RESULTS

Table 2-6:
EP 1&2 Calciner Stack - CO, Ethane, Methane, Total Hydrocarbons

Run No.	1	2	3	Average
Date (1995)	January 17	January 17	January 17	
Start Time (approx.)	08:54	10:54	12:21	
Stop Time (approx.)	09:53	11:53	13:20	
Operating Data				
Trona processing rate (tons/hour)	244	244	244	**244**
Gas Conditions				
T_s Temperature (°F)	456	458	457	**457**
Volumetric Flow Rate				
Q_a Volumetric flow rate, actual (acfm)	618,300	614,200	612,000	**614,833**
Q_{std} Volumetric flow rate, standard (dscfm)	235,700	233,300	234,000	**234,333**
Carbon Monoxide				
C Concentration (ppmdv)	340.90	62.40	45.00	**149**
E Emission rate (lb/hr)	350.47	63.50	45.93	**153**
E Emission rate (lb/tons of trona)	1.44	0.260	0.188	**0.628**
Ethane				
C Concentration (ppmdv)	BDL	BDL	BDL	**BDL**
Methane				
C Concentration (ppmdv)	6.86	8.23	3.74	**6.28**
E Emission rate (lb/hr)	4.04	4.80	2.19	**3.67**
E Emission rate (lb/tons of trona)	0.0166	0.0197	0.00896	**0.0151**
Total Hycrocarbons				
C Concentration (ppmdv)	34.96	49.70	37.86	**40.8**
E Emission rate (lb/hr)	56.58	79.63	60.83	**65.7**
E Emission rate (lb/tons of trona)	0.232	0.326	0.249	**0.269**
Non-methane, non-ethane hydrocarbons				
E Emission rate (lb/hr)	52.54	74.83	58.64	**62.0**
E Emission rate (lb/tons of trona)	0.215	0.307	0.240	**0.254**

BDL: indicates that value was below detection limits.

RESULTS

Table 2-7:
EP 1&2 Calciner Stack - Volatile Organic Compounds by M18

Run No.	1	2	3	Average
Date (1995)	January 17	January 17	January 17	
Start Time (approx.)	08:55	11:00	12:25	
Stop Time (approx.)	09:55	12:00	13:25	
Operating Data				
Trona processing rate (tons/hour)	244	244	244	**244**
Gas Conditions				
T_s Temperature (°F)	456	458	457	**457**
Volumetric Flow Rate				
Q_a Volumetric flow rate, actual (acfm)	618,300	614,200	612,000	**614,833**
Q_{std} Volumetric flow rate, standard (dscfm)	235,700	233,300	234,000	**234,333**
1, 3 Butadiene [1]				
C Concentration (mg/dscm)	3.833	BDL	1.369	**1.73**
C Concentration (ppmdv)	1.695	BDL	0.6052	**0.767**
E Emission rate (lb/hr)	3.365	BDL	1.193	**1.52**
E Emission rate (lb/tons of trona)	0.0138	BDL	0.00489	**0.00623**
1-1-1 Trichloroethane				
C Concentration (mg/dscm)	BDL	BDL	BDL	**BDL**
Acrylonitrile				
C Concentration (mg/dscm)	BDL	BDL	BDL	**BDL**
Benzene				
C Concentration (mg/dscm)	1.231	1.696	1.282	**1.40**
C Concentration (ppmdv)	0.3790	0.5222	0.3949	**0.432**
E Emission rate (lb/hr)	1.087	1.482	1.124	**1.23**
E Emission rate (lb/tons of trona)	0.00445	0.00607	0.00461	**0.00504**
Ethylbenzene				
C Concentration (mg/dscm)	BDL	BDL	BDL	**BDL**
Hexane				
C Concentration (mg/dscm)	0.4698	0.7169	0.5557	**0.581**
C Concentration (ppmdv)	0.1311	0.2001	0.1551	**0.162**
E Emission rate (lb/hr)	0.4148	0.6265	0.4872	**0.510**
E Emission rate (lb/tons of trona)	0.00170	0.00257	0.00200	**0.00209**
Methylene Chloride				
C Concentration (mg/dscm)	1.509	1.944	1.895	**1.78**
C Concentration (ppmdv)	0.4273	0.5505	0.5367	**0.505**
E Emission rate (lb/hr)	1.332	1.699	1.661	**1.56**
E Emission rate (lb/tons of trona)	0.00546	0.00696	0.00681	**0.00641**
Styrene				
C Concentration (mg/dscm)	BDL	BDL	BDL	**BDL**
Toluene				
C Concentration (mg/dscm)	1.125	1.992	1.425	**1.51**
C Concentration (ppmdv)	0.2937	0.5200	0.3720	**0.395**
E Emission rate (lb/hr)	0.9932	1.741	1.249	**1.33**
E Emission rate (lb/tons of trona)	0.00407	0.00714	0.00512	**0.00544**
Xylene				
C Concentration (mg/dscm)	1.674	2.592	1.981	**2.08**
C Concentration (ppmdv)	0.3794	0.5873	0.4488	**0.472**
E Emission rate (lb/hr)	1.478	2.265	1.736	**1.83**
E Emission rate (lb/tons of trona)	0.00606	0.00928	0.00712	**0.00749**

[1] See comments on 1, 3 Butadiene results by Method 18 in Project Overview.
BDL: indicates that value was below detection limits.

RESULTS

Table 2-8:
EP 1&2 Calciner Stack - Volatile Organic Compounds by M0030

Run No.		1	2	3	Average
Date (1995)		January 17	January 17	January 17	
Start Time (approx.)		08:55	11:00	12:25	
Stop Time (approx.)		09:15	11:20	12:45	
Operating Data					
	Trona processing rate (tons/hr)	244	244	244	**244**
Volumetric Flow Rate					
Q_a	Actual conditions (acfm)	618,300	614,200	612,000	**614,800**
Q_{std}	Standard conditions (dscfm)	235,700	233,300	234,000	**234,300**
Acrylonitrile					
C	Concentration (mg/dscm)	0.4199	0.5131	0.3698	**0.434**
C	Concentration (ppm)	0.1904	0.2326	0.1677	**0.197**
E	Emission rate (lb/hr)	0.3708	0.4484	0.3242	**0.381**
E	Emission rate (lb/tons of trona)	0.00152	0.00184	0.00133	**0.00156**
Allyl chloride					
C	Concentration (mg/dscm)	BDL	BDL	BDL	**BDL**
Benzene					
C	Concentration (mg/dscm)	1.667	2.001	1.409	**1.69**
C	Concentration (ppm)	0.5133	0.6162	0.4338	**0.521**
E	Emission rate (lb/hr)	1.472	1.748	1.235	**1.48**
E	Emission rate (lb/tons of trona)	0.00603	0.00717	0.00506	**0.00609**
Bromoform					
C	Concentration (mg/dscm)	BDL	BDL	BDL	**BDL**
1,3-Butadiene					
C	Concentration (mg/dscm)	4.761	6.478	4.699	**5.31**
C	Concentration (ppm)	2.117	2.881	2.090	**2.36**
E	Emission rate (lb/hr)	4.203	5.661	4.119	**4.66**
E	Emission rate (lb/tons of trona)	0.0172	0.0232	0.0169	**0.0191**
Carbon disulfide					
C	Concentration (mg/dscm)	0.05145	0.05420	0.03163	**0.0458**
C	Concentration (ppm)	0.004896	0.005158	0.003010	**0.00435**
E	Emission rate (lb/hr)	0.04543	0.04737	0.02773	**0.040**
E	Emission rate (lb/tons of trona)	0.000186	0.000194	0.000114	**0.000165**
Carbon tetrachloride					
C	Concentration (mg/dscm)	BDL	BDL	BDL	**BDL**
Chlorobenzene					
C	Concentration (mg/dscm)	BDL	BDL	BDL	**BDL**
Chloroform					
C	Concentration (mg/dscm)	BDL	BDL	BDL	**BDL**
Cumene (isopropylbenzene)					
C	Concentration (mg/dscm)	0.005982	0.007227	0.006082	**0.00643**
C	Concentration (ppm)	0.001197	0.001446	0.001217	**0.00129**
E	Emission rate (lb/hr)	0.005282	0.006316	0.005332	**0.00564**
E	Emission rate (lb/tons of trona)	2.16E-05	2.59E-05	2.19E-05	**2.31E-05**
cis-1,3-Dichloropropene					
C	Concentration (mg/dscm)	BDL	BDL	BDL	**BDL**

BDL: Indicates below the detection limit.

RESULTS

Table 2-8:
EP 1&2 Calciner Stack - Volatile Organic Compounds by M0030 (Continued)

Run No.		1	2	3	Average
Date (1995)		January 17	January 17	January 17	
Start Time (approx.)		08:55	11:00	12:25	
Stop Time (approx.)		09:15	11:20	12:45	
Operating Data					
	Trona processing rate (tons/hr)	244	244	244	**244**
Volumetric Flow Rate					
Q_a	Actual conditions (acfm)	618,300	614,200	612,000	**614,800**
Q_{std}	Standard conditions (dscfm)	235,700	233,300	234,000	**234,300**
trans-1,3-Dichloropropene					
C	Concentration (mg/dscm)	BDL	BDL	BDL	**BDL**
Ethyl acrylate					
C	Concentration (mg/dscm)	BDL	BDL	BDL	**BDL**
Ethylbenzene					
C	Concentration (mg/dscm)	0.1065	0.1674	0.1277	**0.134**
C	Concentration (ppm)	0.02413	0.03794	0.02894	**0.0303**
E	Emission rate (lb/hr)	0.09402	0.1463	0.1120	**0.117**
E	Emission rate (lb/tons of trona)	0.000385	0.000600	0.000459	**0.000481**
1,2-Epoxybutane					
C	Concentration (mg/dscm)	BDL	BDL	BDL	**BDL**
Dibromomethane					
C	Concentration (mg/dscm)	BDL	BDL	BDL	**BDL**
1,2-Dichlrorethane					
C	Concentration (mg/dscm)	BDL	BDL	BDL	**BDL**
1,1-Dichloroehtane					
C	Concentration (mg/dscm)	BDL	BDL	BDL	**BDL**
n-Hexane					
C	Concentration (mg/dscm)	0.2321	0.3240	0.1800	**0.245**
C	Concentration (ppm)	0.06480	0.09045	0.05026	**0.0685**
E	Emission rate (lb/hr)	0.2049	0.2832	0.1578	**0.22**
E	Emission rate (lb/tons of trona)	0.000840	0.00116	0.000647	**0.000882**
Bromomethane					
C	Concentration (mg/dscm)	0.01077	0.00964	0.007299	**0.00923**
C	Concentration (ppm)	0.002728	0.002441	0.001849	**0.00234**
E	Emission rate (lb/hr)	0.009508	0.008421	0.006398	**0.00811**
E	Emission rate (lb/tons of trona)	3.90E-05	3.45E-05	2.62E-05	**3.32E-05**
Chloromethane					
C	Concentration (mg/dscm)	0.03470	0.01927	0.01946	**0.0245**
C	Concentration (ppm)	0.01653	0.009182	0.009274	**0.0117**
E	Emission rate (lb/hr)	0.03064	0.01684	0.01706	**0.0215**
E	Emission rate (lb/tons of trona)	0.000126	6.90E-05	6.99E-05	**8.82E-05**
1,1,1-Trichloroethane					
C	Concentration (mg/dscm)	BDL	BDL	BDL	**BDL**

BDL: Indicates below the detection limit.

RESULTS

Table 2-8:
EP 1&2 Calciner Stack - Volatile Organic Compounds by M0030 (Continued)

Run No.		1	2	3	Average
Date (1995)		January 17	January 17	January 17	
Start Time (approx.)		08:55	11:00	12:25	
Stop Time (approx.)		09:15	11:20	12:45	
Operating Data					
	Trona processing rate (tons/hr)	244	244	244	**244**
Volumetric Flow Rate					
Q_a	Actual conditions (acfm)	618,300	614,200	612,000	**614,800**
Q_{std}	Standard conditions (dscfm)	235,700	233,300	234,000	**234,300**
2-Butanone					
C	Concentration (mg/dscm)	0.4427	0.5324	0.3552	**0.443**
C	Concentration (ppm)	0.1477	0.1776	0.1185	**0.148**
E	Emission rate (lb/hr)	0.3909	0.4653	0.3114	**0.389**
E	Emission rate (lb/tons of trona)	0.00160	0.00191	0.00128	**0.00159**
Idomethane					
C	Concentration (mg/dscm)	BDL	BDL	BDL	**BDL**
4-Methyl-2-pentanone					
C	Concentration (mg/dscm)	BDL	BDL	BDL	**BDL**
Tert-butyl methyl ether					
C	Concentration (mg/dscm)	BDL	BDL	BDL	**BDL**
Methylene chloride					
C	Concentration (mg/dscm)	0.1256	0.1120	0.03406	**0.0906**
C	Concentration (ppm)	0.03558	0.03172	0.009647	**0.0257**
E	Emission rate (lb/hr)	0.1109	0.09790	0.02986	**0.0796**
E	Emission rate (lb/tons of trona)	0.000455	0.000401	0.000122	**0.000326**
Methyl methacrylate					
C	Concentration (mg/dscm)	BDL	BDL	BDL	**BDL**
1,2-Dichloropropane					
C	Concentration (mg/dscm)	BDL	BDL	BDL	**BDL**
Styrene					
C	Concentration (mg/dscm)	0.1340	0.1927	0.1472	**0.158**
C	Concentration (ppm)	0.03095	0.04452	0.03400	**0.0365**
E	Emission rate (lb/hr)	0.1183	0.1684	0.1290	**0.139**
E	Emission rate (lb/tons of trona)	0.000485	0.000690	0.000529	**0.000568**
1,1,2,2-Tetrachloroethane					
C	Concentration (mg/dscm)	BDL	BDL	BDL	**BDL**
Tetrachloroethene					
C	Concentration (mg/dscm)	BDL	BDL	BDL	**BDL**

BDL: Indicates below the detection limit.

RESULTS

Table 2-1:
EP 1&2 Calciner Stack - Particulate

Run No.		1	2	3	Average
Date (1995)		April 25	April 25	April 25	
Start Time (approx.)		11:45	14:19	16:57	
Stop Time (approx.)		13:27	15:54	18:30	
Process Conditions					
	Feed Rate (tons of trona/hr)[1]	267	267	267	**267**
Gas Conditions					
T_s	Temperature (°F)	426	429	427	**428**
B_{wo}	Moisture (volume %)	18.05	17.93	18.09	**18.02**
O_2	Oxygen (dry volume %)	14.3	14.2	14.1	**14.2**
CO_2	Carbon dioxide (dry volume %)	8.0	8.2	8.2	**8.1**
Volumetric Flow Rate					
Q_a	Actual conditions (acfm)	612,500	619,400	621,100	**617,700**
Q_{std}	Standard conditions (dscfm)	235,400	237,600	238,300	**237,100**
Front Half Particulate					
C	Concentration (gr/dscf)	0.0075	0.0137	0.0136	**0.0116**
E	Emission rate (lb/hr)	15.1	27.9	27.8	**23.6**
E	Emission rate (lb/ton trona)	0.0567	0.1046	0.1040	**0.0884**
Back Half Organic Particulate					
C	Concentration (gr/dscf)	0.0092	0.0084	0.0132	**0.0103**
E	Emission Rate (lb/hr)	18.5	17.1	27.0	**20.9**
E	Emission rate (lb/ton trona)	0.0694	0.0641	0.1010	**0.0782**
Back Half Inorganic Particulate					
C	Concentration (gr/dscf)	0.0020	0.0059	0.0072	**0.0050**
E	Emission Rate (lb/hr)	4.05	12.09	14.7	**10.3**
E	Emission rate (lb/ton trona)	0.0152	0.0453	0.0549	**0.0385**
Total Inorganic Particulate					
C	Concentration (gr/dscf)	0.0095	0.0197	0.0208	**0.0166**
E	Emission Rate (lb/hr)	19.2	40.0	42.4	**33.9**
E	Emission rate (lb/ton trona)	0.0718	0.1499	0.1589	**0.1269**

[1] Feed rate provided by Solvay Minerals, Inc.

RESULTS

Table 2-1:
EP-1&2-Total Hydrocarbons, Runs 1-3

Run No.		1	2	3	Average
Date (1995)		April 28	April 28	April 28	
Start Time (approx.)		08:04	09:42	11:13	
Stop Time (approx.)		09:04	10:42	12:13	
Process Conditions					
	Feed rate (ton of trona/hr)	262	262	262	262
Gas Conditions[1]					
T_s	Stack temperature (°F)	441	432	440	**438**
B_{wo}	Moisture in sample (% by volume)	17.68	17.98	18.33	**18.00**
O_2	Oxygen (dry volume %)	15.0	15.3	15.5	**15.5**
CO_2	Carbon dioxide (dry volume%)	7.1	6.9	7.3	**7.3**
Flow Conditions					
Q_a	Volumetric flow rate, actual (acfm)	626,400	621,000	616,300	**621,233**
Q_{std}	Volumetric flow rate, standard (dscfm)	238,000	237,600	232,700	**236,100**
Continuous Emissions Monitoring					
Carbon Monoxide					
C	Concentration (ppmdv)	526	527	525	**526**
E	Emission rate (lb/hr)	546.1	546.4	533.2	**541.9**
E	Emission rate (lb/ton of trona)	2.084	2.086	2.035	**2.068**
Total Hydrocarbons(as propane)					
C	Concentration (ppmdv)	66.5	54.6	44.8	**55.3**
E	Emission rate (lb/hr)	108.6	89.2	71.7	**89.8**
E	Emission rate (lb/ton of trona)	0.415	0.340	0.274	**0.343**
Methane					
C	Concentration (ppmdv)	BDL	BDL	BDL	**BDL**

BDL indicates the value was below the detection limit. A value of zero was used for BDL in the average calculation.
[1] Gas conditions are taken from simultaneous velocity-moisture test.

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RESULTS

Table 2-2:
EP-1&2 VOCs , Runs 1-3

Run No.		1	2	3	Average
Date (1995)		April 28	April 28	April 28	
Start Time (approx.)		08:05	10:05	11:14	
Stop Time (approx.)		09:11	10:48	12:19	
Process Conditions					
	Feed rate(tons of trona/hr)	262	262	262	**262**
Gas Conditions*					
B_{wo}	Moisture (% by volume)	17.68	17.98	18.33	**17.99**
Q_{std}	Volumetric flow rate, standard (dscfm)	238,000	237,600	232,700	**236,100**
2-Butanone					
C	Concentration (ppmdv)	0.13	BDL	BDL	**0.04**
E	Emission rate (lb/hr)	0.36	BDL	BDL	**0.12**
E	Emission rate(lb/ton of trona)	1.36E-03	BDL	BDL	**4.54E-04**
Benzene					
C	Concentration (ppmdv)	0.44	0.48	0.44	**0.45**
E	Emission rate (lb/hr)	1.27	1.37	1.25	**1.30**
E	Emission rate(lb/tons of trona)	4.83E-03	5.25E-03	4.76E-03	**4.95E-03**
1,3 Butadiene					
C	Concentration (ppmdv)	1.77	0.59	1.22	**1.19**
E	Emission rate (lb/hr)	3.56	1.17	2.40	**2.38**
E	Emission rate(lb/ton of trona)	1.36E-02	4.47E-03	9.16E-03	**9.07E-03**
Ethyl Benzene					
C	Concentration (ppmdv)	BDL	BDL	BDL	**BDL**
E	Emission rate (lb/hr)	BDL	BDL	BDL	**BDL**
E	Emission rate(lb/ton of trona)	BDL	BDL	BDL	**BDL**
Hexane					
C	Concentration (ppmdv)	0.13	0.45	BDL	**0.19**
E	Emission rate (lb/hr)	0.43	1.44	BDL	**0.62**
E	Emission rate(lb/ton of trona)	1.63E-03	5.49E-03	BDL	**2.37E-03**
Methylene Chloride					
C	Concentration (ppmdv)	0.97	1.19	1.09	**1.09**
E	Emission rate (lb/hr)	3.06	3.75	3.35	**3.39**
E	Emission rate(lb/ton of trona)	1.17E-02	1.43E-02	1.28E-02	**1.29E-02**
Styrene					
C	Concentration (ppmdv)	0.23	0.06	0.01	**0.10**
E	Emission rate (lb/hr)	0.89	0.23	0.05	**0.39**
E	Emission rate(lb/ton of trona)	3.40E-03	8.96E-04	1.76E-04	**1.49E-03**
Toluene					
C	Concentration (ppmdv)	1.42	1.19	0.98	**1.20**
E	Emission rate (lb/hr)	4.85	4.07	3.27	**4.07**
E	Emission rate(lb/ton of trona)	1.85E-02	1.55E-02	1.25E-02	**1.55E-02**
1,1,1 - Trichloroethane					
C	Concentration (ppmdv)	0.80	0.88	1.64	**1.11**
E	Emission rate (lb/hr)	3.96	4.33	7.93	**5.41**
E	Emission rate(lb/ton of trona)	1.51E-02	1.65E-02	3.03E-02	**2.06E-02**
Xylene					
C	Concentration (ppmdv)	1.68	1.37	0.82	**1.29**
E	Emission rate (lb/hr)	6.60	5.36	3.16	**5.04**
E	Emission rate(lb/ton of trona)	2.52E-02	2.05E-02	1.20E-02	**1.92E-02**

BDL indicates the value was below the detection limit. A value of zero was uded for BDL in the average calculation.
* Gas conditions are taken from simultaneous velocity-moisture test.

PROJECT OVERVIEW

After the conclusion of the test program, meter box 66-13, which was used at the ESP Inlet location, was found to have drifted out of acceptable calibration limits. According to EPA Method 5, when this occurs, the Y_d value that yields the lowest V_{mstd} should be used in all calculations. Therefore, the post-test calibration was used in all calculations.

For the determination of percent removal efficiency, the total inorganic particulate emissions are used. Run 2A at the ESP Inlet corresponds to Run 2 at the Stack, and the average of Runs 3A and 3B at the ESP Inlet corresponds to Run 3 at the Stack.

The test parameters included the following pollutants:

- Total particulate.

The testing was conducted at the EP-1 ESP Inlet and EP 1&2 Calciner Stack on September 14 and 15, 1995.

Coordinating the field testing were:

S. Cook - Solvay Minerals, Inc.
S. Ferguson - Clean Air Engineering

Table 1-1:
EP-1 Calciner Profile

Unit Identification Number	AQD No. 17, EP-1&2
Process	Calciner
Fuel	Natural Gas
Heat Content	1080 Btu/ft^3
Stack Height	180.5 feet
Stack Diameter	144 inches
Diameters to Upstream Disturbance	Approximately 3.6
Diameters to Downstream Disturbance	Approximately 4.4
Primary Control Equipment	2-Buell ESP

Table 1-2:
Summary of Test Results

Source Constituent	Sampling Method	Average Emission	Average Efficiency (%)
EP-1 ESP Inlet			
Inorganic Particulate (lb/hr)	EPA M17	8,343	
EP 1&2 Calciner Stack			
Inorganic Particulate (lb/hr)	EPA M5	3.78	99.96

The test conditions and results of analysis are presented in Tables 2-1 and 2-2 on pages 2-1 and 2-2.

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RESULTS

Table 2-1:
EP 1&2 Calciner Stack - Particulate (300 tons/hr Feed Rate)

Run No.		1	2	3	Average
Date (1995)		October 26	October 26	October 27	
Start Time (approx.)		08:50	10:54	10:40	
Stop Time (approx.)		09:59	12:04	11:53	
Process Conditions					
	Feed rate (tons/hr)[1]	300	300	300	
Gas Conditions					
T_s	Temperature (°F)	365	363	364	**364**
B_{wo}	Moisture (volume %)	26.16	28.68	27.10	**27.31**
O_2	Oxygen (dry volume %)	13.9	13.2	13.7	**13.6**
CO_2	Carbon dioxide (dry volume %)	7.4	8.4	8.1	**8.0**
Volumetric Flow Rate					
Q_a	Actual conditions (acfm)	435,700	439,600	432,800	**436,000**
Q_{stc}	Standard conditions (dscfm)	162,700	158,800	160,700	**160,700**
Front Half Particulate					
C	Concentration (gr/dscf)	0.0023	0.0016	0.0022	**0.0021**
E	Emission rate (lb/hr)	3.2	2.2	3.1	**2.8**
E	Emission rate (lb/ton of trona)	0.011	0.007	0.010	**0.009**
Back Half Organic Particulate					
C	Concentration (gr/dscf)	0.0179	0.0196	0.0324	**0.0233**
E	Emission rate (lb/hr)	24.9	26.6	44.6	**32.1**
E	Emission rate (lb/ton of trona)	0.083	0.089	0.149	**0.107**
Back Half Inorganic Particulate					
C	Concentration (gr/dscf)	0.0059	0.0076	0.0092	**0.0075**
E	Emission rate (lb/hr)	8.2	10.3	12.6	**10.4**
E	Emission rate (lb/ton of trona)	0.027	0.034	0.042	**0.035**
Back Half Total Particulate					
C	Concentration (gr/dscf)	0.0237	0.0272	0.0415	**0.0308**
E	Emission rate (lb/hr)	33.1	37.0	57.2	**42.4**
E	Emission rate (lb/ton of trona)	0.110	0.123	0.191	**0.141**
Front and Back Half Inorganic Particulate					
C	Concentration (gr/dscf)	0.0081	0.0092	0.0114	**0.0096**
E	Emission rate (lb/hr)	11.4	12.5	15.7	**13.2**
E	Emission rate (lb/ton of trona)	0.038	0.042	0.052	**0.044**

[1] Feed rate provided by Solvay Minerals, Inc.

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RESULTS

Table 2-2:
EP 1&2 Calciner Stack - Nitrogen Oxides and Total Hydrocarbons (300 tons/hr Feed Rate)

Run No.		1	2	3	Average
Date (1995)		October 27	October 27	October 27	
Start Time (approx.)		14:15	16:12	17:42	
Stop Time (approx.)		15:15	17:12	18:42	
Gas Conditions[1]					
T_s	Temperature (°F)	368	363	365	**365**
O_2	Oxygen (dry volume %)	13.5	13.2	13.3	**13.3**
CO_2	Carbon dioxide (dry volume %)	8.1	8.8	8.8	**8.6**
B_{wo}	Moisture (volume %)	26.28	25.90	26.44	**26.21**
Q_{std}	Standard conditions (dscfm)	155,000	154,300	154,300	**154,533**
Process Conditions[2]					
	Feed rate (ton of trona/hr)	300	300	300	**300**
Nitrogen Oxides					
C	Concentration (ppmdv)	17.6	12.7	11.9	**14.0**
E	Emission rate (lb/hr)	19.5	14.0	13.1	**15.6**
E	Emission rate (lb/ton of trona)	0.065	0.047	0.044	**0.052**
Total Hydrocarbons (as propane)					
C	Concentration (ppmdv)	358.4	346.2	398.6	**367.7**
E	Emission rate (lb/hr)	381.5	366.8	422.4	**390.2**
E	Emission rate (lb/ton of trona)	1.272	1.223	1.408	**1.301**
Methane					
C	Concentration (ppmdv)	488.9	471.7	495.1	**485.2**
E	Emission rate (lb/hr)	189.3	181.8	190.8	**187.3**
E	Emission rate (lb/ton of trona)	0.631	0.606	0.636	**0.624**
Total Non-Methane Hydrocarbons (as propane)					
E	Emission rate (lb/hr)	192.2	185.1	231.5	**202.9**
E	Emission rate (lb/ton of trona)	0.641	0.617	0.772	**0.676**

[1] Gas conditions are taken from simultaneous velocity-moisture testing.
[2] Feed rate provided by Solvay Minerals, Inc.

RESULTS

Table 2-3:
EP 1&2 Calciner Stack - Volatile Organic Compounds
(300 tons/hr Feed Rate)

Run No.		1	2	3	Average
Date (1995)		October 27	October 27	October 27	
Start Time (approx.)		14:13	16:10	17:41	
Stop Time (approx.)		15:13	17:13	18:44	
Process Conditions[1]					
	Feed rate (ton of trona/hr)	300	300	300	**300**
Gas Conditions[2]					
B_{wo}	Moisture (% by volume)	26.28	25.90	26.44	**26.21**
Q_{std}	Volumetric flow rate, standard (dscfm)	155,000	154,300	154,300	**154,533**
1,1,1-Trichloroethane					
C	Concentration (ppmdv)	BDL	BDL	BDL	**BDL**
E	Emission rate (lb/hr)	BDL	BDL	BDL	**BDL**
E	Emission rate (lb/ton of trona)	BDL	BDL	BDL	**BDL**
1,3 Butadiene					
C	Concentration (ppmdv)	BDL	BDL	BDL	**BDL**
E	Emission rate (lb/hr)	BDL	BDL	BDL	**BDL**
E	Emission rate (lb/ton of trona)	BDL	BDL	BDL	**BDL**
Acrylonitrile					
C	Concentration (ppmdv)	BDL	BDL	BDL	**BDL**
E	Emission rate (lb/hr)	BDL	BDL	BDL	**BDL**
E	Emission rate (lb/ton of trona)	BDL	BDL	BDL	**BDL**
Benzene					
C	Concentration (ppmdv)	1.94	2.13	2.20	**2.09**
E	Emission rate (lb/hr)	3.66	4.00	4.13	**3.93**
E	Emission rate (lb/ton of trona)	0.012	0.013	0.014	**0.013**
Ethyl Benzene					
C	Concentration (ppmdv)	BDL	BDL	BDL	**BDL**
E	Emission rate (lb/hr)	BDL	BDL	BDL	**BDL**
E	Emission rate (lb/ton of trona)	BDL	BDL	BDL	**BDL**
Hexane					
C	Concentration (ppmdv)	0.96	0.82	1.18	**0.99**
E	Emission rate (lb/hr)	2.00	1.70	2.45	**2.05**
E	Emission rate (lb/ton of trona)	0.007	0.006	0.008	**0.007**
Methylene Chloride					
C	Concentration (ppmdv)	BDL	BDL	BDL	**BDL**
E	Emission rate (lb/hr)	BDL	BDL	BDL	**BDL**
E	Emission rate (lb/ton of trona)	BDL	BDL	BDL	**BDL**
Styrene					
C	Concentration (ppmdv)	BDL	BDL	BDL	**BDL**
E	Emission rate (lb/hr)	BDL	BDL	BDL	**BDL**
E	Emission rate (lb/ton of trona)	BDL	BDL	BDL	**BDL**
Toluene					
C	Concentration (ppmdv)	BDL	BDL	BDL	**BDL**
E	Emission rate (lb/hr)	BDL	BDL	BDL	**BDL**
E	Emission rate (lb/ton of trona)	BDL	BDL	BDL	**BDL**
Trichloroethene					
C	Concentration (ppmdv)	BDL	BDL	BDL	**BDL**
E	Emission rate (lb/hr)	BDL	BDL	BDL	**BDL**
E	Emission rate (lb/ton of trona)	BDL	BDL	BDL	**BDL**
Xylene					
C	Concentration (ppmdv)	BDL	BDL	BDL	**BDL**
E	Emission rate (lb/hr)	BDL	BDL	BDL	**BDL**
E	Emission rate (lb/ton of trona)	BDL	BDL	BDL	**BDL**

BDL indicates value was below the detection limit.
[1] Process conditions provided by Solvay Minerals, Inc.
[2] Gas conditions are taken from simultaneous velocity-moisture test.

RESULTS

Table 2-4:
EP 1&2 Calciner Stack - Total Hydrocarbons (280 tons/hr Feed Rate)

Run No.		1	2	3	Average
Date (1995)		October 29	October 29	October 29	
Start Time (approx.)		15:16	16:34	17:57	
Stop Time (approx.)		16:16	17:33	18:57	
Process Conditions[1]					
	Feed rate (tons/hr of trona)	280	280	280	**280**
Gas Conditions[2]					
B_{wo}	Moisture (volume %)	26.20	26.04	26.20	**26.15**
Q_{std}	Standard conditions (dscfm)	144,100	146,000	146,400	**145,500**
Total Hydrocarbons (as propane)					
C	Concentration (ppmdv)	348.1	380.9	381.1	**370.0**
E	Emission rate (lb/hr)	344.4	381.8	383.1	**369.8**
E	Emission rate (lb/ton of trona)	1.230	1.364	1.368	**1.321**
Methane					
C	Concentration (ppmdv)	627.0	687.1	680.2	**664.8**
E	Emission rate (lb/hr)	225.7	250.6	248.7	**241.7**
E	Emission rate (lb/ton of trona)	0.806	0.895	0.888	**0.863**
Total Non-Methane Hydrocarbons (as propane)					
E	Emission rate (lb/hr)	118.8	131.2	134.4	**128.1**
E	Emission rate (lb/ton of trona)	0.424	0.469	0.480	**0.458**

[1] Feed rate provided by Solvay Minerals, Inc.
[2] Gas conditions taken from simultaneous velocity-moisture testing.

RESULTS

Table 2-5: EP 1&2 Calciner Stack - Volatile Organic Compounds (280 tons/hr Feed Rate)

Run No.		4	5	6	Average
Date (1995)		October 29	October 29	October 29	
Start Time (approx.)		15:06	16:33	17:56	
Stop Time (approx.)		16:11	17:27	18:55	
Process Conditions[1]					
	Feed rate (ton of trona/hr)	280	280	280	**280**
Gas Conditions[2]					
B_{wo}	Moisture (% by volume)	26.20	26.04	26.20	**26.15**
Q_{std}	Volumetric flow rate, standard (dscfm)	144,100	146,000	146,400	**145,500**
1,1,1-Trichloroethane					
C	Concentration (ppmdv)	BDL	BDL	BDL	**BDL**
E	Emission rate (lb/hr)	BDL	BDL	BDL	**BDL**
E	Emission rate (lb/ton of trona)	BDL	BDL	BDL	**BDL**
1,3 Butadiene					
C	Concentration (ppmdv)	BDL	BDL	BDL	**BDL**
E	Emission rate (lb/hr)	BDL	BDL	BDL	**BDL**
E	Emission rate (lb/ton of trona)	BDL	BDL	BDL	**BDL**
Acrylonitrile					
C	Concentration (ppmdv)	BDL	BDL	BDL	**BDL**
E	Emission rate (lb/hr)	BDL	BDL	BDL	**BDL**
E	Emission rate (lb/ton of trona)	BDL	BDL	BDL	**BDL**
Benzene					
C	Concentration (ppmdv)	1.36	1.12	1.23	**1.24**
E	Emission rate (lb/hr)	2.38	1.99	2.20	**2.19**
E	Emission rate (lb/ton of trona)	0.008	0.007	0.008	**0.008**
Ethyl Benzene					
C	Concentration (ppmdv)	BDL	BDL	BDL	**BDL**
E	Emission rate (lb/hr)	BDL	BDL	BDL	**BDL**
E	Emission rate (lb/ton of trona)	BDL	BDL	BDL	**BDL**
Hexane					
C	Concentration (ppmdv)	0.62	0.85	0.64	**0.70**
E	Emission rate (lb/hr)	1.21	1.67	1.25	**1.38**
E	Emission rate (lb/ton of trona)	0.004	0.006	0.004	**0.005**
Methylene Chloride					
C	Concentration (ppmdv)	BDL	BDL	BDL	**BDL**
E	Emission rate (lb/hr)	BDL	BDL	BDL	**BDL**
E	Emission rate (lb/ton of trona)	BDL	BDL	BDL	**BDL**
Styrene					
C	Concentration (ppmdv)	BDL	BDL	BDL	**BDL**
E	Emission rate (lb/hr)	BDL	BDL	BDL	**BDL**
E	Emission rate (lb/ton of trona)	BDL	BDL	BDL	**BDL**
Toluene					
C	Concentration (ppmdv)	BDL	BDL	BDL	**BDL**
E	Emission rate (lb/hr)	BDL	BDL	BDL	**BDL**
E	Emission rate (lb/ton of trona)	BDL	BDL	BDL	**BDL**
Trichloroethene					
C	Concentration (ppmdv)	BDL	BDL	BDL	**BDL**
E	Emission rate (lb/hr)	BDL	BDL	BDL	**BDL**
E	Emission rate (lb/ton of trona)	BDL	BDL	BDL	**BDL**
Xylene					
C	Concentration (ppmdv)	BDL	BDL	BDL	**BDL**
E	Emission rate (lb/hr)	BDL	BDL	BDL	**BDL**
E	Emission rate (lb/ton of trona)	BDL	BDL	BDL	**BDL**

BDL indicates value was below the detection limit. A value of zero was used for BDL in the average calculation.
[1] Process conditions provided by Solvay Minerals, Inc.
[2] Gas conditions are taken from simultaneous velocity-moisture test.

RESULTS

Table 2-6:
EP 1&2 Calciners - Carbon Monoxide

Run No.		1	2	3	Average
Date (1995)		October 27	October 27	October 27	
Start Time (approx.)		14:15	16:12	17:42	
Stop Time (approx.)		15:15	17:12	18:42	
Gas Conditions[1]					
O_2	Oxygen (dry volume %)	13.5	13.2	13.3	**13.3**
CO_2	Carbon dioxide (dry volume %)	8.1	8.8	8.8	**8.6**
B_{wo}	Moisture (volume %)	26.28	25.90	26.44	**26.21**
$Q_{s:c}$	Standard conditions (dscfm)	155,000	154,300	154,300	**154,533**
Process Conditions[2]					
	Feed rate (ton of trona/hr)	300	300	300	**300**
Carbon Monoxide					
C	Concentration (ppmdv)	1360.6	1030.8	1101.0	**1164.1**
E	Emission rate (lb/hr)	919.9	693.8	741.0	**784.9**
E	Emission rate (lb/ton of trona)	3.066	2.313	2.470	**2.616**

1 Gas conditions taken from simultaneous velocity-moisture testing.
2 Feed rate provided by Solvay Minerals, Inc.

RESULTS

Table 2-1:
EP 1&2 Calciner Stack - Particulate (287 tons/hr Feed Rate)

Run No.		1	2	3	Average
Date (1995)		December 12	December 12	December 12	
Start Time (approx.)		09:35	11:40	13:35	
Stop Time (approx.)		10:56	13:02	14:52	
Process Conditions					
	Feed Rate (tons/hr)[1]	291	283	288	**287**
	Fields A, B and C off				
Gas Conditions					
T_s	Temperature (°F)	374	373	373	**374**
B_{wo}	Moisture (volume %)	24.48	25.02	24.75	**24.75**
O_2	Oxygen (dry volume %)	14.0	13.8	13.9	**13.9**
CO_2	Carbon dioxide (dry volume %)	7.8	7.8	8.0	**7.9**
Volumetric Flow Rate					
Q_a	Actual conditions (acfm)	433,700	433,500	439,500	**435,600**
Q_{std}	Standard conditions (dscfm)	163,900	162,800	165,800	**164,200**
Front Half Particulate					
C	Concentration (gr/dscf)	0.0140	0.0198	0.0135	**0.0158**
E	Emission rate (lb/hr)	19.7	27.6	19.1	**22.2**
E	Emission rate (lb/ton of trona)	0.068	0.098	0.066	**0.077**
Back Half Organic Particulate					
C	Concentration (gr/dscf)	0.0269	0.0145	0.0132	**0.0182**
E	Emission rate (lb/hr)	37.8	20.3	18.8	**25.6**
E	Emission rate (lb/ton of trona)	0.130	0.072	0.065	**0.089**
Back Half Inorganic Particulate					
C	Concentration (gr/dscf)	0.0165	0.0037	0.0056	**0.0086**
E	Emission rate (lb/hr)	23.2	5.12	7.90	**12.1**
E	Emission rate (lb/ton of trona)	0.080	0.018	0.027	**0.042**
Back Half Total Particulate					
C	Concentration (gr/dscf)	0.0434	0.0182	0.0188	**0.0268**
E	Emission rate (lb/hr)	61.0	25.4	26.7	**37.7**
E	Emission rate (lb/ton of trona)	0.210	0.090	0.093	**0.131**
Front and Back Half Inorganic Particulate					
C	Concentration (gr/dscf)	0.0305	0.0235	0.0190	**0.0243**
E	Emission rate (lb/hr)	42.9	32.8	27.0	**34.2**
E	Emission rate (lb/ton of trona)	0.147	0.116	0.094	**0.119**

[1] Process feed rate provided by Solvay Minerals, Inc. For additional process operating data see Appendix H.

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RESULTS

Table 2-1:
EP 1&2 Calciner Stack - Total Non-Methane Hydrocarbons

Run No.		1	2	3	Average
Date (1995)		December 14	December 14	December 14	
Start Time (approx.)		10:00	12:32	14:43	
Stop Time (approx.)		11:00	13:32	15:43	
Process Conditions[1]					
	Feed rate (tons/hr of trona)	300	300	300	**300**
Gas Conditions[2]					
O_2	Oxygen (dry volume %)	13.5	13.6	13.6	**13.6**
CO_2	Carbon dioxide (dry volume %)	8.4	8.3	8.1	**8.3**
B_{wo}	Moisture (volume %)	25.09	24.88	24.54	**24.84**
Q_{std}	Standard conditions (dscfm)	161,700	166,300	165,400	**164,467**
Total Hydrocarbons (as propane)					
C	Concentration (ppmdv)	504.0	517.6	627.7	**549.7**
E	Emission rate (lb/hr)	559.6	591.1	712.9	**621.2**
E	Emission rate (lb/ton of trona)	1.865	1.970	2.376	**2.071**
Methane					
C	Concentration (ppmdv)	1089.1	1063.7	1116.3	**1089.7**
E	Emission rate (lb/hr)	439.9	441.9	461.2	**447.7**
E	Emission rate (lb/ton of trona)	1.466	1.473	1.537	**1.492**
Total Non-Methane Hydrocarbons (as propane)					
E	Emission rate (lb/hr)	119.7	149.2	251.6	**173.5**
E	Emission rate (lb/ton of trona)	0.399	0.497	0.839	**0.578**

[1] Feed rate provided by Solvay Minerals, Inc.
[2] Gas conditions are taken from near simultaneous BIF 0011 formaldehyde test.

RESULTS

Table 2-2:
EP 1&2 Calciner Stack - Volatile Organic Compounds

Run No.		1	2	3	Average
Date (1995)		December 14	December 14	December 14	
Start Time (approx.)		09:53	12:17	14:29	
Stop Time (approx.)		11:13	13:35	15:50	
Process Conditions[1]					
	Feed rate(ton of trona/hr)	300	300	300	**300**
Gas Conditions[2]					
B_{wo}	Moisture (% by volume)	25.09	24.88	24.54	**24.84**
Q_{std}	Volumetric flow rate, standard (dscfm)	167,700	166,300	165,400	**164,467**
1,1,1-Trichloroethane					
C	Concentration (ppmdv)	0.73	BDL	2.15	**0.96**
E	Emission rate (lb/hr)	2.47	BDL	7.38	**3.28**
E	Emission rate (lb/ton of trona)	0.0082	BDL	0.0246	**0.0109**
1,3 Butadiene					
C	Concentration (ppmdv)	BDL	BDL	BDL	**BDL**
E	Emission rate (lb/hr)	BDL	BDL	BDL	**BDL**
E	Emission rate (lb/ton of trona)	BDL	BDL	BDL	**BDL**
2-Butanone					
C	Concentration (ppmdv)	BDL	BDL	BDL	**BDL**
E	Emission rate (lb/hr)	BDL	BDL	BDL	**BDL**
E	Emission rate (lb/ton of trona)	BDL	BDL	BDL	**BDL**
Acrylonitrile					
C	Concentration (ppmdv)	BDL	BDL	BDL	**BDL**
E	Emission rate (lb/hr)	BDL	BDL	BDL	**BDL**
E	Emission rate (lb/ton of trona)	BDL	BDL	BDL	**BDL**
Benzene					
C	Concentration (ppmdv)	3.15	2.62	5.04	**3.60**
E	Emission rate (lb/hr)	6.20	5.30	10.13	**7.21**
E	Emission rate (lb/ton of trona)	0.0207	0.0177	0.0338	**0.0240**
Ethyl Benzene					
C	Concentration (ppmdv)	0.03	BDL	0.20	**0.08**
E	Emission rate (lb/hr)	0.07	BDL	0.54	**0.20**
E	Emission rate (lb/ton of trona)	0.0002	BDL	0.0018	**0.0007**
Hexane					
C	Concentration (ppmdv)	1.64	1.53	3.22	**2.13**
E	Emission rate (lb/hr)	3.56	3.42	7.15	**4.71**
E	Emission rate (lb/ton of trona)	0.0119	0.0114	0.0238	**0.0157**
Methylene Chloride					
C	Concentration (ppmdv)	0.52	BDL	BDL	**0.17**
E	Emission rate (lb/hr)	1.11	BDL	BDL	**0.37**
E	Emission rate (lb/ton of trona)	0.0037	BDL	BDL	**0.0012**
Styrene					
C	Concentration (ppmdv)	0.67	0.60	1.90	**1.05**
E	Emission rate (lb/hr)	1.75	1.62	5.08	**2.82**
E	Emission rate (lb/ton of trona)	0.0058	0.0054	0.0169	**0.0094**
Toluene					
C	Concentration (ppmdv)	1.07	0.96	1.79	**1.27**
E	Emission rate (lb/hr)	2.48	2.29	4.25	**3.00**
E	Emission rate (lb/ton of trona)	0.0083	0.0076	0.0142	**0.0100**
Trichloroethene					
C	Concentration (ppmdv)	BDL	BDL	0.44	**0.15**
E	Emission rate (lb/hr)	BDL	BDL	1.48	**0.49**
E	Emission rate (lb/ton of trona)	BDL	BDL	0.0049	**0.0016**
Xylene					
C	Concentration (ppmdv)	0.25	0.25	1.34	**0.61**
E	Emission rate (lb/hr)	0.68	0.70	3.66	**1.68**
E	Emission rate (lb/ton of trona)	0.0023	0.0023	0.0122	**0.0056**

BDL indicates value was below the detection limit. A value of zero was used for BDL in the average calculation.
[1] Process conditions provided by Solvay Minerals, Inc.
[2] Gas conditions are taken from near simultaneous BIF 0011 formaldehyde test.

RESULTS

Table 2-3:
EP 1&2 Calciner Stack - Aldehydes and Ketones

Run No.		1	2	3	Average
Date (1995)		December 14	December 14	December 14	
Start Time (approx.)		09:41	12:10	14:22	
Stop Time (approx.)		11:28	13:55	16:06	
Process Conditions					
	Feed Rate (tons/hr)[1]	300	300	300	**300**
Gas Conditions					
T_s	Temperature (°F)	380	374	380	**378**
B_{wc}	Moisture (volume %)	25.09	24.88	24.54	**24.84**
O_2	Oxygen (dry volume %)	13.5	13.6	13.6	**13.6**
CO_2	Carbon dioxide (dry volume %)	8.4	8.3	8.1	**8.3**
Volumetric Flow Rate					
Q_a	Actual conditions (acfm)	430,500	438,300	436,900	**435,200**
Q_{std}	Standard conditions (dscfm)	161,700	166,300	165,400	**164,500**
Formaldehyde					
C	Concentration (lb/dscf)	4.82E-08	4.76E-09	1.33E-08	**2.21E-08**
C	Concentration (µg/dscm)	7.71E+02	7.63E+01	2.14E+02	**3.54E+02**
C	Concentration (ppmdv)	0.62	0.06	0.17	**0.28**
E	Emission rate (lb/hr)	0.47	0.05	0.13	**0.22**
E	Emission rate (lb/ton of trona)	0.0016	0.0002	0.0004	**0.0007**
Acetaldehyde					
C	Concentration (lb/dscf)	1.07E-09	1.70E-09	5.74E-09	**2.83E-09**
C	Concentration (µg/dscm)	1.72E+01	2.72E+01	9.19E+01	**4.54E+01**
C	Concentration (ppmdv)	0.01	0.01	0.05	**0.02**
E	Emission rate (lb/hr)	0.01	0.02	0.06	**0.03**
E	Emission rate (lb/ton of trona)	0.0000	0.0001	0.0002	**0.0001**
Propionaldehyde					
C	Concentration (lb/dscf)	BDL	BDL	4.47E-09	**1.49E-09**
C	Concentration (µg/dscm)	BDL	BDL	7.17E+01	**2.39E+01**
C	Concentration (ppmdv)	BDL	BDL	0.03	**0.01**
E	Emission rate (lb/hr)	BDL	BDL	0.04	**0.01**
E	Emission rate (lb/ton of trona)	BDL	BDL	0.0001	**0.0000**
Acrolein					
C	Concentration (lb/dscf)	1.61E-08	1.86E-08	7.12E-08	**3.53E-08**
C	Concentration (µg/dscm)	2.58E+02	2.97E+02	1.14E+03	**5.65E+02**
C	Concentration (ppmdv)	0.11	0.13	0.49	**0.24**
E	Emission rate (lb/hr)	0.16	0.19	0.71	**0.35**
E	Emission rate (lb/ton of trona)	0.0005	0.0006	0.0024	**0.0012**
Acetone					
C	Concentration (lb/dscf)	BDL	BDL	BDL	**BDL**
C	Concentration (µg/dscm)	BDL	BDL	BDL	**BDL**
C	Concentration (ppmdv)	BDL	BDL	BDL	**BDL**
E	Emission rate (lb/hr)	BDL	BDL	BDL	**BDL**
E	Emission rate (lb/ton of trona)	BDL	BDL	BDL	**BDL**
2-Butanone					
C	Concentration (lb/dscf)	BDL	BDL	BDL	**BDL**
C	Concentration (µg/dscm)	BDL	BDL	BDL	**BDL**
C	Concentration (ppmdv)	BDL	BDL	BDL	**BDL**
E	Emission rate (lb/hr)	BDL	BDL	BDL	**BDL**
E	Emission rate (lb/ton of trona)	BDL	BDL	BDL	**BDL**

BDL indicates value was below the detection limit. A value of zero was used for BDL in the average calculation.

[1] Process conditions provided by Solvay Minerals, Inc.

RESULTS

Table 2-3:
CA 1 & 2 Calciner Stack - Total Non-Methane/Ethane Hydrocarbons

Run No.		1	2	3	Average
Date (1996)		July 26	July 26	July 26	
Start Time (approx.)		14:38	16:55	18:54	
Stop Time (approx.)		15:38	17:55	19:54	
Process Conditions[1]					
	Feed rate (ton of trona/hr)	282	280	278	**280**
Gas Conditions[2]					
T_s	Temperature (°F)	372	373	374	**373**
O_2	Oxygen (dry volume %)	13.8	13.6	13.7	**13.7**
CO_2	Carbon Dioxide (dry volume %)	8.0	8.0	7.9	**8.0**
B_{wo}	Moisture (volume %)	24.93	25.45	25.96	**25.45**
Q_{std}	Standard conditions (dscfm)	152,600	152,300	150,000	**151,633**
Total Hydrocarbons (as propane)					
C	Concentration (ppmdv)	627.8	528.5	481.8	**546.0**
E	Emission rate (lb/hr)	657.8	552.7	496.3	**569.0**
E	Emission rate (lb/ton of trona)	2.33	1.97	1.79	**2.03**
Methane					
C	Concentration (ppmdv)	343.1	331.4	346.4	**340.3**
E	Emission rate (lb/hr)	130.8	126.1	129.8	**128.9**
E	Emission rate (lb/ton of trona)	0.464	0.450	0.467	**0.460**
Ethane					
C	Concentration (ppmdv)	37.4	30.6	35.3	**34.4**
E	Emission rate (lb/hr)	26.7	21.8	24.8	**24.4**
E	Emission rate (lb/ton of trona)	0.095	0.078	0.089	**0.087**
Total Non-Methane/Ethane Hydrocarbons (as propane)					
E	Emission rate (lb/hr)	500.3	404.8	341.8	**415.6**
E	Emission rate (lb/ton of trona)	1.774	1.446	1.229	**1.483**

[1] Feed rate provided by Solvay Minerals, Inc.
[2] Gas conditions taken from near simultaneous velocity and moisture testing.

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RESULTS

Table 2-4:
CA 1 & 2 Calciner Stack - Volatile Organic Compounds

Run No.		1	2	3	Average
Date (1995)		July 26	July 26	July 26	
Start Time (approx.)		14:38	16:56	18:49	
Stop Time (approx.)		16:32	18:12	20:21	
Process Conditions[1]					
	Feed rate (ton of trona/hr)	282	280	278	**280**
Gas Conditions[2]					
B_{wo}	Moisture (% by volume)	24.93	25.45	25.96	**25.45**
Q_{std}	Volumetric flow rate, standard (dscfm)	152,600	152,300	150,000	**151,633**
1,1,1-Trichloroethane					
C	Concentration (ppmdv)	BDL	BDL	BDL	**BDL**
E	Emission rate (lb/hr)	BDL	BDL	BDL	**BDL**
E	Emission rate (lb/ton of trona)	BDL	BDL	BDL	**BDL**
1,3 Butadiene					
C	Concentration (ppmdv)	19.23	15.10	14.51	**16.28**
E	Emission rate (lb/hr)	24.72	19.38	18.33	**20.81**
E	Emission rate (lb/ton of trona)	0.0877	0.0692	0.0659	**0.0743**
2-Butanone					
C	Concentration (ppmdv)	2.82	2.79	8.70	**4.77**
E	Emission rate (lb/hr)	4.84	4.77	14.65	**8.09**
E	Emission rate (lb/ton of trona)	0.0172	0.0170	0.0527	**0.0290**
Acrylonitrile					
C	Concentration (ppmdv)	1.59	0.48	1.40	**1.16**
E	Emission rate (lb/hr)	2.00	0.61	1.74	**1.45**
E	Emission rate (lb/ton of trona)	0.0071	0.0022	0.0063	**0.0052**
Benzene					
C	Concentration (ppmdv)	7.03	6.55	5.86	**6.48**
E	Emission rate (lb/hr)	13.05	12.13	10.70	**11.96**
E	Emission rate (lb/ton of trona)	0.0463	0.0433	0.0385	**0.0427**
Ethyl Benzene					
C	Concentration (ppmdv)	0.64	0.83	0.96	**0.81**
E	Emission rate (lb/hr)	1.61	2.09	2.38	**2.03**
E	Emission rate (lb/ton of trona)	0.0057	0.0075	0.0086	**0.0073**
Hexane					
C	Concentration (ppmdv)	3.05	2.16	2.26	**2.49**
E	Emission rate (lb/hr)	6.25	4.41	4.54	**5.07**
E	Emission rate (lb/ton of trona)	0.0222	0.0158	0.0163	**0.0181**
Methylene Chloride					
C	Concentration (ppmdv)	BDL	BDL	BDL	**BDL**
E	Emission rate (lb/hr)	BDL	BDL	BDL	**BDL**
E	Emission rate (lb/ton of trona)	BDL	BDL	BDL	**BDL**
Styrene					
C	Concentration (ppmdv)	0.13	0.89	0.88	**0.63**
E	Emission rate (lb/hr)	0.33	2.19	2.14	**1.55**
E	Emission rate (lb/ton of trona)	0.0012	0.0078	0.0077	**0.0056**
Toluene					
C	Concentration (ppmdv)	2.01	1.94	4.78	**2.91**
E	Emission rate (lb/hr)	4.40	4.25	10.29	**6.31**
E	Emission rate (lb/ton of trona)	0.0156	0.0152	0.0370	**0.0226**
Trichloroethene					
C	Concentration (ppmdv)	2.05	7.57	0.50	**3.37**
E	Emission rate (lb/hr)	6.41	23.58	1.53	**10.50**
E	Emission rate (lb/ton of trona)	0.0227	0.0842	0.0055	**0.0375**
Xylene					
C	Concentration (ppmdv)	2.29	3.31	3.00	**2.87**
E	Emission rate (lb/hr)	5.78	8.34	7.44	**7.19**
E	Emission rate (lb/ton of trona)	0.0205	0.0298	0.0267	**0.0257**

BDL indicates value was below the detection limit. A value of zero was used for BDL in the average calculation.
[1] Process conditions provided by Solvay Minerals, Inc.
[2] Gas conditions are taken from near simultaneous velocity and moisture testing.

RESULTS

Table 2-3:
CA 1&2 Calciner Stack - Total Hydrocarbons

Run No.		1	2	3	Average
Date (1996)		November 13	November 13	November 13	
Start Time (approx.)		11:51	13:38	15:41	
Stop Time (approx.)		13:27	15:26	17:27	
Process Conditions[1]					
Feed rate (ton/hr)		135	135	135	**135**
Gas Conditions[2]					
T_s	Temperature (°F)	238	282	333	**284**
O_2	Oxygen (dry volume %)	17.8	15.1	15.4	**16.1**
CO_2	Carbon Dioxide (dry volume %)	3.3	6.1	5.8	**5.1**
B_{wo}	Moisture (volume %)	11.85	19.94	21.08	**17.62**
Q_{std}	Standard conditions (dscfm)	183,700	142,300	155,100	**160,367**
Total Hydrocarbons (as propane)					
C	Concentration (ppmdv)	400.9	601.0	647.8	**549.9**
E	Emission rate (lb/hr)	505.6	587.3	689.9	**594.3**
E	Emission rate (lb/ton of trona)	3.7455	4.3503	5.1105	**4.4021**

[1] Process conditions obtained from Solvay Minerals, Inc.
[2] Gas conditions obtained from concurrent Method 1-4 testing.

RESULTS

Table 2-4:
CA 1&2 Calciner Stack - GCMS HAPs

Run No.		1	2	3	Average
Date (1996)		November 13	November 13	November 13	
Start Time (approx.)		11:51	13:38	15:41	
Stop Time (approx.)		13:27	15:26	17:27	
Process Conditions[1]					
Feed rate (ton of trona/hr)		135	135	135	**135**
Volumetric Flow Rate[2]					
Q_a	Actual conditions (acfm)	349,100	316,300	373,900	**346,400**
Q_{std}	Standard conditions (dscfm)	183,700	142,300	155,100	**160,400**
Benzene					
C	Concentration (ppm)	1.07	2.63	2.70	**2.13**
E	Emission rate (lb/hr)	2.39	4.55	5.09	**4.01**
E	Emission rate (lb/ton of trona)	0.0177	0.0337	0.0377	**0.0297**
1,3 Butadiene[3]					
C	Concentration (ppm)	0.10	0.02	NF	**0.04**
E	Emission rate (lb/hr)	0.15	0.02	NF	**0.06**
E	Emission rate (lb/ton of trona)	0.0011	0.0002	BDL	**0.0004**
Ethylbenzene					
C	Concentration (ppm)	0.24	0.40	0.55	**0.40**
E	Emission rate (lb/hr)	0.73	0.94	1.41	**1.03**
E	Emission rate (lb/ton of trona)	0.0054	0.0070	0.0104	**0.0076**
2-Butanone					
C	Concentration (ppm)	0.09	0.46	0.58	**0.38**
E	Emission rate (lb/hr)	0.19	0.73	1.01	**0.64**
E	Emission rate (lb/ton of trona)	0.0014	0.0054	0.0075	**0.0048**
Hexane					
C	Concentration (ppm)	0.03	0.06	0.08	**0.06**
E	Emission rate (lb/hr)	0.07	0.11	0.17	**0.12**
E	Emission rate (lb/ton of trona)	0.0005	0.0008	0.0012	**0.0009**
Styrene					
C	Concentration (ppm)	0.08	0.30	0.26	**0.21**
E	Emission rate (lb/hr)	0.24	0.69	0.65	**0.53**
E	Emission rate (lb/ton of trona)	0.0018	0.0051	0.0048	**0.0039**
Toluene					
C	Concentration (ppm)	0.45	1.09	1.20	**0.91**
E	Emission rate (lb/hr)	1.19	2.23	2.67	**2.03**
E	Emission rate (lb/ton of trona)	0.0088	0.0165	0.0198	**0.0150**
Xylene					
C	Concentration (ppm)	1.22	1.84	2.08	**1.71**
E	Emission rate (lb/hr)	3.70	4.33	5.33	**4.46**
E	Emission rate (lb/ton of trona)	0.0274	0.0321	0.0395	**0.0330**
Total HAPs					
E	Emission rate (lb/hr)	8.66	13.61	16.34	**12.87**
E	Emission rate (lb/ton of trona)	0.0642	0.1008	0.1210	**0.0953**

[1] Process conditions provided by Solvay Minerals, Inc.
[2] Flow conditions obtained from concurrent Method 1-4 testing.
[3] NF indicates the compound was not found. A value of zero is used for NF to calculate the average.

RESULTS

Table 2-5:
CA 1&2 Calciner Stack - Total Hydrocarbons

Run No.		4	5	6	Average
Date (1996)		November 14	November 14	November 14	
Start Time (approx.)		09:17	10:45	12:19	
Stop Time (approx.)		10:34	12:09	13:40	
Process Conditions[1]					
Feed rate (ton/hr)		152	152	152	**152**
Gas Conditions[2]					
T_s	Temperature (°F)	322	322	322	**322**
O_2	Oxygen (dry volume %)	15.7	15.7	16.0	**15.8**
CO_2	Carbon Dioxide (dry volume %)	5.7	5.7	5.4	**5.6**
B_{wo}	Moisture (volume %)	18.93	19.87	19.20	**19.33**
Q_{std}	Standard conditions (dscfm)	140,800	142,700	140,400	**141,300**
Total Hydrocarbons (as propane)					
C	Concentration (ppmdv)	374.8	379.3	338.4	**364.2**
E	Emission rate (lb/hr)	362.4	371.7	326.3	**353.5**
E	Emission rate (lb/ton of trona)	2.3843	2.4453	2.1466	**2.3254**

1 Process conditions obtained from Solvay Minerals, Inc.
2 Gas conditions obtained from concurrent Method 1-4 testing.

RESULTS

Table 2-6:
CA 1&2 Calciner Stack - GCMS HAPs

Run No.		4	5	6	Average
Date (1996)		November 14	November 14	November 14	
Start Time (approx.)		09:17	10:45	12:19	
Stop Time (approx.)		10:34	12:09	13:40	
Process Conditions[1]					
Feed rate (ton of trona/hr)		152	152	152	**152**
Volumetric Flow Rate[2]					
Q_a	Actual conditions (acfm)	331,600	339,800	331,600	**334,300**
Q_{std}	Standard conditions (dscfm)	140,800	142,700	140,400	**141,300**
Benzene					
C	Concentration (ppm)	1.33	1.42	1.22	**1.32**
E	Emission rate (lb/hr)	2.28	2.46	2.08	**2.28**
E	Emission rate (lb/ton of trona)	0.0150	0.0162	0.0137	**0.0150**
1,3 Butadiene					
C	Concentration (ppm)	0.09	0.10	0.11	**0.10**
E	Emission rate (lb/hr)	0.11	0.12	0.13	**0.12**
E	Emission rate (lb/ton of trona)	0.0007	0.0008	0.0009	**0.0008**
Ethylbenzene					
C	Concentration (ppm)	0.09	0.10	0.09	**0.09**
E	Emission rate (lb/hr)	0.21	0.24	0.21	**0.22**
E	Emission rate (lb/ton of trona)	0.0014	0.0016	0.0014	**0.0014**
2-Butanone					
C	Concentration (ppm)	0.40	0.40	0.36	**0.39**
E	Emission rate (lb/hr)	0.63	0.64	0.57	**0.61**
E	Emission rate (lb/ton of trona)	0.0042	0.0042	0.0037	**0.0040**
Hexane					
C	Concentration (ppm)	0.08	0.07	0.07	**0.07**
E	Emission rate (lb/hr)	0.15	0.13	0.13	**0.14**
E	Emission rate (lb/ton of trona)	0.0010	0.0009	0.0009	**0.0009**
Styrene					
C	Concentration (ppm)	0.12	0.13	0.09	**0.11**
E	Emission rate (lb/hr)	0.27	0.30	0.20	**0.26**
E	Emission rate (lb/ton of trona)	0.0018	0.0020	0.0013	**0.0017**
Toluene					
C	Concentration (ppm)	0.62	0.65	0.59	**0.62**
E	Emission rate (lb/hr)	1.25	1.33	1.19	**1.26**
E	Emission rate (lb/ton of trona)	0.0082	0.0088	0.0078	**0.0083**
Xylene					
C	Concentration (ppm)	0.81	0.80	0.80	**0.80**
E	Emission rate (lb/hr)	1.89	1.89	1.86	**1.88**
E	Emission rate (lb/ton of trona)	0.0124	0.0124	0.0122	**0.0123**
Total HAPs					
E	Emission rate (lb/hr)	6.79	7.11	6.37	**6.76**
E	Emission rate (lb/ton of trona)	0.0447	0.0468	0.0419	**0.0445**

[1] Process conditions provided by Solvay Minerals, Inc.
[2] Flow conditions obtained from concurrent Method 1-4 testing.

RESULTS

Table 2-1:
CA 1 & 2 Stack - Particulate, M5/202

Run No.		1	2	5	Average
Date (1997)		April 9	April 10	April 14	
Start Time (approx.)		13:10	10:40	13:40	
Stop Time (approx.)		15:25	12:52	15:50	
Process Conditions[1]					
	Feed Rate (tons/hr)	257	255	205	**239**
Gas Conditions					
T_s	Temperature (°F)	318	323	314	**318**
B_{wo}	Moisture (volume %)	22.99	22.74	20.60	**22.11**
O_2	Oxygen (dry volume %)	13.5	12.7	14.4	**13.5**
CO_2	Carbon dioxide (dry volume %)	8.4	8.3	7.0	**7.9**
Volumetric Flow Rate					
Q_a	Actual conditions (acfm)	356,300	380,200	337,200	**357,900**
Q_{std}	Standard conditions (dscfm)	145,700	156,100	144,300	**148,700**
Front Half Particulate					
C	Concentration (gr/dscf)	0.0058	0.0051	0.0026	**0.0045**
E	Emission rate (lb/hr)	7.23	6.83	3.25	**5.77**
E	Emission rate (lb/ton of trona)	0.0281	0.0268	0.0158	**0.0236**
Back Half Organic Particulate					
C	Concentration (gr/dscf)	0.0216	0.0170	0.0183	**0.0189**
E	Emission rate (lb/hr)	26.98	22.69	22.60	**24.09**
E	Emission rate (lb/ton of trona)	0.1050	0.0890	0.1102	**0.1014**
Back Half Inorganic Particulate					
C	Concentration (gr/dscf)	0.0097	0.0089	0.0081	**0.0089**
E	Emission rate (lb/hr)	12.06	11.95	10.01	**11.34**
E	Emission rate (lb/ton of trona)	0.0469	0.0469	0.0488	**0.0475**
Back Half Total Particulate					
C	Concentration (gr/dscf)	0.0313	0.0259	0.0264	**0.0278**
E	Emission rate (lb/hr)	39.03	34.64	32.61	**35.43**
E	Emission rate (lb/ton of trona)	0.1519	0.1359	0.1591	**0.1489**
Front and Back Half Inorganic Particulate					
C	Concentration (gr/dscf)	0.0154	0.0140	0.0107	**0.0134**
E	Emission rate (lb/hr)	19.28	18.78	13.26	**17.11**
E	Emission rate (lb/ton of trona)	0.0750	0.0736	0.0647	**0.0711**

[1] Process conditions provided by Solvay Minerals, Inc.

RESULTS

Table 2-2:
CA 1 & 2 Stack - Particulate, M201A

Run No.		**1**
Date (1997)		April 10
Start Time (approx.)		10:52
Stop Time (approx.)		13:52
Process Conditions[1]		
Feed rate (tons/hr)		255
Gas Conditions		
O_2	Oxygen (dry volume %)	12.7
CO_2	Carbon dioxide (dry volume %)	8.3
T_s	Temperature (°F)	320
B_{wo}	Moisture (volume %)	23.10
Volumetric Flow Rate		
Q_a	Stack, actual conditions (acfm)	360,300
Q_{std}	Stack, standard conditions (dscfm)	147,800
Q_{ac}	Cyclone, actual conditions (acfm)	0.660
Q_{cstd}	Cyclone, standard conditions (dscfm)	0.271
Total Particulate		
C	Concentration (gr/dscf)	0.0354
E	Emission rate (lb/hr)	44.812
E	Emission rate (lb/ton of trona)	0.1757
PM_{10}		
C	Concentration (gr/dscf)	0.0344
E	PM_{10} emission rate (lb/hr)	43.622
E	Emission rate (lb/ton of trona)	0.1711

Acceptance Criteria (M201A):

For a run, 9.0 $\mu m \leq D_{50} \leq 11.0\ \mu m$
and either:
For all sampling points in a run, ΔPmin acceptable $\leq \Delta P < \Delta P$max acceptable
Or:
80% ≤ %I ≤ 120% and no more than one (1) sampling point with a $\Delta P > \Delta P$ max acceptable or $\Delta P < \Delta P$ min acceptable.

D_{50} min	Minimum 50% cut point for run(μm)	9.72
D_{50} max	Maximum 50% cut point for run (μm)	13.62
D_{50}	Overall 50% cut point for run (μm)	10.1
ΔP min acc	Minimum acceptable velocity head (in H_2O)	0.19
ΔP min	Minimum velocity head for run (in H_2O)	0.34
ΔP max acc	Maximum acceptable velocity head (in H_2O)	0.70
ΔP max	Maximum velocity head for run (in H_2O)	0.54
# ΔP unacc.	Number of points outside acceptable range	0
%I	Overall percent isokinetic for run (%)	97.9
% < PM_{10}	Percent less than than 10 micron (lb/hr)	97.3

[1] Process conditions provided by Solvay Minerals, Inc.

RESULTS

Table 2-3:
CA 1 & 2 Stack - Cascade Impactor Particle Size Analysis

Run No.	1
Date (1997)	April 14
Start Time (approx.)	10:29 AM
Stop Time (approx.)	5:49 PM

	Final Wt (g)	Tare Wt (g)	M_n Net Wt (g)	Percent of Total	C (gr/dscf)	Terminal Velocity V_{si} (ft/s)
Stage-1	0.34273	0.33966	0.00307	69.93	0.0004	1.67
Stage-2	0.33609	0.33608	0.00001	0.23	0.0000	2.85
Stage-3	0.35104	0.35096	0.00008	1.82	0.0000	4.98
Stage-4	0.32965	0.32952	0.00013	2.96	0.0000	7.77
Stage-5	0.34820	0.34783	0.00037	8.43	0.0001	13.92
Stage-6	0.33186	0.33121	0.00065	14.81	0.0001	34.72
Stage-7	0.34928	0.34921	0.00007	1.59	0.0000	65.69
Stage-8	0.33460	0.33449	0.00011	2.51	0.0000	120.20
Filter	0.39707	0.39717	-0.00010	-2.28	0.0000	1.67
Totals			0.00439			

Equivalent Particle Diameter EPD_i (μm)	Cumulative Percent < Indicated Size	Grain Loading Dm / $(DlogD)_i$	Geometric Mean Diameter (GMD)	Particle Reynold's Number R_e (P)	Particle Knudsen Number K_n	Orifice Flow Reynold's Number R_e (f)
6.78	30.07	0.0005	18.42	0.098	0.036	192.5
6.28	29.84	0.0000	6.53	0.155	0.039	251.6
3.89	28.02	0.0001	4.94	0.168	0.063	332.6
2.60	25.06	0.0001	3.18	0.175	0.094	415.4
1.35	16.63	0.0002	1.88	0.164	0.180	556.1
0.71	1.82	0.0003	0.98	0.212	0.346	878.2
0.33	0.23	0.0000	0.48	0.188	0.741	1208.0
0.16	-2.28	0.0000	0.23	0.164	1.554	1634.1
Filter	0.00	0.0000	0.11		3.108	

NOTE: (GMD) and $(DM/DlogD)_i$ are determined assuming the largest particle diameter in the size distribution is 50 μm.

RESULTS

Table 2-4:
CA 1&2 Calciner Stack - Particulate

Run No.		1	2	3	Average
Date (1998)		January 22	January 22	January 22	
Start Time (approx.)		08:55	11:05	12:50	
Stop Time (approx.)		10:04	12:11	14:04	
Process Conditions[1]					
	Feed rate (tons/hr)	295	289	287	**290**
	Fuel flow (scfm)	5,845	5,658	5,602	**5,702**
Gas Conditions					
T_s	Temperature (°F)	336	337	339	**337**
B_{wo}	Moisture (volume %)	23.75	22.73	22.57	**23.02**
O_2	Oxygen (dry volume %)	13.4	13.8	13.8	**13.7**
CO_2	Carbon dioxide (dry volume %)	8.4	8.0	8.0	**8.1**
Volumetric Flow Rate					
Q_a	Actual conditions (acfm)	446,600	435,300	451,400	**444,400**
Q_{std}	Standard conditions (dscfm)	178,600	176,100	182,700	**179,100**
Front Half Particulate					
C	Concentration (gr/dscf)	0.0021	0.0027	0.0017	**0.0022**
E	Emission rate (lb/hr)	3.2	4.0	2.6	**3.3**
E	Emission rate (lb/ton of trona)	0.0110	0.0139	0.0092	**0.0114**
Back Half Organic Particulate					
C	Concentration (gr/dscf)	0.0182	0.0285	0.0174	**0.0214**
E	Emission rate (lb/hr)	27.9	43.0	27.2	**32.7**
E	Emission rate (lb/ton of trona)	0.0946	0.1487	0.0948	**0.1127**
Back Half Inorganic Particulate					
C	Concentration (gr/dscf)	0.0031	0.0044	0.0024	**0.0033**
E	Emission rate (lb/hr)	4.7	6.6	3.8	**5.0**
E	Emission rate (lb/ton of trona)	0.0161	0.0228	0.0131	**0.0173**
Back Half Total Particulate					
C	Concentration (gr/dscf)	0.0213	0.0328	0.0198	**0.0247**
E	Emission rate (lb/hr)	32.7	49.6	31.0	**37.7**
E	Emission rate (lb/ton of trona)	0.1107	0.1715	0.1080	**0.1300**
Front and Back Half Inorganic Particulate					
C	Concentration (gr/dscf)	0.0052	0.0070	0.0041	**0.0054**
E	Emission rate (lb/hr)	8.0	10.6	6.4	**8.3**
E	Emission rate (lb/ton of trona)	0.0271	0.0367	0.0223	**0.0287**

[1] Process conditions obtained from Solvay Minerals, Inc.

RESULTS

Table 2-5:
CA 1&2 Calciner Stack - Total Non-Methane Hydrocarbons

Run No.		1	2	3	Average
Date (1998)		January 22	January 22	January 22	
Start Time (approx.)		08:54	11:07	12:49	
Stop Time (approx.)		09:54	12:07	13:49	
Process Conditions[1]					
	Feed rate (tons/hr)	295	289	287	**290**
	Fuel flow (scfm)	5,845	5,658	5,602	**5,702**
Gas Conditions[2]					
T_s	Temperature (°F)	336	337	339	**337**
O_2	Oxygen (dry volume %)	13.4	13.8	13.8	**13.6**
CO_2	Carbon Dioxide (dry volume %)	8.4	8.0	8.0	**8.1**
B_{wo}	Moisture (volume %)	23.75	22.73	22.57	**23.02**
Q_{std}	Standard conditions (dscfm)	178,600	176,100	182,700	**179,133**
Total Hydrocarbons (as propane)					
C	Concentration (ppmdv)	401.6	416.2	310.3	**376.1**
E	Emission rate (lb/hr)	492.6	503.3	389.3	**461.7**
E	Emission rate (lb/ton of trona)	1.6683	1.7406	1.3568	**1.5885**
Methane					
C	Concentration (ppmdv)	788.7	662.0	604.5	**685.1**
E	Emission rate (lb/hr)	351.9	291.2	275.9	**306.3**
E	Emission rate (lb/ton of trona)	1.1918	1.0071	0.9615	**1.0535**
Total Non-Methane Hydrocarbons					
E	Emission rate (lb/hr)	140.7	212.1	113.4	**155.4**
E	Emission rate (lb/ton of trona)	0.4765	0.7335	0.3952	**0.5351**

[1] Process conditions obtained from Solvay Minerals, Inc.
[1] Gas conditions obtained from concurrent Method 5/202 testing.

RESULTS

Table 2-6:
CA 1&2 Calciner Stack - Nitrogen Oxides & Carbon Monoxide

Run No.		1	2	3	Average
Date (1998)		January 22	January 22	January 22	
Start Time (approx.)		08:54	11:07	12:49	
Stop Time (approx.)		09:54	12:07	13:49	
Process Conditions[1]					
	Feed rate (tons/hr)	295	289	287	**290**
	Fuel flow (scfm)	5,845	5,658	5,602	**5,702**
Gas Conditions[2]					
T_s	Temperature (°F)	336	337	339	**337**
O_2	Oxygen (dry volume %)	13.4	13.8	13.8	**13.6**
CO_2	Carbon Dioxide (dry volume %)	8.4	8.0	8.0	**8.1**
B_{wo}	Moisture (volume %)	23.75	22.73	22.57	**23.02**
Q_{std}	Standard conditions (dscfm)	178,600	176,100	182,700	**179,133**
Nitrogen Oxides					
C	Concentration (ppmdv)	4.2	3.1	3.4	**3.6**
E	Emission rate (lb/hr)	5.4	3.9	4.4	**4.6**
E	Emission rate (lb/ton of trona)	0.0183	0.0133	0.0154	**0.0157**
Carbon Monoxide					
C	Concentration (ppmdv)	1189.3	1212.7	992.4	**1131.5**
E	Emission rate (lb/hr)	926.5	931.5	790.9	**882.9**
E	Emission rate (lb/ton of trona)	3.1379	3.2215	2.7561	**3.0385**

[1] Process conditions obtained from Solvay Minerals, Inc.
[1] Gas conditions obtained from concurrent Method 5/202 testing.

PROJECT OVERVIEW

Table 1-2:
CA-3 Calciner Profile

Unit Identification Number	AQD No. 48, CA-3
Process	Calciner
Fuel	Natural Gas
Heat Content	1061 Btu/ft^3.
Stack Height	180 feet
Stack Diameter	125.5 inches
Diameters to Upstream Disturbance	Approximately 9.0
Diameters to Downstream Disturbance	Approximately 5.5
Primary Control Equipment	Flakt ESP

Chemical abstract service (CAS) numbers and molecular weights are listed in Table 1-3.

Table 1-3:
Compound (CAS) Numbers

Compound Name	Molecular Weight	CAS No.
Nitrogen Oxides (NO_x)	46.01	10102-44-0
Carbon Monoxide (CO)	28.01	630-08-0

Table 1-4:
Summary of Test Results CA 1 & 2 at 336 Tons per Hour

Source Constituent	Sampling Method	Average Emission (lb/hr)	Average Emission (lb/ton of trona)	Permit Limit[1] (lb/hr)
CA 1&2 Calciner				
Particulate (total inorganic)	EPA M 5/202	8.75	0.0260	22.30
Nitrogen Oxides	EPA M 7E	22.0	0.0654	30.00
Carbon Monoxide	EPA M 10	1,295	3.6553	N/A

[1] Permit limints obtained from Solvay Minerals, Inc. permit No. CT-1347.

Summary of Results

Table 1 – Calciner Nos. 1 & 2 Stack, Particulate Emissions

Test Parameters	**Run 1**	**Run 2**	**Run 3**	**Average**
Date (2000)	5/3	5/3	5/3	
Start Time	10:57	14:03	16:43	
Stop Time	12:33	15:47	18:57	
Process Conditions*				
CA-1 Production Rate (tons/hr)	183	183	186	**184**
CA-2 Production Rate (tons/hr)	135	135	135	**135**
Total Production Rate (tons/hr)	318	318	321	**319**
Gas Conditions				
Temperature (^{o}F)	332	338	331	**334**
Volumetric Flow Rate (acfm)	406,100	412,100	403,000	**407,100**
Volumetric Flow Rate (scfm)	213,200	214,500	211,700	**213,100**
Volumetric Flow Rate (dscfm)	150,300	151,500	149,600	**150,500**
Carbon Dioxide (% dry)	10.7	10.2	10.5	**10.5**
Oxygen (% dry)	11.7	11.9	11.9	**11.9**
Moisture (%)	29.6	29.4	29.3	**29.4**
Front Half Particulate				
Concentration (grains/dscf)	0.00239	0.00171	0.00192	**0.00201**
Emission Rate (lb/hr)	3.08	2.23	2.46	**2.59**
Back Half Organic Particulate				
Concentration (grains/dscf)	0.0206	0.0175	0.0164	**0.0170**
Emission Rate (lb/hr)	26.6	22.8	21.0	**21.9**
Back Half Inorganic Particulate				
Concentration (grains/dscf)	0.00569	0.00490	0.00485	**0.00514**
Emission Rate (lb/hr)	7.33	6.36	6.21	**6.63**
Back Half Total Particulate				
Concentration (grains/dscf)	0.0263	0.0224	0.0213	**0.0233**
Emission Rate (lb/hr)	33.9	29.1	27.3	**30.1**
Front and Back Half Inorganic Particulate				
Concentration (grains/dscf)	0.00808	0.00661	0.00676	**0.00715**
Emission Rate (lb/hr)	10.4	8.59	8.67	**9.22**

* Process conditions provided by Solvay Minerals Inc.

AIRTECH Environmental Services Inc.

Table 2 – Calciner Nos. 1 & 2 Stack, Nitrogen Oxides Emissions

Test Parameters	**Run 2**	**Run 4**	**Run 5**	**Average**
Date (2000)	5/3	5/3	5/3	
Start Time	14:30	18:05	19:16	
Stop Time	15:30	19:05	20:16	
Process Conditions*				
CA-1 Production Rate (tons/hr)	183	185	184	**184**
CA-2 Production Rate (tons/hr)	135	135	135	**135**
Total Production Rate (tons/hr)	318	320	319	**319**
Gas Conditions				
Temperature (°F)	338	331	333	**334**
Volumetric Flow Rate (acfm)	412,100	403,000	394,800	**403,300**
Volumetric Flow Rate (scfm)	214,500	211,700	207,000	**211,100**
Volumetric Flow Rate (dscfm)	151,500	149,600	148,000	**149,700**
Carbon Dioxide (% dry)	10.2	10.5	10.5	**10.4**
Oxygen (% dry)	11.9	11.9	11.9	**11.9**
Moisture (%)	29.4	29.3	28.5	**29.1**
Nitrogen Oxides				
Concentration (ppmdv)	22.0	23.5	23.1	**22.8**
Emission Rate (lb/hr)	23.9	25.1	24.5	**24.5**

* Process conditions provided by Solvay Minerals Inc.

AIRTECH Environmental Services Inc.

Table 3 – Calciner Nos. 1 & 2 Stack, Carbon Monoxide Emissions

Test Parameters	**Run 1**	**Run 2**	**Run 3**	**Average**
Date (2000)	5/4	5/4	5/4	
Start Time	9:27	10:41	11:55	
Stop Time	10:27	11:41	12:55	
Process Conditions*				
CA-1 Production Rate (tons/hr)	185	184	186	**185**
CA-2 Production Rate (tons/hr)	135	135	136	**135**
Total Production Rate (tons/hr)	320	319	322	**320**
Gas Conditions				
Temperature (°F)	327	329	332	**329**
Volumetric Flow Rate (acfm)	382,100	394,000	393,400	**389,800**
Volumetric Flow Rate (scfm)	202,500	208,300	207,400	**206,100**
Volumetric Flow Rate (dscfm)	145,400	143,800	145,200	**144,800**
Carbon Dioxide (% dry)	10.7	10.1	10.7	**10.5**
Oxygen (% dry)	11.7	12.2	11.5	**11.8**
Moisture (%)	28.3	31.0	30.0	**29.8**
Carbon Monoxide				
Concentration (ppmdv)	533	532	1016	**694**
Emission Rate (lb/hr)	338	334	643	**438**

* Process conditions provided by Solvay Minerals Inc.

AIRTECH Environmental Services Inc.

Summary of Results

Table 1 – No. 1 and No. 2 Calciners Stack, Particulate Emissions

Test Parameters	**Run 1**	**Run 3**	**Run 4**	**Average**
Date (2001)	9/13	9/13	9/13	
Start Time	8:03	15:04	17:30	
Stop Time	9:42	16:55	19:02	
Gas Conditions				
Temperature (°F)	330	327	325	**327**
Volumetric Flow Rate (acfm)	361,100	347,200	341,100	**349,800**
Volumetric Flow Rate (scfm)	193,500	186,900	183,900	**188,100**
Volumetric Flow Rate (dscfm)	136,130	131,680	130,410	**132,740**
Carbon Dioxide (% dry)	10.2	10.1	10.3	**10.2**
Oxygen (% dry)	12.3	12.2	12.3	**12.2**
Moisture (%)	29.7	29.6	29.1	**29.4**
Front Half Particulate				
Concentration (grains/dscf)	0.00106	0.00146	0.000950	**0.00115**
Emission Rate (lb/hr)	1.23	1.65	1.06	**1.31**
Back Half Organic Particulate				
Concentration (grains/dscf)	0.0158	0.0244	0.0157	**0.0186**
Emission Rate (lb/hr)	18.4	27.5	17.5	**21.2**
Back Half Inorganic Particulate				
Concentration (grains/dscf)	0.00528	0.00535	0.00539	**0.00534**
Emission Rate (lb/hr)	6.16	6.04	6.02	**6.08**
Front and Back Half Inorganic Particulate				
Concentration (grains/dscf)	0.00633	0.00681	0.00634	**0.00650**
Emission Rate (lb/hr)	7.39	7.69	7.09	**7.39**

* Process conditions provided by Solvay Minerals, Inc.

AIRTECH Environmental Services Inc.

Table 2 – No. 1 and No. 2 Calciners Stack, Nitrogen Oxides Emissions

Test Parameters	**Run 1**	**Run 2**	**Run 3**	**Run 4**	**Average**
Date (2001)	9/13	9/13	9/13	9/13	
Start Time	12:15	14:44	15:56	17:33	
Stop Time	13:15	15:44	16:56	18:33	
Gas Conditions					
Temperature (°F)	330	327	327	325	**327**
Volumetric Flow Rate (acfm)	350,300	347,200	347,200	341,100	**346,500**
Volumetric Flow Rate (scfm)	187,800	186,900	186,900	183,900	**186,400**
Volumetric Flow Rate (dscfm)	132,200	131,680	131,680	130,410	**131,490**
Carbon Dioxide (% dry)	10.2	10.1	10.1	10.3	**10.2**
Oxygen (% dry)	12.3	12.2	12.2	12.3	**12.2**
Moisture (%)	29.7	29.6	29.6	29.1	**29.5**
Nitrogen Oxides					
Concentration (ppmdv)	15.2	18.3	17.5	19.0	**17.5**
Emission (lb/hr)	14.4	17.3	16.5	17.8	**16.5**

* Process conditions provided by Solvay Minerals, Inc.

AIRTECH Environmental Services Inc.

2.0 SUMMARY OF RESULTS

2.1 CA 1 & 2 Nitrogen Oxides Results

Operating Conditions CA-1 & 2	Run 1	Run 2	Run 3	Average
Fuel Flow, MSCFH	296	285	279	**287**
Feed Rate, TPH	277	267	261	**268**
Opacity, %	1.2	0.7	1.1	**1.0**
Fuel Btu Value, scf/10^6Btu	1,030	1,030	1,030	**1,030**

Pollutants	Run 1	Run 2	Run 3	Average
Nitrogen Oxides, ppmdv	23.2	24.5	24.4	**24.0**
Nitrogen Oxides, lb/hr	21.7	23.5	22.5	**22.6**

Parameters	Run 1	Run 2	Run 3	Average
Date (2002)	5/17	5/17	5/17	
Start Time	9:42	11:01	12:18	
Stop Time	10:41	12:01	13:19	
Stack Temp, °F	295	301	302	**299**
O_2, %	13.4	13.3	13.2	**13.3**
CO_2, %	10.0	9.9	10.0	**10.0**
Moisture, %	28.5	26.8	27.3	**27.5**
Velocity, ft/sec	48.1	48.6	46.9	**47.9**
Acfm	326,310	329,630	318,170	**324,700**
Scfm	182,850	183,260	176,640	**180,920**
Dscfm	130,800	134,120	128,460	**131,120**

2.0 SUMMARY OF RESULTS

2.1 CA 1 & 2 Nitrogen Oxides Results

Operating Conditions CA-1 & 2	Run 1	Run 2	Run 3	Average
Fuel Flow, MSCFH	321	313	303	**312**
Fuel Btu Value, scf/10^6Btu	1,028	1,029	1,028	**1,028**
Opacity, %	2.7	2.5	2.6	**2.6**
Production rate, ton/hr	311	304	295	**303**

Nitrogen Oxides Results	Run 1	Run 2	Run 3	Average
Nitrogen Oxides, ppmdv	26.7	26.5	19.2	**24.2**
Nitrogen Oxides, lb/hr	25.9	25.9	19.5	**23.8**

Parameters	Run 1	Run 2	Run 3	Average
Date (2003)	11/1/	11/18	11/18	
Start Time	8:46	10:05	11:24	
Stop Time	9:46	11:05	12:24	
Stack Temp, °F	291	292	290	**291**
O_2, %	12.1	12.1	12.3	**12.2**
CO_2, %	10.7	10.6	9.9	**10.4**
Moisture, %	28.4	28.7	28.6	**28.6**
Velocity, ft/sec	49.4	50.1	51.7	**50.4**
Acfm	335,370	339,640	350,810	**341,940**
Scfm	188,890	191,150	197,840	**192,630**
Dscfm	135,260	136,390	141,380	**137,680**

2.0 SUMMARY OF RESULTS

2.1 CA 1 & 2 Nitrogen Oxides and Carbon Monoxide Results

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Fuel Flow, MSCFH	290	280	293	**288**
Feed Rate, TPH	277	268	280	**275**
Fuel Btu Value, scf/10^6Btu	1,041	1,044	1,044	**1,043**

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Nitrogen Oxides, ppmdv	21.1	19.3	18.4	**19.6**
Nitrogen Oxides, lb/hr	21.7	19.4	19.4	**20.2**
Carbon Monoxide, ppmdv	483.9	457.9	363.4	**435.1**
Carbon Monoxide, lb/hr	303.3	280.7	232.3	**272.1**

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Date (2004)	8/24	8/24	8/24	
Start Time	8:15	9:32	10:48	
Stop Time	9:15	10:32	11:48	
Stack Temp, °F	252	256	253	**253**
O_2, %	12.97	13.17	12.89	**13.01**
CO_2, %	10.03	9.70	10.41	**10.05**
Moisture, %	26.2	26.9	26.9	**26.7**
Velocity, ft/sec	48.5	48.2	50.0	**48.9**
Acfm	329,240	326,880	339,470	**331,860**
Scfm	194,610	192,080	200,410	**195,700**
Dscfm	143,670	140,550	146,570	**143,600**

2.0 SUMMARY OF RESULTS

2.1 CA-A Nitrogen Oxides Results

Operating Conditions, CA-A	Run 1	Run 2	Run 3	Average
Fuel Flow, MSCFH	199	176	184	**186**
Fuel Btu Value, scf/10^6Btu	1,077	1,057	1,048	**1,061**
Opacity, %	2.47	2.11	2.16	**2.25**
Production Rate, ton/hr	163	164	163	**163.3**

Nitrogen Oxides Results	Run 1	Run 2	Run 3	Average
Nitrogen Oxides, ppmdv	12.7	10.9	13.1	**12.2**
Nitrogen Oxides, lb/hr	9.35	7.10	8.48	**8.31**

Parameters	Run 1	Run 2	Run 3	Average
Date (2005)	12/18	12/18	12/18	
Start Time	9:39	12:01	14:28	
Stop Time	10:39	13:39	15:43	
Stack Temp, °F	338	344	318	**333**
O_2, %	13.8	14.2	13.8	**13.9**
CO_2, %	8.2	8.0	8.4	**8.2**
Moisture, %	23.9	29.9	31.5	**28.4**
Velocity, ft/sec	37.4	36.5	35.7	**36.5**
Acfm	253,810	247,410	241,930	**247,720**
Scfm	134,470	130,100	131,570	**132,050**
Dscfm	102,380	91,220	90,140	**94,580**

2.0 SUMMARY OF RESULTS

2.1 CA-B Particulate Results

Calciner Production Rate, Ton/hr	115	115	115	**115**
Opacity, %	1.0	1.0	1.3	**1.1**

Front Half Particulate, gr/dscf	0.00311	0.00186	0.00160	**0.00219**
Front Half Particulate, lb/hr	1.99	1.21	1.03	**1.41**
Back Half Inorganic Particulate, gr/dscf	0.00355	0.000699	0.000991	**0.00175**
Back Half Inorganic Particulate, lb/hr	2.27	0.454	0.636	**1.12**
Back Half Organic Particulate, gr/dscf	0.00792	0.00972	0.00924	**0.00896**
Back Half Organic Particulate, lb/hr	5.08	6.32	5.93	**5.77**
Total Inorganic Particulate, gr/dscf	0.00666	0.00256	0.00259	**0.00393**
Total Inorganic Particulate, lb/hr	4.26	1.66	1.66	**2.53**

Date (2006)	8/8	8/8	8/9	
Start Time	13:03	16:45	9:33	
Stop Time	14:33	18:05	10:53	
Stack Temp, °F	397	379	377	**384**
O_2, %	12.83	12.80	13.27	**12.96**
CO_2, %	10.70	10.83	10.22	**10.58**
Moisture, %	22.7	23.7	23.4	**23.3**
Velocity, ft/sec	28.8	29.0	28.5	**28.7**
Acfm	195,400	196,600	193,070	**195,020**
Scfm	96,680	99,320	97,800	**97,930**
Dscfm	74,730	75,830	74,900	**75,150**
Isokinetics, %	93.3	97.0	95.2	**95.2**

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2.2 CA-B Sulfur Dioxide Results

[illegible]	Run 1	Run 2	Run 3	Average
Calciner Production Rate, Ton/hr	115	115	115	**115**
Opacity, %	1.0	1.0	1.3	**1.1**

[illegible]	Run 1	Run 2	Run 3	Average
Sulfur Dioxide, ppmdv	1.1	1.9	1.1	**1.4**
Sulfur Dioxide, lb/hr	0.823	1.44	0.846	**1.04**

[illegible]	Run 1	Run 2	Run 3	Average
Date (2006)	8/8	8/8	8/8	
Start Time	13:06	15:01	16:46	
Stop Time	14:05	16:00	17:45	
Stack Temp, °F	397	374	379	**383**
O_2, %	12.83	12.86	12.80	**12.83**
CO_2, %	10.70	10.69	10.83	**10.74**
Moisture, %	22.7	23.4	23.7	**23.3**
Velocity, ft/sec	28.8	28.1	29.0	**28.6**
Acfm	195,400	190,490	196,600	**194,160**
Scfm	96,680	96,900	99,320	**97,630**
Dscfm	74,730	74,270	75,830	**74,940**

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2.3 CA-B Ammonia Results

[illegible]	Run 2	Run 3	Run 4	Average
Calciner Production Rate, Ton/hr	115	115	115	**115**
Opacity, %	1.1	1.1	1.1	**1.1**
Urea Injection Rate, GPH	5.2	5.0	4.3	**4.8**

[illegible] Results	Run 2	Run 3	Run 4	Average
Ammonia, lb/dscf	4.91E-07	5.20E-07	4.79E-07	**4.97E-07**
Ammonia, ppmdv	11.1	11.8	10.8	**11.2**
Ammonia, ppmdv @ 3% O_2	24.8	27.1	25.1	**25.7**
Ammonia, lb/hr	2.19	2.38	2.05	**2.21**

Parameters	Run 2	Run 3	Run 4	Average
Date (2006)	8/8	8/9	8/9	
Start Time	15:00	7:45	11:19	
Stop Time	16:20	9:06	12:42	
Stack Temp, °F	374	384	373	**377**
O_2, %	12.86	13.13	13.17	**13.06**
CO_2, %	10.69	10.22	10.33	**10.41**
Moisture, %	23.4	23.3	24.1	**23.6**
Velocity, ft/sec	28.1	29.2	27.2	**28.1**
Acfm	190,490	197,880	184,290	**190,890**
Scfm	96,900	99,410	93,760	**96,690**
Dscfm	74,270	76,230	71,220	**73,910**
Isokinetics, %	95.7	96.6	97.8	**96.7**

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2.0 SUMMARY OF RESULTS

2.1 CA-B Particulate Results-All ESP Fields On

[illegible]	Run 1	Run 2	Run 3	Average
ESP Setting	All Fields On	All Fields On	All Fields On	
Calciner Production Rate, Ton/hr	115	115	115	**115**
Opacity, %	1.1	1.1	1.1	**1.1**

[illegible]	Run 1	Run 2	Run 3	Average
Front Half Particulate, gr/dscf	0.00311	0.00186	0.00160	**0.00219**
Front Half Particulate, lb/hr	1.99	1.21	1.03	**1.41**
Back Half Inorganic Particulate, gr/dscf	0.00355	0.000699	0.000991	**0.00175**
Back Half Inorganic Particulate, lb/hr	2.27	0.454	0.636	**1.12**
Back Half Organic Particulate, gr/dscf	0.00792	0.00972	0.00924	**0.00896**
Back Half Organic Particulate, lb/hr	5.08	6.32	5.93	**5.77**
Total Inorganic Particulate, gr/dscf	0.00666	0.00256	0.00259	**0.00393**
Total Inorganic Particulate, lb/hr	4.26	1.66	1.66	**2.53**

[illegible]	Run 1	Run 2	Run 3	Average
Date (2006)	8/8	8/8	8/9	
Start Time	13:03	16:45	9:33	
Stop Time	14:33	18:05	10:53	
Stack Temp, °F	397	379	377	**384**
O_2, %	12.83	12.80	13.27	**12.96**
CO_2, %	10.70	10.83	10.22	**10.58**
Moisture, %	22.7	23.7	23.4	**23.3**
Velocity, ft/sec	28.8	29.0	28.5	**28.7**
Acfm	195,400	196,600	193,070	**195,020**
Scfm	96,680	99,320	97,800	**97,930**
Dscfm	74,730	75,830	74,900	**75,150**
Isokinetics, %	93.3	97.0	95.2	**95.2**

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2.2 CA-B Particulate Results (Runs 4, 5, 7 & 8)

[illegible]	Run 4	Run 5	Run 7	Run 8
ESP Setting	Field 3 Off	Field 4 Off	Fields 3,5 Off	Fields 2,4 Off
Production Rate, ton/hr	115	115	115	115
Opacity, %	2.0	2.1	3.3	2.5

[illegible]	Run 4	Run 5	Run 7	Run 8
Front Half Particulate (TSP), gr/dscf	0.00233	0.00256	0.00406	0.00338
Front Half Particulate (TSP), lb/hr	1.49	1.59	2.70	2.18
Inorganic Condensible Particulate, gr/dscf	0.000622	0.00178	0.00292	0.000952
Inorganic Condensible Particulate, lb/hr	0.397	1.11	1.94	0.616
Organic Condensible Particulate, gr/dscf	0.00722	0.00707	0.0142	0.00898
Organic Condensible Particulate, lb/hr	4.60	4.40	9.45	5.81
Total Inorganic Particulate, gr/dscf	0.00296	0.00435	0.00699	0.00433
Total Inorganic Particulate, lb/hr	1.88	2.70	4.64	2.80

[illegible]	Run 4	Run 5	Run 7	Run 8
Date (2006)	8/9	8/9	8/10	8/10
Start Time	13:51	16:15	10:48	14:50
Stop Time	15:13	17:34	12:06	16:09
Stack Temp, °F	376	396	395	395
O_2, %	12.94	12.69	12.07	12.26
CO_2, %	10.44	10.71	10.39	9.96
Moisture, %	23.7	24.3	24.0	24.1
Velocity, ft/sec	28.3	28.5	30.3	29.5
Acfm	192,170	193,370	205,370	200,200
Scfm	97,460	95,770	101,930	99,410
Dscfm	74,370	72,540	77,520	75,490
Isokinetics, %	97.2	99.3	96.4	98.3

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2.3 CA-B Particulate Results (Runs 9, 11 & 12)

[illegible]	Run 9	Run 11	Run 12
ESP Setting	Fields 1,2,4 Off	Field 1 Off	Fields 1,2 Off
Production Rate, ton/hr	115	155	115
Opacity, %	3.0	2.5	2.7

[illegible]	Run 9	Run 11	Run 12
Front Half Particulate (TSP), gr/dscf	0.00668	0.00387	0.00344
Front Half Particulate (TSP), lb/hr	4.35	2.35	2.18
Inorganic Condensible Particulate, gr/dscf	0.00221	0.00139	0.00156
Inorganic Condensible Particulate, lb/hr	1.44	0.843	0.990
Organic Condensible Particulate, gr/dscf	0.0132	0.0152	0.0241
Organic Condensible Particulate, lb/hr	8.60	9.24	15.2
Total Inorganic Particulate, gr/dscf	0.00889	0.00526	0.00501
Total Inorganic Particulate, lb/hr	5.79	3.19	3.17

[illegible]	Run 9	Run 11	Run 12
Date (2006)	8/11	8/11	8/11
Start Time	7:52	13:20	15:35
Stop Time	9:12	14:44	16:44
Stack Temp, °F	384	386	390
O_2, %	12.55	13.00	12.86
CO_2, %	10.24	9.84	10.45
Moisture, %	23.1	23.9	22.3
Velocity, ft/sec	29.1	27.4	28.2
Acfm	197,300	186,160	191,140
Scfm	98,740	92,930	94,980
Dscfm	76,000	70,790	73,840
Isokinetics, %	96.8	97.4	97.3

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2.0 SUMMARY OF RESULTS

2.1 Ammonia and Sulfur Dioxide Results

Operating Conditions	Run 2	Run 3	Run 4	Average
Calciner Production Rate, Ton/hr	285	284	282	**283.7**
Opacity, %	2.5	3.1	2.5	**2.7**
Urea Injection Rate, GPH	11.0	12.5	13.7	**12.4**

NH3 & SO2 Results	Run 2	Run 3	Run 4	Average
Ammonia, ppmdv	17.3	17.9	25.0	**20.1**
Ammonia, ppmdv @ 3% O_2	41.0	43.0	59.7	**47.9**
Ammonia, lb/hr	7.32	7.72	10.8	**8.63**
Sulfur Dioxide, ppmdv	1.6	0.0	0.0	**0.5**
Sulfur Dioxide, lb/hr	2.47	0.0	0.0	**0.825**

Parameters	Run 2	Run 3	Run 4	Average
Date (2006)	12/7	12/7	12/7	
Start Time	10:48	12:42	14:27	
Stop Time	12:00	13:52	15:39	
Stack Temp, °F	351	349	351	**351**
O_2, %	13.34	13.45	13.40	**13.40**
CO_2, %	9.96	9.78	9.85	**9.86**
Moisture, %	24.0	23.2	23.5	**23.6**
Velocity, ft/sec	58.8	59.1	59.8	**59.2**
Acfm	399,330	400,950	405,870	**402,050**
Scfm	210,080	211,650	213,680	**211,800**
Dscfm	159,690	162,630	163,430	**161,920**
Isokinetics, %	91.2	96.6	99.0	**95.6**

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2.2 Particulate Results

Operating Conditions	Run 1	Run 2	Run 3	Average
Calciner Production Rate, Ton/hr	271	281	285	**279**
Opacity, %	2.3	2.2	2.5	**2.3**

Particulate Results	Run 1	Run 2	Run 3	Average
Front Half Particulate, gr/dscf	0.00962	0.00695	0.0100	**0.00886**
Front Half Particulate, lb/hr	13.7	9.85	14.3	**12.6**
Back Half Inorganic Particulate, gr/dscf	0.00812	0.00672	0.00600	**0.00695**
Back Half Inorganic Particulate, lb/hr	11.6	9.53	8.57	**9.88**
Back Half Organic Particulate, gr/dscf	0.0176	0.0174	0.0121	**0.0157**
Back Half Organic Particulate, lb/hr	25.0	24.7	17.3	**22.3**
Total Inorganic Particulate, gr/dscf	0.0177	0.0137	0.0160	**0.0158**
Total Inorganic Particulate, lb/hr	25.2	19.4	22.9	**22.5**

Parameters	Run 1	Run 2	Run 3	Average
Date (2006)	12/8	12/8	12/8	
Start Time	7:46	10:19	12:42	
Stop Time	9:16	11:48	14:14	
Stack Temp, °F	356	358	356	**356**
O_2, %	13.18	13.28	13.27	**13.24**
CO_2, %	9.85	10.15	9.83	**9.94**
Moisture, %	23.2	21.7	23.0	**22.6**
Velocity, ft/sec	61.0	59.7	61.0	**60.6**
Acfm	413,870	405,450	414,070	**411,130**
Scfm	216,060	211,190	216,200	**214,480**
Dscfm	165,970	165,320	166,650	**165,980**
Isokinetics, %	95.8	96.8	98.3	**97.0**

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2.0 SUMMARY OF RESULTS

2.1 CA-A & B Particulate Results

Production Rate, CA-A & B	Run 1	Run 2	Run 3	Average
Calciner Production Rate, Ton/hr	313	308	305	**309**

Particulate Results	Run 1	Run 2	Run 3	Average
Front Half Particulate, gr/dscf	0.00487	0.00643	0.00508	**0.00546**
Front Half Particulate, lb/hr	6.56	8.57	6.70	**7.28**
Back Half Inorganic Particulate, gr/dscf	0.00167	0.00178	0.00119	**0.00154**
Back Half Inorganic Particulate, lb/hr	2.25	2.37	1.57	**2.06**
Back Half Organic Particulate, gr/dscf	0.00232	0.00271	0.00223	**0.00242**
Back Half Organic Particulate, lb/hr	3.13	3.62	2.94	**3.23**
Total Inorganic Particulate, gr/dscf	0.00654	0.00821	0.00627	**0.00700**
Total Inorganic Particulate, lb/hr	8.80	10.9	8.26	**9.34**

Parameters	Run 1	Run 2	Run 3	Average
Date (2007)	6/6	6/6	6/6	
Start Time	12:40	14:41	16:50	
Stop Time	13:50	16:10	18:00	
Stack Temp, °F	383	386	390	**386**
O_2, %	12.2	12.2	12.3	**12.2**
CO_2, %	11.4	11.2	11.0	**11.2**
Moisture, %	24.3	24.3	22.8	**23.8**
Velocity, ft/sec	62.6	62.2	60.6	**61.8**
Acfm	425,020	422,280	411,390	**419,560**
Scfm	207,460	205,370	199,100	**203,980**
Dscfm	157,160	155,530	153,800	**155,500**
Isokinetics, %	100.4	100.6	99.0	**100.0**

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2.0 SUMMARY OF RESULTS

2.1 CA-A Particulate Results

Operating Conditions	Run 4	Run 5	Run 6	Run 7
ESP Setting	Field 3 Off	Field 3,5 Off	Field 1 Off	Field 1,2 Off
Production Rate, ton/hr	138	143	144	141
Opacity, %	6.0	6.1	6.1	6.4

Particulate Results	Run 4	Run 5	Run 6	Run 7
Front Half Particulate (TSP), gr/dscf	0.00286	0.00205	0.00307	0.00151
Front Half Particulate (TSP), lb/hr	2.03	1.46	2.27	1.10
Inorganic Condensible Particulate, gr/dscf	0.00157	0.00131	0.000265	0.00100
Inorganic Condensible Particulate, lb/hr	1.12	0.938	0.196	0.723
Organic Condensible Particulate, gr/dscf	0.00566	0.00342	0.00452	0.00335
Organic Condensible Particulate, lb/hr	4.02	2.44	3.34	2.43
Total Inorganic Particulate, gr/dscf	0.00443	0.00336	0.00333	0.00250
Total Inorganic Particulate, lb/hr	3.15	2.40	2.46	1.82

Parameters	Run 4	Run 5	Run 6	Run 7
Date (2007)	6/7	6/7	6/7	6/7
Start Time	9:10	11:30	13:50	16:15
Stop Time	10:18	12:37	14:59	17:21
Stack Temp, °F	369	371	373	370
O_2, %	12.4	12.4	12.3	12.2
CO_2, %	9.9	9.7	10.1	10.0
Moisture, %	21.6	22.8	22.3	22.0
Velocity, ft/sec	31.0	31.6	32.7	31.9
Acfm	210,250	214,770	221,910	216,160
Scfm	105,720	107,750	111,040	108,620
Dscfm	82,870	83,250	86,290	84,730
Isokinetics, %	98.2	99.2	97.6	97.5

2.0 SUMMARY OF RESULTS

2.1 Particulate Results

Operating Conditions	Run 1	Run 2	Run 3	Average
Calciner Production Rate, Ton/hr	292	288	290	**290**
Opacity, %	2.4	2.6	2.8	**2.6**

Particulate Results	Run 1	Run 2	Run 3	Average
Front Half Particulate, gr/dscf	0.00410	0.00355	0.00351	**0.00372**
Front Half Particulate, lb/hr	5.33	4.57	4.60	**4.83**
Back Half Inorganic Particulate, gr/dscf	0.00194	0.00226	0.00204	**0.00208**
Back Half Inorganic Particulate, lb/hr	2.52	2.90	2.67	**2.70**
Back Half Organic Particulate, gr/dscf	0.00536	0.00446	0.00619	**0.00534**
Back Half Organic Particulate, lb/hr	6.98	5.73	8.10	**6.94**
Total Inorganic Particulate, gr/dscf	0.00604	0.00581	0.00555	**0.00580**
Total Inorganic Particulate, lb/hr	7.86	7.47	7.27	**7.53**

Parameters	Run 1	Run 2	Run 3	Average
Date (2008)	12/16	12/16	12/16	
Start Time	8:55	11:05	12:38	
Stop Time	10:21	12:17	13:49	
Stack Temp, °F	287	271	260	**273**
O_2, %	12.3	12.3	12.5	**12.3**
CO_2, %	11.7	11.6	11.0	**11.4**
Moisture, %	26.0	26.3	25.2	**25.8**
Velocity, ft/sec	54.3	52.7	52.1	**53.0**
Acfm	368,730	357,390	353,350	**359,820**
Scfm	205,230	203,490	204,200	**204,310**
Dscfm	151,870	150,010	152,790	**151,560**
Isokinetics, %	104.0	100.5	98.1	**100.9**

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2.0 SUMMARY OF RESULTS

2.1 Particulate Results

Operating Conditions	Run 1	Run 2	Run 3	Average
Calciner Production Rate, Ton/hr	219	224	219	**220.7**
Opacity, %	2.4	2.6	2.6	**2.5**

Particulate Results	Run 1	Run 2	Run 3	Average
Front Half Particulate, gr/dscf	0.0106	0.00634	0.00791	**0.00830**
Front Half Particulate, lb/hr	13.1	7.53	9.67	**10.1**
Back Half Inorganic Particulate, gr/dscf	0.00428	0.00309	0.00343	**0.00360**
Back Half Inorganic Particulate, lb/hr	5.26	3.67	4.20	**4.38**
Back Half Organic Particulate, gr/dscf	0.00299	0.00230	0.00162	**0.00231**
Back Half Organic Particulate, lb/hr	3.68	2.74	1.98	**2.80**
Total Inorganic Particulate, gr/dscf	0.0149	0.00943	0.0113	**0.0119**
Total Inorganic Particulate, lb/hr	18.3	11.2	13.9	**14.5**

Parameters	Run 1	Run 2	Run 3	Average
Date (2009)	12/8	12/8	12/8	
Start Time	12:55	15:03	16:42	
Stop Time	14:17	16:19	18:10	
Stack Temp, °F	282	282	284	**283**
O_2, %	13.04	12.69	13.12	**12.95**
CO_2, %	9.98	10.55	10.10	**10.21**
Moisture, %	24.2	25.6	24.8	**24.9**
Velocity, ft/sec	50.3	49.4	50.5	**50.1**
Acfm	341,240	335,400	342,620	**339,750**
Scfm	189,270	186,110	189,580	**188,320**
Dscfm	143,510	138,570	142,620	**141,570**
Isokinetics, %	95.5	100.5	97.6	**97.9**

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2.3 CA-1 & 2 February 2010 Results

TOTAL VOLATILE ORGANIC COMPOUNDS (VOCs)

Analyzer Values	Actual	Cal Error	Run 1	Run 2	Run 3
Date		2/11/10	2/11/10	2/11/10	2/11/10
VOC Concentration, as C_3H_8 (ppmdv)			**27.9**	**45.2**	**46.2**
Zero Cal Gas, C_0 (ppm)	0.0	0.4			0.4
Low Cal Gas (ppm)	30.0	30.1			
Mid Cal Gas (ppm)	60.0	60.4			
High Cal Gas (ppm)	100.0	100.5			
Span Value (ppm)	100.0				
Drift Check Gas, C_s (ppm)	30.0				29.7
RESULTS					
Zero Error (%)	5 % of Actual	0.4			
Low Error (%)		0.5			
Mid Error (%)		0.6			
High Error (%)		0.5			
Zero Drift (%)	3 % of Span		-0.1	-0.1	-0.1
Upscale Drift (%)			-0.4	-0.4	-0.4

METHANE, CH_4	Run 1	Run 2	Run 3
CH_4 Concentration (ppmdv)	**NA**	**22.9**	**20.0**
CH_4 Concentration, as C_3H_8 (ppmdv)	**0.0**	**7.6**	**6.7**
TNMVOC Concentration, as C_3H_8 (ppmdv)	**27.9**	**37.6**	**39.5**

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2.6 CA-1 & 2 December 2009 Results

TOTAL VOLATILE ORGANIC COMPOUNDS (VOCs)

Analyzer Values	Actual	Cal Error	Run 1	Run 2	Run 3
Date		12/10/09	12/10/09	12/10/09	12/10/09
VOC Concentration, as C_3H_8 (ppmdv)			**20.9**	**34.1**	**20.8**
Zero Cal Gas, C_0 (ppm)	0.0	3.7			0.4
Low Cal Gas (ppm)	300.0	302.1			
Mid Cal Gas (ppm)	600.0	603.6			
High Cal Gas (ppm)	1000.0	1002.0			
Span Value (ppm)	1000.0				
Drift Check Gas, C_s (ppm)	300.0				305.0
RESULTS					
Zero Error (%)	5 % of Actual	0.4			
Low Error (%)		0.7			
Mid Error (%)		0.6			
High Error (%)		0.2			
Zero Drift (%)	3 % of Span		-0.3	-0.3	-0.3
Upscale Drift (%)			0.3	0.3	0.3

2.0 SUMMARY OF RESULTS

2.1 $PM_{2.5}$ Particulate Results

Operating Conditions	Run 1	Run 2	Run 3	Average
Calciner Production Rate, Ton/hr	226	241	226	**231**
Opacity, %	2.1	2.2	2.1	**2.1**

$PM_{2.5}$ Particulate Results	Run 1	Run 2	Run 3	Average
Total Inorganic $PM_{2.5}$ Particulate, gr/dscf	0.00518	0.00658	0.00224	**0.00466**
Total Inorganic $PM_{2.5}$ Particulate, lb/hr	5.86	7.47	2.49	**5.27**
Total $PM_{2.5}$ Particulate, gr/dscf[1]	0.00753	0.00821	0.00584	**0.00719**
Total $PM_{2.5}$ Particulate, lb/hr[1]	8.52	9.32	6.50	**8.11**

Parameters	Run 1	Run 2	Run 3	Average
Date (2010)	6/5	6/6	6/6	
Start Time	13:38	9:12	13:26	
Stop Time	16:13	11:46	15:58	
Stack Temp, °F	347	348	354	**350**
O_2, %	11.85	11.67	11.48	**11.67**
CO_2, %	12.26	12.57	12.87	**12.56**
Moisture, %	26.7	26.7	28.1	**27.2**
Velocity, ft/sec	51.5	51.6	52.0	**51.7**
Acfm	349,590	350,490	352,630	**350,900**
Scfm	179,930	180,680	180,570	**180,390**
Dscfm	131,940	132,460	129,890	**131,430**
Isokinetics, %	92.0	93.8	94.3	**93.4**

[1] Includes the organic condensable fraction.

2.0 SUMMARY OF RESULTS

2.1 Particulate and Nitrogen Oxides Results

Operating Conditions	Run 1	Run 2	Run 3	Run 4	Average
Production Rate, Ton/hr	204	204	199	200	**201.8**
Average Opacity, %	6.5	6.6	6.8	9.5	**7.4**

Nitrogen Oxides Results	Run 1	Run 2	Run 3	Run 4	Average
NOx, ppmdv		85.61	87.15	84.54	**85.77**
NOx, lb/hr		74.1	74.6	75.0	**74.6**

Particulate Results	Run 1	Run 2	Run 3	Run 4	Average
Front Half Particulate (TSP), gr/dscf	0.00309	0.00198	0.00308		**0.00272**
Front Half Particulate (TSP), lb/hr	3.13	2.05	3.16		**2.78**
Inorganic Condensable Particulate, gr/dscf	0.00292	0.00237	0.00213		**0.00247**
Inorganic Condensable Particulate, lb/hr	2.95	2.46	2.18		**2.53**
Organic Condensable Particulate, gr/dscf	0.00408	0.00639	0.00682		**0.00576**
Organic Condensable Particulate, lb/hr	4.13	6.62	6.99		**5.91**
Total Inorganic Particulate, gr/dscf	0.00601	0.00435	0.00521		**0.00519**
Total Inorganic Particulate, lb/hr	6.08	4.51	5.34		**5.31**

Optimal AIR TESTING SERVICES, INC

2.0 SUMMARY OF RESULTS

Table 2 CA - 1 & 2 Particulate Test Parameters and Results, Solvay, June 27, 2012

	Start Time	8:15	9:45	11:33	
	Stop Time	9:18	10:40	12:43	
Operating Conditions	**Units**	**Run 3**	**Run 4**	**Run 5**	**Avg.**
Trona Production Rate	Ton/hr	240	250	237	242
Opacity	%	1.0	1.0	0.8	0.9
Test Parameters					
P_{bar} (Barometric Pressure, absolute)	In. Hg	23.50	23.50	23.50	
Y (Dry Gas Meter Calibration Factor)	unitless	1.008	1.008	1.008	
C_p (Pitot tube Coefficient)	unitless	0.84	0.84	0.84	
D_n (Diameter of Nozzle)	Inches	0.308	0.308	0.308	
θ (Total Sampling Time of Test)	Minutes	60	60	60	
ΔH (Orifice Pressure Drop)	In. H_2O	1.68	1.72	1.69	
V_m (Dry Gas Sampled - as measured)	ft^3 (dry)	48.271	48.863	48.966	
T_m (Gas Meter Temperature, avg.)	Degr. F	86	88	98	
V_{lc} (Condensate and silica gel)	ml or g	263.7	297.6	253.5	
Location/Process Parameters					
A_s (Cross-sectional Area of Stack)	ft^2	113.10	113.10	113.10	113.1
P_g (Static Pressure of Stack Gas)	In. H_2O	-0.40	-0.44	-0.40	-0.41
T_s (Temperature of Stack Gas)	Deg. F	388	391	398	392
$\sqrt{\Delta p}$ (Sq. root of velocity head of gas)	√ In. H_2O	0.6635	0.6699	0.6648	0.6660
CO_2 (Carbon Dioxide)	%	10.92	11.04	11.40	11.12
O_2 (Oxygen)	%	12.87	12.78	12.50	12.72
Calculations					
V_{mstd} (Gas Sampled, standard (std) cond.)	ft^3	37.16	37.43	36.86	37.15
V_{wstd} (Water Vapor in Gas Sampled, std)	ft^3	12.43	14.03	11.95	12.81
B_w (Water Vapor in Gas, by Vol.)	%	25.07	27.26	24.49	25.61
M_d (Molecular Weight of Dry Stack Gas)	lb/lb-mole	30.26	30.28	30.32	30.29
M_s (Molecular Weight of Wet Stack Gas)	lb/lb-mole	27.19	26.93	27.31	27.14
P_s (Pressure of Stack Gas, Absolute)	In. Hg	23.47	23.47	23.47	23.47
Iso (Percent of Isokinetic Sampling)	%	99.3	101.8	98.3	99.8
Flow Results					
V_s (Average Stack Gas Velocity)	ft/m (fpm)	3,296	3,350	3,313	3,320
Q_a (Actual Volumetric Flow Rate)	ft^3/m (cfm)	372,722	378,848	374,721	375,430
Q_{std} (Dry Volumetric Flow Rate, std.)	ft^3/m (dscfm)	136,336	134,014	136,621	135,657
Particulate Results					
Filterable Inorganic PM Mass	mg/sample	7.46	5.00	4.27	
Filterable Inorganic Conc. - std.	gr/dscf	0.0031	0.0021	0.0018	0.0023
Filterable Inorganic Emissions	lb/hr	3.62	2.37	2.09	2.69
Mass of Condensable Inorganic PM	mg/sample	12.4	17.7	17.4	
Condensable Inorganic Conc. - std.	gr/dscf	0.0051	0.0073	0.0072	0.0066
Condensable Inorganic Emission Rate	lb/hr	6.02	8.38	8.44	7.61
Total Inorganic Particulate Collected	mg/sample	19.86	22.70	21.67	
Total Inorganic Particulate Conc. - std.	gr/dscf	0.0082	0.0094	0.0090	0.0089
Total Inorganic Particulate Emissions	lb/hr	9.64	10.75	10.53	10.31
Condensable Organic PM Mass	mg/sample	29.4	24.5	42.9	
Condensable Organic Conc. - std.	gr/dscf	0.0122	0.0101	0.0178	0.0134
Condensable Organic Emission Rate	lb/hr	14.27	11.60	20.82	15.56

2.0 SUMMARY OF RESULTS

Table 2 CA - 1 & 2 Particulate Test and Parameters Results, Solvay Chemical, June 5 and 6, 2013

	Date	*6/5/13*	*6/6/13*	*6/6/13*	
	Start Time	*12:02*	*9:21*	*11:20*	
	Stop Time	*13:05*	*10:11*	*12:25*	
Test Parameters	**Units**	**Run 1**	**Run 2**	**Run 3**	**Avg.**
P_{bar} (Barometric Pressure, absolute)	In. Hg	23.58	23.48	23.48	
Y (Dry Gas Meter Calibration Factor)	unitless	0.987	0.987	0.987	
C_p (Pitot tube Coefficient)	unitless	0.84	0.84	0.84	
D_n (Diameter of Nozzle)	Inches	0.312	0.312	0.312	
θ (Total Sampling Time of Test)	Minutes	60	60	60	
ΔH (Orifice Pressure Drop)	In. H_2O	1.67	1.74	1.75	
V_m (Dry Gas Sampled - as measured)	ft^3 (dry)	46.743	48.395	48.214	
T_m (Gas Meter Temperature, avg.)	Degr. F	80	92	91	
V_{lc} (Condensate and silica gel)	ml or g	253.5	264.8	236.2	
Location/Process Parameters					
A_s (Cross-sectional Area of Stack)	ft^2	113.1	113.1	113.1	113.1
P_g (Static Pressure of Stack Gas)	In. H_2O	-0.47	-0.44	-0.44	-0.45
T_s (Temperature of Stack Gas)	Deg. F	397	394	398	396
$\sqrt{\Delta p}$ (Sq. root of velocity head of gas)	√ In. H_2O	0.6521	0.6575	0.6592	0.6563
CO_2 (Carbon Dioxide)	%	10.78	11.07	11.39	11.08
O_2 (Oxygen)	%	12.68	12.45	12.33	12.49
Calculations					
V_{mstd} (Gas Sampled, standard (std) cond.)	ft^3	35.73	36.03	35.94	35.90
V_{wstd} (Water Vapor in Gas Sampled, std)	ft^3	11.95	12.49	11.14	11.86
B_w (Water Vapor in Gas, by Vol.)	%	25.07	25.73	23.66	24.82
M_d (Molecular Weight of Dry Stack Gas)	lb/lb-mole	30.23	30.27	30.32	30.27
M_s (Molecular Weight of Wet Stack Gas)	lb/lb-mole	27.17	27.11	27.40	27.23
P_s (Pressure of Stack Gas, Absolute)	In. Hg	23.55	23.45	23.45	23.48
Iso (Percent of Isokinetic Sampling)	%	95.0	95.8	93.4	94.7
V_s (Average Stack Gas Velocity)	ft/m (fpm)	3,252	3,284	3,283	3,273
Q_a (Actual Volumetric Flow Rate)	ft^3/m (cfm)	367,808	371,385	371,247	370,147
Q_{std} (Dry Volumetric Flow Rate, std.)	ft^3/m (dscfm)	133,585	133,573	136,601	134,586
Particulate Results					
Filterable Inorganic PM Mass	mg/sample	24.55	20.50	20.15	
Filterable Inorganic Conc. - std.	gr/dscf	0.0106	0.0088	0.0087	0.0093
Filterable Inorganic Emissions	lb/hr	12.14	10.05	10.13	10.77
Mass of Condensable Inorganic PM	mg/sample	7.8	4.0	9.8	
Condensable Inorganic Conc. - std.	gr/dscf	0.0034	0.0017	0.0042	0.0031
Condensable Inorganic Emission Rate	lb/hr	3.86	1.96	4.85	3.55
Total Inorganic Particulate Collected	mg/sample	32.35	24.50	29.95	
Total Inorganic Particulate Conc. - std.	gr/dscf	0.0140	0.0105	0.0129	0.0124
Total Inorganic Particulate Emissions	lb/hr	16.00	12.01	14.98	14.33
Condensable Organic PM Mass	mg/sample	16.4	9.8	16.1	
Condensable Organic Conc. - std.	gr/dscf	0.0071	0.0042	0.0070	0.0061
Condensable Organic Emission Rate	lb/hr	8.11	4.80	7.96	6.96