0	637	631	6
9/30/91	75	77	-2	8.0	8.0	0.0	637	638	-1

Average	75.000	75.367	8.000	7.993	637.000	635.133
Avg. d	-0.367		0.007		1.867	
S. Dev.	2.977		0.091		10.395	
CC	1.110		0.034		3.875	
RA	1.969		0.506		0.901	
BIAS	PASS		PASS		PASS	

Gas is Primary Standard

10 of 12

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Enclosure 2

INTERMOUNTAIN POWER SERVICE CORPORATION

File: b1858
01.03.01
18.0900

October 28, 1991

Mr. Bruce E. Blowey
Engineer of Generation - External
LADWP
P.O. Box 111, Room 1255C
Los Angeles, CA 90051-0100

Dear Mr. Blowey:

Clean Air Act Amendments -
Continuous Emissions Monitoring System (CEMS)
Class of 85 and LPPC Alternate CEM Proposal

This is in response to your fax concerning the Class of 85 and LPPC proposal presented to the EPA as another alternative to the draft CEMS rules. Attached are copies of the bias test procedures applied to our 1989 and 1990 RATAs and also, copies of the bias test procedures applied to our most recent daily calibration error data.

It appears that the bias applied to the daily calibration error data would be more beneficial to us than applied to the RATA data. However, we feel that bias adjustments would still not be warranted unless the mean difference from the 30 day period was above a defined percentage, say 5 to 7.5%. In the two cases where our daily calibration error data failed the bias test, the mean differences were very low (less than 1.5% difference) and an adjustment to provide better accuracy would be very difficult.

We are still concerned, in the Class of 85 and LPPC proposal, that no allowance is being given to low emitting units such as ours which may have difficulty meeting a straight percent relative accuracy. It will be very difficult for us to pass our outlet SO2 RATA at 5, 7.5 or 10% when our total outlet SO2 concentration is at 20 to 30 ppm. We feel that the EPA could meet the need of low emitting units by including a relative accuracy as a percent as they have proposed, but also by including as an alternate, a lower end value, not to exceed plus or minus 5 ppm, perhaps. (For that matter, subpart Da regulations provide enough flexibility for us to currently meet the relative accuracy requirements.)

11 of 12

If bias is still applied to the RA data as originally proposed, we feel that the simplest way to resolve the problems with bias test results would be to perform them only when relative accuracy is above a specified number, as our previous correspondence suggested.

A copy of this letter was faxed to Byron Fujikawa of your staff and David Rice of EGAS today (October 25). We hope that this information will be helpful in developing a final, workable CEM regulation for both industry and EPA.

If you have any questions or concerns with the above responses, please call Stan Smith at 864-4414, Extension 6430.

Sincerely,

S. Gale Chapman
President & Chief Operations Officer

SLS:lbo
Attachment

cc: Blaine Ipson

12 of 12