NCORE Data Quality Analysis: Looking at Precision & Accuracy Data

Low Audit Concentration Level-
Basis for Practical Audit
Acceptance Limits

Audit Issues: Acceptance Limits at Lower Audit Ranges/Levels

- Can we continue using our past limits?
- Should we use the same parameter at lower levels?
- Up to now, we use % Difference
- Will the Data indicate we have to use PPM or PPB Difference?
- How should we determine what PPMs or PPBs to use?

Choose 3 of 5 Concentration Ranges, PPM

Level	O3	SO2	NO2/Y	CO
1	0.02-0.05	.003-.005	0.0002-0.002	0.08-0.10
2	0.06-0.10	0.006-0.10	0.003-0.005	0.50-1.00
3	0.11-0.20	0.02-0.10	0.006-0.10	1.50-4.00
4	0.21-0.30	0.11-0.40	0.11-0.30	5-15
5	0.31-0.90	0.41-0.90	0.31-0.60	20-50

Analysis of Gaseous NPAP Audit Data in 2008

- Changed Old Audit Acceptance Limits from 15% to 10%- Data confirmed to go ahead
- Data was not Sufficient to Change Acceptance Limits for CO, SO2, or NO2, at the usual (NON-NCORE) Ranges, at Levels 3-5
- Can we Use % Limits at Levels 1-3
- Analyses for Level 3 indicate % is fine

Non-% Approach to Audit Acceptance Limits for NCORE

- A Statistician reviewed the existing data for 2008, at the new audit levels
- Why-the audit Level 3 represents closest surrogate for the NCORE levels
- Included Level 1 Ozone, and Levels 3&4 for CO &SO2
- Result: Summary of the data, at the 95% Confidence Limit, in terms of upper and lower Confidence Bounds, in PPM

Regions 2,3,7 &10 O3 2008 Data, Level1, in PPM

Ozone Mean	0.000
Standard Deviation	0.003
n	147
Confidence Interval alpha	0.05
Confidence	0.000
Upper Bound	0.000
Lower Bound	-0.001

Regions 9,4,5,2,3,7,&10 CO Data, 2008, Levels 3&4,in PPM

CO Mean	0.1
Standard Deviation	0.2
n	22
Confidence Interval alpha	0.05
Confidence	0.1
Upper Bound	0.2
Lower Bound	0.0

Regions 9,4,5,2,3,7,&10 SO2 Data, 2008, Level 3, in PPM

SO2 Mean	0.000
Standard Deviation	0.003
n	17
Confidence Interval alpha	0.05
Confidence	0.002
Upper Bound	0.001
Lower Bound	-0.002

Single Point Check of NCORE Data

- Analysis of Completeness for CO and SO2
- Note Completeness and actual 1 point check concentration vs Audit Level

CO Data From NCore Sites

Table A. Single Point Quality Check Completeness for CO, 2007-2008 for sites using precursor gas instruments and ID'd as NCore sites

Region	State	PQAO	Monitor Type	Site ID	Number Required	Number Submitted	Comp. %	% Sites <50% Complete	Bias UB	CV UB
1	CT	251	SLAMS	90090027	52	8	15	NA	-11.97	14.11
1	MA	660	PROPOSED NCORE	250250042	6	7	100	NA	3.02	3.4
1	MA	660	SLAMS	250250042	45	1	2	NA		
3	MD	1002	PROPOSED NCORE	240330030	52	50	96	NA	3.26	2.84
4	NC	776	SLAMS	371190041	52	80	100	NA	4.26	5.35
4	NC	776	PROPOSED NCORE	371190041	2	4	100	NA	-10.22	7.28
5	IL	513	SLAMS	170314201	44	27	61	NA	-8.29	6.96
5	MI	685	PROPOSED NCORE	260810020	36	33	92	NA	-4.61	3.21
5	MI	685	PROPOSED NCORE	261630001	34	22	65	NA	6.89	8.32
5	WI	1175	NON-REGULATORY	550270007	45	42	93	NA	10.54	13.45
6	LA	1001	SLAMS	220330009	52	0	0	NA		
6	OK	812	PROPOSED NCORE	401431127	52	30	58	NA	0	0
6	OK	905	PROPOSED NCORE	400019009	13	11	85	NA	11.17	13.34
6	TX	1035	OTHER	481130069	52	22	42	NA	9.41	10.24
7	IA	1080	NON-REGULATORY	191630015	52	70	100	NA	1.29	1.33
7	IA	874	PROPOSED NCORE	191530030	52	91	100	NA	-2.5	2.61
7	MO	588	PROPOSED NCORE	295100085	2	1	50	NA		
10	OR	821	PROPOSED NCORE	410510080	52	50	96	NA	-5.6	2.14
10	WA	1136	PROPOSED NCORE	530330080	49	0	0	NA		

Red- not using method codes 554, 588 or 593

SO2 Data From NCore Sites

Table A. Single Point Quality Check Completeness for SO2, 2007-2008 for sites using precursor gas instruments and ID'd as NCore sites

Region	State	PQAO	Monitor Type	Site ID	Number Required	Number Submitted	Comp. %	% Sites <50% Complete	Bias UB	CV UB
1	CT	251	SLAMS	90090027	52	10	19	NA	8.71	11.31
1	CT	251	SPECIAL PURPOSE	90050005	52	81	100	NA	3.03	4.37
1	MA	660	PROPOSED NCORE	250250042	3	4	100	NA	-1.36	1.35
1	ME	635	SPECIAL PURPOSE	230090103	52	39	75	NA	2.52	3.76
2	NY	768	PROPOSED NCORE	360810124	49	0	0	NA		
2	NY	768	PROPOSED NCORE	361010003	52	161	100	NA	3.4	2.49
2	NY	768	SLAMS	360810124	30	0	0	NA		
3	MD	1002	PROPOSED NCORE	240330030	52	47	90	NA	1.62	1.73
4	FL	1328	SLAMS	120573002	52	0	0	NA		
4	NC	776	SLAMS	371190041	52	75	100	NA	1.54	1.92
4	SC	971	SPECIAL PURPOSE	450730001	52	48	92	NA	7.03	8.73
4	SC	971	SPECIAL PURPOSE	450790007	26	0	0	NA		
5	IL	513	SLAMS	170314201	52	0	0	NA		
5	MI	685	PROPOSED NCORE	260810020_2	19	25	100	NA	-8.03	4.25
5	MI	685	PROPOSED NCORE	261630001	19	13	68	NA	4.36	5.68
5	WI	1175	NON-REGULATORY	550270007	45	45	100	NA	-7.3	6.91
6	AR	55	SLAMS	51190007	52	0	0	NA		
6	LA	1001	SLAMS	220330009	52	0	0	NA		
6	OK	812	PROPOSED NCORE	401431127	52	33	63	NA	3.27	4.04
6	OK	905	PROPOSED NCORE	400019009	13	11	85	NA	13.39	19.09
6	TX	1035	SLAMS	481130069	52	2	4	NA	49.99	117.92
7	IA	874	PROPOSED NCORE	191530030	48	86	100	NA	2.71	3.47
7	IA	1080	PROPOSED NCORE	191630015	52	71	100	NA	2.1	2.36
8	ND	782	SLAMS	380171004	52	52	100	NA	1.71	2.06
10	OR	821	PROPOSED NCORE	410510080	52	25	48	NA	4.9	6.86
10	WA	1136	PROPOSED NCORE	530330080	47	0	0	NA		

Red- not using method codes 600, 560 or 592