MARCH 2008
PM10 TESTING

TABLE 4
ISOKINETIC SAMPLING SUMMARY
Particulate - EPA Method 201A/202

Client: **UGI**
Plant: **Hunlock Station**
Location: **Stack**

Run Number:	1	2	3
Date:	3/11/08	3/11/08	3/11/08
Run Time: Start	7:55	9:35	11:12
End	9:13	10:49	12:25
Unit Load (MW):	73	73	73
DN - Nozzle Diameter:	0.215	0.215	0.215
Pbar - Barometric Pressure:	29.35	29.35	29.35
TT - Sampling Time:	60.0	60.0	60.0
VM - Meter Volume:	25.909	26.726	26.914
TM - Avg. Meter Temp (F):	45	58	73
PM - Avg. Delta H (in. of H2O):	0.482	0.492	0.480
Y - Meter Calibration Factor:	0.99	0.99	0.99
VMSTD - Std. Gas Volume (SCF):	26.295	26.433	25.873
Vlc - Volume Water Collected:	26.2	26	27.7
%M - Percent Moisture:	4.5	4.4	4.8
Bws - Mole Fraction, Dry:	30.12	30.11	30.11
%CO2 - Carbon Dioxide, Dry:	11.3	11.2	11.2
%O2 - Oxygen, Dry:	7.8	7.9	7.9
MD - Dry Molecular Weight:	0.96	0.96	0.95
MS - Wet Molecular Weight:	29.58	29.57	29.53
A - Stack Area, SQ.FT:	70.88	70.88	70.88
PS - Static Press. (in. of Hg):	4.76	4.76	4.76
TS - Stack Temp. (F):	315	319	322
CP - Pitot Coefficient:	0.84	0.84	0.84
VS - Stack Gas Velocity (AFPS):	50.9	51.3	51.5
QS - Stack Gas Volume (DSCFM):	137,898	138,482	137,861
QA - Stack Gas Volume (ACFM):	216,304	218,146	218,903
%I - Isokinetic Ratio:	89.4	89.5	88.0
D50 - Cyclone Cut Size:	9.41	9.40	9.52

Particulate Emissions:

PM10

Weight (mg):	25.2	33.5	31.9
Concentration (gr/dscf):	0.015	0.020	0.019
Emission Rate (lb/hr):	17.48	23.22	22.48
Emission Rate (lb/mmBtu):	0.034	0.046	0.045

Average (gr/dscf): **0.018**
Average (lb/hr): **21.06**
Average (lb/mmBtu): **0.042**

tsp = pm10+>pm10

>PM10

Weight (mg):	8.3	9.7	9.1
Concentration (gr/dscf):	0.005	0.006	0.005
Emission Rate (lb/hr):	5.76	6.74	6.43
Emission Rate (lb/mmBtu):	0.011	0.013	0.013

pm2.5 =0.042 reduce by particle size distribution
condensibl pm2.5 =0.121 reduce by particle size distribution

Average (gr/dscf): **0.005**
Average (lb/hr): **6.31**
Average (lb/mmBtu): **0.012**

Condensible

Weight (mg):	33.0	120.0	111.0
Concentration (gr/dscf):	0.019	0.070	0.066
Emission Rate (lb/hr):	22.84	82.97	78.06
Emission Rate (lb/mmBtu):	0.045	0.164	0.155

Average (gr/dscf): **0.052**
Average (lb/hr): **61.29**
Average (lb/mmBtu): **0.121**

Catalyst Air Management, Inc.
Isokinetic Sampling Analysis

Client: **UGI**
Plant: **Hunlock Station**
Unit Tested: 6-8
Sampling Location: Stack

Test: PM10 - Method 201A and 202
Date: 3/11/2008
Start: 7:55
End: 9:13

Run No:	1				
Nozzle Diameter:	0.215	Dn	Stack Diameter:	114	in
Area of Nozzle:	2.521E-04	A_n	Stack Area:	70.9	As
Barometric Pressure:	29.35	Pb	Volume of Moisture:	26.2	VW
Gas Meter Y-Factor:	0.99	Yi	Pitot Coefficient:	0.84	Cp

	SAMPLE POINT	DWELL TIME	GAS METER	VELOCITY HEAD	STACK TEMP F	METER TEMPERATURE IN F	OUT F	PM ORIFICE	CO2	O2	STATIC PRESSURE	VEL	SDE	
4.95	A-1	4.95	600.905	0.55	310	42	39	0.48	11.3	7.8		3,011	20.58	0.74
10.12	2	5.17	603.5	0.60	314	45	41	0.48				3,153	21.55	0.77
15.62	3	5.50	605.2	0.68	320	45	41	0.48			-0.35	3,370	23.03	0.82
20.71	B-1	5.08	607.446	0.58	308	45	42	0.48				3,088	21.11	0.76
25.88	2	5.17	609.6	0.60	312	47	42	0.48				3,149	21.52	0.77
31.38	3	5.50	611.9	0.68	318	47	43	0.48				3,366	23.00	0.82
35.86	C-1	4.48	614.325	0.45	310	45	43	0.48				2,724	18.61	0.67
40.48	2	4.62	616.0	0.48	315	48	44	0.48				2,822	19.29	0.69
45.20	3	4.72	618.2	0.50	319	48	44	0.48				2,888	19.74	0.71
49.92	D-1	4.72	620.140	0.50	311	45	44	0.48				2,873	19.63	0.71
54.83	2	4.91	622.3	0.54	322	50	45	0.48				3,007	20.55	0.73
60.00	3	5.17	624.5	0.60	325	50	45	0.48				3,176	21.70	0.77
			626.814											

RESULTS	TT	VM	SQRT PIT	TS	TM	PM	CO2	O2	Pst	VEL	SDE	
	60.0	25.909	0.749	315	45	0.48	11.3	7.8	-0.35	3,052	20.86	0.75
	net		avg	avg	avg	avg	avg	avg	avg	avg	avg	

PS=	29.32	VMSTD=	26.295	VWGAS=	1.234	%M=	4.48
MD=	0.96	MWD=	30.12	MW=	29.58	PS=	29.32

STACK GAS VELOCITY =	50.9	AFPS	CYCLONE FLOW RATE =	0.69	CFM		EMISSIONS		
STACK GAS VOLUME =	137,898	DSCFM	GAS VISCOSITY =	229.98	micropoise		PM10	>PM10	Condensible *
STACK GAS VOLUME =	216,304	ACFM	CYCLONE CUT SIZE (D50) =	9.41	um	WEIGHT,mg =	25.2	8.3	33
ISOKINETIC RATIO =	89.4					GR/DSCF =	0.015	0.005	0.019
						LBS/Hr =	17.48	5.76	22.84
						LBS/MMBTU =	0.034	0.011	0.045

Catalyst Air Management, Inc.
Isokinetic Sampling Analysis

Client: **UGI**
Plant: **Hunlock Station**
Unit Tested: 6-8
Sampling Location: Stack

Test: PM10 - Method 201A and 202
Date: 3/11/2008
Start: 9:35
End: 10:49

Run No:	2				
Nozzle Diameter:	0.215	Dn	Stack Diameter:	114	in
Area of Nozzle:	2.521E-04	A_n	Stack Area:	70.9	As
Barometric Pressure:	29.35	Pb	Volume of Moisture:	26.0	VW
Gas Meter Y-Factor:	0.99	Yi	Pitot Coefficient:	0.84	Cp

	SAMPLE POINT	DWELL TIME	GAS METER	VELOCITY HEAD	STACK TEMP F	METER TEMPERATURE IN F	OUT F	PM ORIFICE	CO2	O2	STATIC PRESSURE	VEL	SDE	
4.97	A-1	4.97	627.050	0.56	314	51	48	0.48	11.2	7.9		3,047	20.82	0.75
10.10	2	5.14	629.2	0.60	318	55	49	0.49				3,162	21.61	0.77
15.58	3	5.47	631.5	0.68	320	56	50	0.49			-0.35	3,370	23.03	0.82
20.72	B-1	5.14	633.902	0.60	312	55	51	0.49				3,149	21.52	0.77
25.86	2	5.14	636.4	0.60	316	58	52	0.49				3,158	21.58	0.77
31.33	3	5.47	638.6	0.68	320	60	53	0.49				3,370	23.03	0.82
35.83	C-1	4.50	641.043	0.46	318	60	55	0.49				2,768	18.92	0.68
40.42	2	4.60	643.0	0.48	320	63	56	0.49				2,831	19.35	0.69
45.21	3	4.78	645	0.52	322	66	57	0.49				2,951	20.17	0.72
49.90	D-1	4.69	647.342	0.50	322	65	60	0.49				2,894	19.77	0.71
54.78	2	4.88	649.0	0.54	322	70	62	0.49				3,007	20.55	0.73
60.00	3	5.22	651.3	0.62	325	72	63	0.49				3,228	22.06	0.79
			653.776											

RESULTS	TT	VM	SQRT PIT	TS	TM	PM	CO2	O2	Pst	VEL	SDE	
	60.0	26.726	0.754	319	58	0.492	11.2	7.9	-0.35	3,078	21.03	0.75
	net	net	avg	avg	avg	avg	avg	avg	avg	avg	avg	

PS=	29.32	VMSTD=	26.433	VWGAS=	1.225	%M=	4.4
MD=	0.96	MWD=	30.11	MW=	29.57	PS=	29.32

STACK GAS VELOCITY =	51.3	AFPS	CYCLONE FLOW RATE =	0.69	CFM
STACK GAS VOLUME =	138,482	DSCFM	GAS VISCOSITY =	231.37	micropoise
STACK GAS VOLUME =	218,146	ACFM	CYCLONE CUT SIZE (D50) =	9.40	um
ISOKINETIC RATIO =	89.5				

EMISSIONS	PM10	>PM10	Condensible *
WEIGHT,mg =	33.5	9.7	120
GR/DSCF =	0.020	0.006	0.070
LBS/Hr =	23.22	6.74	82.97
LBS/MMBTU =	0.046	0.013	0.164

Catalyst Air Management, Inc.
Isokinetic Sampling Analysis

Client: **UGI**
Plant: **Hunlock Station**
Unit Tested: 6-8
Sampling Location: Stack

Test: PM10 - Method 201A and 202
Date: 3/11/2008
Start: 11:12
End: 12:25

Run No:	3				
Nozzle Diameter:	0.215	Dn	Stack Diameter:	114	in
Area of Nozzle:	2.521E-04	A_n	Stack Area:	70.9	As
Barometric Pressure:	29.35	Pb	Volume of Moisture:	27.7	VW
Gas Meter Y-Factor:	0.99	Yi	Pitot Coefficient:	0.84	Cp

	SAMPLE POINT	DWELL TIME	GAS METER	VELOCITY HEAD	STACK TEMP F	METER TEMPERATURE IN F	OUT F	PM ORIFICE	CO2	O2	STATIC PRESSURE	VEL	SDE	
4.92	A-1	4.92	654.118	0.55	318	72	68	0.48	11.2	7.9		3,029	20.69	0.74
10.14	2	5.22	656.3	0.62	320	74	68	0.48				3,220	21.99	0.79
15.61	3	5.47	658.5	0.68	322	75	69	0.48			-0.35	3,377	23.06	0.82
20.74	B-1	5.14	661.068	0.60	322	74	69	0.48				3,172	21.66	0.77
25.88	2	5.14	663.3	0.60	324	76	70	0.48				3,176	21.69	0.77
31.35	3	5.47	665.6	0.68	324	76	70	0.48				3,381	23.09	0.82
35.84	C-1	4.50	668.136	0.46	320	75	71	0.48				2,774	18.94	0.68
40.44	2	4.59	670.1	0.48	322	76	72	0.48				2,837	19.37	0.69
45.22	3	4.78	672.2	0.52	325	77	72	0.48				2,959	20.20	0.72
49.91	D-1	4.69	674.126	0.50	321	76	72	0.48				2,894	19.76	0.71
54.78	2	4.87	676.5	0.54	324	75	72	0.48				3,013	20.58	0.73
60.00	3	5.22	678.6	0.62	325	74	72	0.48				3,231	22.06	0.79
			681.032											

RESULTS	TT	VM	SQRT PIT	TS	TM	PM	CO2	O2	Pst	VEL	SDE	
	60.0	26.914	0.754	322	73	0.480	11.2	7.9	-0.35	3,089	21.09	0.75
	net	net	avg	avg	avg	avg	avg	avg	avg	avg	avg	

PS=	29.32	VMSTD=	25.873	VWGAS=	1.305	%M=	4.8
MD=	0.95	MWD=	30.11	MW=	29.53	PS=	29.32

STACK GAS VELOCITY =	51.5	AFPS	CYCLONE FLOW RATE =	0.68	CFM		
STACK GAS VOLUME =	137,861	DSCFM	GAS VISCOSITY =	232.18	micropoise		
STACK GAS VOLUME =	218,903	ACFM	CYCLONE CUT SIZE (D50) =	9.52	um		
ISOKINETIC RATIO =	88.0						

EMISSIONS	PM10	>PM10	Condensible *
WEIGHT,mg =	31.9	9.1	111
GR/DSCF =	0.019	0.005	0.066
LBS/Hr =	22.48	6.43	78.06
LBS/MMBTU =	0.045	0.013	0.155

Catalyst Air Management, Inc.

Client: **UGI**
Unit Tested: **Hunlock Station**
Sampling Location: Stack

ACETONE BLANK	VOLUME ml		BEAKER WEIGHT, g
	100	INITIAL	101.1559
		FINAL	101.1561
		INI g	0.0002

ACETONE INFO:
LOT NUMBER = **064459**
DENSITY = **0.7857** g/ml

ACETONE BLANK = 2.55E-06 g/g

PARTICULATE WEIGHT PM10

SAMPLE ID	ACETONE VOLUME ml		**ACETONE BEAKER WEIGHT, g**	FINAL-INI g		**FILTER WEIGHT, g**	FILTER FINAL	ACETONE PLUS FILTER g	MAXIMUM WASH BLANK g	TOTAL ALLOWABLE BLANK g	TOTAL g	mg
Run 1	95	INITIAL	107.2601		INITIAL	0.1164						
		FINAL	107.2655	**0.0054**	FINAL	0.1364	**0.0200**	0.0254	0.0002	0.0007	0.0252	25.2
Run 2	95	INITIAL	108.0732		INITIAL	0.1179						
		FINAL	108.0807	**0.0075**	FINAL	0.1441	**0.0262**	0.0337	0.0002	0.0007	0.0335	33.5
Run 3	95	INITIAL	108.1204		INITIAL	0.1185						
		FINAL	108.1265	**0.0061**	FINAL	0.1445	**0.0260**	0.0321	0.0002	0.0007	0.0319	31.9

PARTICULATE WEIGHT >PM10

Run 1	95	INITIAL	109.4939		INITIAL	0.0000						
		FINAL	109.5024	**0.0085**	FINAL	0.0000	**0.0000**	0.0085	0.0002	0.0007	0.0083	8.3
Run 2	85	INITIAL	108.4664		INITIAL	0.0000						
		FINAL	108.4763	**0.0099**	FINAL	0.0000	**0.0000**	0.0099	0.0002	0.0007	0.0097	9.7
Run 3	85	INITIAL	109.7309		INITIAL	0.0000						
		FINAL	109.7402	**0.0093**	FINAL	0.0000	**0.0000**	0.0093	0.0002	0.0007	0.0091	9.1

RUN		1	2	3
IMP	1	730.4	687.3	687.7
		747.7	705.5	708.8
		17.3	18.2	21.1
	2	720.9	699.6	708.9
		725.2	703.1	710.2
		4.3	3.5	1.3
	3	721.7	704.6	724.1
		721.7	704.6	724.4
		0.0	0.0	0.3
	4	681.0	707.3	708.2
		685.6	711.6	713.2
		4.6	4.3	5.0
TOTAL		26.2	26.0	27.7