April 14, 2010

Shell Chemicals, LP
Deer Park Annex B3
5900 Hwy. 225
Deer Park, Texas 77536

Attention: Ms. Barbara Bessette-Henderson

ARI Project No. HRVOC-504-343

Ms. Bessette-Henderson:

Enclosed are the analytical results from the sampling performed at the Shell-Deer Park facility.

This is a complete analytical report for sampling conducted on March 23, 2010.

If you have any questions regarding this report please feel free to contact me at (713) 946-6222 ext. 109.

Respectfully,

Jim Presley
Senior Chemist
ARI Environmental, Inc.
1710 Preston Road, Unit C
Pasadena, Texas 77503

EXCELLENCE in ANALYSIS **CCAS** SOIL GAS ANALYSIS

METHANE & ATMOSPHERIC GAS ANALYSIS by EPA 3C/ASTM D-1945, TCD/FID

Date Sampled:	3/23/2010	Barbara Bessette-Henderson	CCAS Log No.:	1003020-01
Date Received:	3/26/2010	ARI Environmental	Client Sample ID:	16:02
Date Analyzed:	3/29&31/2010	1710 Preston Rd. # C	Description:	Ambient
Date Reported:	4/5/2010	Pasadena, TX 77503	Client Job ID:	Shell Dial Study
Analyst:	Daniel Florida, BS		Canister Number:	1393
	Mei Ma, MS			

EPA 3C/ASTM D 1945/1946

Analyte	CAS #	Quantitat'n Limit		Results	
		ppmv	Percent	ppmv	Percent
Carbon Dioxide	124-38-9	200	0.02	580	0.058
Oxygen	7782-44-7	300	0.03	208000	20.8
Nitrogen	7727-37-9	300	0.03	791000	79.1
Methane	74-82-8	1.0	0.0001	ND	ND
VOC to C12		0.002	0.0000002	0.36	0.000036
Carbon Monoxide	630-08-0	(MDL) 10	0.0010	ND	ND

N.D. = Not Detected

Dry gas basis

N.R.=Not Requested

Respectfully submitted,

FFIX 1003020-01

MM/SCH

Stephen C. Havlicek, Ph.D.

CCAS State Certifications:
TX/NELAP T104704250-09-TX

Shell HRVOC 504-343 March 23, 2010 BBH (Canister 1393 03232010)

2703 National Place, Garland, TX 75041
Phone (972) 840-8983/Toll Free (877) 506-0629/ Fax (972) 840-8993

EPA Method TO-14/15 for PAMS

CCAS

Air Toxics Report

Date Sampled:	3/23/2010	Sampler:	Barbara Bessette-Henderson	CCAS Log No.:	1003020-01
Date Received:	2/17/2010	Client:	ARI Environmental	Client Sample ID:	16:02 to16:14
Date Analyzed:	3/29&31/2010	Address:	1710 Preston Rd. # C	Description:	Olefins Tank Farm
Date Reported:	4/5/2010		Pasadena, TX 77503	Client Job ID:	Dial Study/Shell
Analyst:	Daniel Florida, BS			Canister Number:	1393
	Mei Ma, MS				

Attn: Greg Burch/Barbara Bessette-Henderson

tot. DF= 1.0

Compound	MW	CAS Number	PQL+ ppbv	PQL+ ug/M^3	Results ppbv	Results ug/M^3
Freon 12 (Dichlorodifluoromethane)	120.9	75-71-8	0.2	1.1	0.42	2.3
Freon 113 (1,1,2-Trichlorotrifluoroethane)	187.4	76-13-1	0.2	1.7	ND	ND
Freon 114 (1,2-Dichlorotetrafluoroethane)	170.9	76-14-2	0.2	1.5	ND	ND
Heptane & isomers	100.2	142-82-5	0.2	0.9	1.0	4.5
Hexachloro-1,3-butadiene	260.8	87-68-3	0.2	2.3	ND	ND
Hexane	86.2	110-54-3	0.2	0.8	3.2	12
2-Hexanone	100.1	591-78-6	0.2	0.9	ND	ND
1-Hexene & isomers	84.2	592-41-6	0.2	0.8	0.43	1.6
c-2-Hexene	84.2	7688-21-3	0.2	0.8	ND	ND
Isobutane	58.1	75-28-5	0.2	0.5	1.0	2.6
Isopentane (2-Methylbutane)	72.2	78-78-4	0.2	0.6	18	58
Isoprene (2-Methyl-1,3-Butadiene)	68.1	78-79-5	0.2	0.6	2.3	7.0
Isopropylbenzene (Cumene)	120.2	98-82-8	0.2	1.1	ND	ND
2-Methyl-2-Butene	70.1	513-35-9	0.2	0.6	2.5	7.8
3-Methyl-1-Butene	70.1	563-45-1	0.2	0.6	ND	ND
Methylene Chloride (Dichloromethane)	84.8	75-09-2	0.2	0.8	ND	ND
Methylcyclohexane	98.1	108-87-2	0.2	0.9	ND	ND
Methylcyclopentane	84.2	96-37-7	0.2	0.8	1.0	3.8
2-Methylheptane	114.2	592-27-8	0.2	1.0	ND	ND
3-Methylheptane	114.2	589-81-1	0.2	1.0	ND	ND
2-Methylhexane	100.2	591-76-4	0.2	0.9	0.67	3.0
3-Methylhexane	100.2	589-34-4	0.2	0.9	ND	ND
Methyl Isobutyl Ketone (MIBK)	100.2	108-10-1	0.2	0.9	ND	ND
Methyl Methacrylate	100.1	80-62-6	0.2	0.9	ND	ND
3-Methyl-1,3-pentadiene E	82.1	2787-43-1	0.2	0.7	ND	ND
3-Methylpentanal E	100.1	15877-57-3	0.2	0.9	ND	ND
2-Methylpentane	86.2	107-83-5	0.2	0.8	3.6	14
3-Methylpentane	86.2	96-14-0	0.2	0.8	2.3	8.9
2-Methyl-1-pentene & isomers	84.2	763-24-1	0.2	0.8	ND	ND
4-Methyl-1-pentene/4-Methyl-2-pentene	84.2	691-37-2	0.2	0.8	ND	ND
MTBE	88.2	1634-04-4	0.2	0.8	ND	ND
Nonane & isomers	128.2	111-84-2	0.2	1.1	ND	ND

Phone: 972-840-8983
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2703 National Place
Garland, TX 75041

EPA Method TO-14/15 for PAMS

CCAS

Air Toxics Report

Date Sampled:	3/23/2010	Sampler:	Barbara Bessette-Henderson	CCAS Log No.:	1003020-01
Date Received:	2/17/2010	Client:	ARI Environmental	Client Sample ID:	16:02 to16:14
Date Analyzed:	3/29&31/2010	Address:	1710 Preston Rd. # C	Description:	Olefins Tank Farm
Date Reported:	4/5/2010		Pasadena, TX 77503	Client Job ID:	Dial Study/Shell
Analyst:	Daniel Florida, BS			Canister Number:	1393
	Mei Ma, MS				

Attn: Greg Burch/Barbara Bessette-Henderson

tot. DF= 1.0

Compound	MW	CAS Number	PQL+ ppbv	PQL+ ug/M^3	Results ppbv	Results ug/M^3
Acetone	58.1	67-64-1	0.2	0.5	15	39
Acetylene	26	74-86-2	0.2	0.2	ND	ND
Benzene	78.1	71-43-2	0.2	0.7	26	91
Benzyl Chloride	126.6	71-43-2	0.2	1.1	ND	ND
Bromodichloromethane	163.9	75-27-4	0.2	1.5	ND	ND
1,3-Butadiene	54.1	106-99-0	0.2	0.5	5.8	14
Butane	58.1	106-97-8	0.2	0.5	5.4	14
1-Butene	56.1	25167-67-3	0.2	0.5	4.6	12
c-2-Butene	56.1	590-18-1	0.2	0.5	1.2	3.0
t-2-Butene	56.1	624-64-6	0.2	0.5	1.3	3.3
2-Butanone (MEK)	72.1	78-93-3	0.2	0.6	1.1	3.5
Carbon Disulfide	76.3	75-15-0	0.2	0.7	ND	ND
Carbon Tetrachloride	153.8	56-23-5	0.2	1.4	ND	ND
Carbonyl Sulfide E	60.2	463-58-1	0.2	0.5	0.81	2.2
Chlorobenzene	112.6	108-90-7	0.2	1.0	ND	ND
Chloroethane	64.5	75-00-3	0.2	0.6	ND	ND
Chloroform	119.4	67-66-3	0.2	1.1	ND	ND
Chloromethane	50.5	74-87-3	0.2	0.5	ND	ND
3-Chloropropene	76.5	107-05-1	0.2	0.7	0.42	1.4
Cyclohexane	84.2	110-82-7	0.2	0.8	ND	ND
Cyclopentane	70.2	287-92-3	0.2	0.6	1.1	3.4
Decane & isomers	142.2	124-18-5	0.2	1.3	ND	ND
Dibromochloromethane	208.3	124-48-1	0.2	1.9	ND	ND
1,2-Dibromoethane (Ethylene Dibromide)	187.9	106-93-4	0.2	1.7	ND	ND
1,2-Dichlorobenzene	147.0	955-50-1	0.2	1.3	ND	ND
1,3-Dichlorobenzene	147.0	541-73-1	0.2	1.3	ND	ND
1,4-Dichlorobenzene	147.0	106-46-7	0.2	1.3	ND	ND
1,1-Dichloroethane (1,1-DCA)	99.0	75-34-3	0.2	0.9	ND	ND
1,2-Dichloroethane(1,2-DCA)	99.0	107-06-2	0.2	0.9	ND	ND
1,1-Dichloroethene(1,1-DCE)	96.9	75-35-4	0.2	0.9	ND	ND
trans- 1,2-Dichloroethene (*t*-1,2-DCE)	96.9	156-60-5	0.2	0.9	ND	ND
1,2-Dichloropropane	113.0	78-87-5	0.2	1.0	ND	ND
cis- 1,3-Dichloropropene	111.0	10061-01-5	0.2	1.0	ND	ND
trans- 1,3-Dichloropropene	111.0	10061-02-6	0.2	1.0	ND	ND
1,4-Diethylbenzene (p-Diethylbenzene)	134.2	105-05-5	0.2	1.2	ND	ND
m-Diethylbenzene	134.2	141-93-5	0.2	1.2	ND	ND
2,2-Dimethylbutane	86.2	75-83-2	0.2	0.8	0.57	2.2
2,3-Dimethylbutane	86.2	79-29-8	0.2	0.8	0.47	1.8
2,3-Dimethylpentane	100.2	565-59-3	0.2	0.9	ND	ND
3,3-Dimethylpentane	100.2	562-49-2	0.2	0.9	ND	ND
2,4-Dimethylpentane	100.2	108-08-7	0.2	0.9	0.30	1.3
1,4-Dioxane	88.1	123-91-1	0.2	0.8	ND	ND
Ethane	30.1	74-84-0	0.2	0.3	ND	ND
Ethyl Acetate		141-78-6	0.5	0.0	ND	ND
Ethylbenzene	106.1	100-41-4	0.5	2.4	ND	ND
Ethylene	28.0	74-85-1	0.2	0.3	120	150
1-Ethyl-4-methylcyclohexane & isomers	126.2	3728-56-1	0.2	1.1	ND	ND
m-Ethyltoluene	120.1	620-14-4	0.2	1.1	ND	ND
o-Ethyltoluene	120.1	611-14-3	0.2	1.1	ND	ND
p-Ethyltoluene	120.1	622-96-8	0.2	1.1	ND	ND
Freon 11 (Fluorotrichloromethane)	137.4	75-69-4	0.2	1.2	0.21	1.3

Phone: 972-840-8983
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2703 National Place
Garland, TX 75041

EPA Method TO-14/15 for PAMS

CCAS

Air Toxics Report

Date Sampled: 3/23/2010
Date Received: 2/17/2010
Date Analyzed: 3/29&31/2010
Date Reported: 4/5/2010
Analyst: Daniel Florida, BS
Mei Ma, MS
Attn: Greg Burch/Barbara Bessette-Henderson

Sampler: Barbara Bessette-Henderson
Client: ARI Environmental
Address: 1710 Preston Rd. # C
Pasadena, TX 77503

CCAS Log No.: 1003020-01
Client Sample ID: 16:02 to16:14
Description: Olefins Tank Farm
Client Job ID:Dial Study/Shell
Canister Number: 1393
tot. DF= 1.0

Compound	MW	CAS Number	PQL+ ppbv	PQL+ ug/M^3	Results ppbv	Results ug/M^3
Octane & isomers	114.2	111-65-9	0.2	1.0	ND	ND
Pentane	72.2	109-66-0	0.2	0.6	6.4	21
1-Pentene	70.1	109-67-1	0.2	0.6	4.8	15
c-2-Pentene	70.1	627-20-3	0.2	0.6	3.0	9.4
t-2-Pentene	70.1	646-04-8	0.2	0.6	1.7	5.3
Propane	44.1	74-98-6	0.2	0.4	2.7	5.3
Propylbenzene	120.2	103-65-1	0.2	1.1	ND	ND
2-Propanol	60.1	67-63-0	0.2	0.5	ND	ND
Propylene	42.1	115-07-1	0.2	0.4	22	41
Styrene	104.2	100-42-5	0.2	0.9	0.39	1.8
1,1,2,2-Tetrachloroethane	167.9	630-20-6	0.2	1.5	ND	ND
Tetrachloroethylene (PCE)	165.8	127-18-4	0.2	1.5	ND	ND
Tetrahydrofuran	72.1	109-99-9	0.2	0.6	ND	ND
Toluene	92.2	108-88-3	0.2	0.8	5.2	21
1,1,1-Trichloroethane (1,1,1-TCA)	133.4	71-55-6	0.2	1.2	ND	ND
1,1,2-Trichloroethane (1,1,2-TCA)	133.4	79-00-5	0.2	1.2	ND	ND
Trichloroethylene (TCE)	131.3	79-01-6	0.2	1.2	ND	ND
1,2,3-Trimethylbenzene	120.1	526-73-8	0.2	1.1	ND	ND
1,2,4-Trimethylbenzene (Pseudocumene)	120.2	95-63-6	0.2	1.1	ND	ND
1,3,5-Trimethylbenzene (Mesitylene)	120.2	108-67-8	0.2	1.1	ND	ND
2,2,4-Trimethylpentane	114.3	540-84-1	0.2	1.1	ND	ND

Phone: 972-840-8983
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2703 National Place
Garland, TX 75041

EPA Method TO-14/15 for PAMS

CCAS

Air Toxics Report

Date Sampled:	3/23/2010	Sampler:	Barbara Bessette-Henderson	CCAS Log No.:	1003020-01
Date Received:	2/17/2010	Client:	ARI Environmental	Client Sample ID:	16:02 to16:14
Date Analyzed:	3/29&31/2010	Address:	1710 Preston Rd. # C	Description:	Olefins Tank Farm
Date Reported:	4/5/2010		Pasadena, TX 77503	Client Job ID:	Dial Study/Shell
Analyst:	Daniel Florida, BS			Canister Number:	1393
	Mei Ma, MS				

Attn: Greg Burch/Barbara Bessette-Henderson

tot. DF= 1.0

Compound	MW	CAS Number	PQL+ ppbv	PQL+ ug/M^3	Results ppbv	Results ug/M^3
2,3,4-Trimethylpentane & isomers	114.3	565-75-3	0.2	1.1	ND	ND
Undecane & isomers	156.2	1120-21-4	0.2	0.9	ND	ND
Vinyl Acetate	86.1	108-05-4	0.2	0.6	ND	ND
Vinyl Bromide	107.0	593-60-2	0.2	0.6	ND	ND
Vinyl Chloride	62.5	75-01-4	0.2	0.6	ND	ND
m-Xylene*	106.2	108-38-3	0.2	0.9	0.58	2.7
p-Xylene*	106.2	106-42-3	0.2	0.9	*	*
o-Xylene	106.2	95-47-6	0.2	0.9	ND	ND
				sum target VOC	267	591

Sample-specific QA recoveries:		%	OK? Y/N
IS	Bromochloromethane	108%	Y
SS	4-Bromofluorobenzene	76%	Y
SS	Benzene-d6	100%	Y
IS	Chlorobenzene Ds	88%	Y

SS acceptance criterion is 70-130%.

Acceptance ranges for Internal Standards (IS) are 60-140%.

IS acceptar 1003020-01

TO-14/15

* Coeluting compounds, reported as sum under m-Xylene.

CCAS State Certifications:
TX/NELAP T104704250-09-TX

Respectfully submitted,

Stephen Havlicek, Ph.D.

Phone: 972-840-8983
Fax: 972-840-8993

2703 National Place
Garland, TX 75041

EPA Method TO-14/15

CCAS

Air Toxics Supplimentary Report

Date Sampled:	3/23/2010	Sampler:	Barbara Bessette-Henderson	CCAS Log No.:	1003020-01
Date Received:	2/17/2010	Client:	ARI Environmental	Client Sample ID:	16:02 to16:14
Date Analyzed:	3/29&31/2010	Address:	1710 Preston Rd. # C	Description:	Olefins Tank Farm
Date Reported:	4/5/2010		Pasadena, TX 77503	Client Job ID:	Dial Study/Shell
Analyst:	Daniel Florida, BS			Canister Number:	1393
	Mei Ma, MS				

Attn: Greg Burch/Barbara Bessette-Henderson

tot. DF= 1.0

Compound	MW	CAS Number	PQL+ ppbv	PQL+ ug/M^3	Results ppbv	Results ug/M^3
Acetaldehyde	44.1	75-07-0	0.5	1.0	2.7	5.3
Butanal E	72.1	123-72-8	0.5	1.6	1.0	3.2
1,3-Cyclopentadiene E	66.1	542-92-7	0.5	1.5	5.1	15
Cyclopentene	68.1	142-29-0	0.5	1.5	3.2	10
3-Methylcyclopentene & isomers E	82.2		0.5	1.8	0.71	2.6
Octane & isomers	114.2	111-65-9	0.5	2.5	0.34	1.7
1,3-Pentadiene & isomers	68.1	2004-70-8	0.5	1.5	18	53
Other Hydrocarbons up to C_{12}/C_{13}	170.2	112-40-3	10	28	59	444
				Sum Supplemental VOC	89	535

Sample-specific QA recoveries:		%	OK? Y/N
IS	Bromochloromethane	109%	Y
IS	1,4-Difluorobenzene	107%	Y
SS	4-Bromofluorobenzene	89%	Y
IS	Chlorobenzene D_5	94%	Y

CCAS State Certifications:
TX/NELAP T104704250-09-TX

SS acceptance criterion is 70-130%.
Acceptance ranges for Internal Standards (IS) are 60-140%.
IS acceptance criteria corresponds to EPA guidelines.
TO-14/15 1003020-01
* Coeluting compounds, reported as sum under m-Xylene.

Respectfully submitted,

Stephen Havlicek, Ph.D.

Phone: 972-840-8983
Fax: 972-840-8993

2703 National Place
Garland, TX 75041

EPA Method TO-14/15 **CCAS** **Air Toxics Report**

Date Sampled:	3/31/2010	**Sampled by:**	CCAS	**CCAS Log No.:**	033110
Date Received:	3/31/2010	**Client:**	CCAS	**Client Sample ID:**	N/A
Date Analyzed:	3/31/2010	**Address:**	2703 National Place	**Description:**	CCV
Date Reported:	4/1/2010		Garland, TX 75041	**Matrix:**	Air
Analyst:	Daniel Florida			**Test Code:**	TO-14/15

tot. DF= 1.0 page 1 of 2

Compound	MW	CAS Number	PQL+ ppbv	PQL+ ug/M^3	Results ppbv	Results % Recov.
Benzene	78.1	71-43-2	1.0	3.5	64	118
Carbon Tetrachloride	153.8	56-23-5	0.5	3.4	30	112
Chlorobenzene	112.6	108-90-7	1.0	5.0	30	110
Chloroform	119.4	67-66-3	0.5	2.7	32	118
1,2-Dibromoethane (Ethylene Dibromide)	187.9	106-93-4	1.0	8.4	29	109
1,2-Dichlorobenzene	147.0	955-50-1	1.0	6.6	30	111
1,3-Dichlorobenzene	147.0	541-73-1	1.0	6.6	30	111
1,4-Dichlorobenzene	147.0	106-46-7	1.0	6.6	30	111
1,1-Dichloroethane (1,1-DCA)	99.0	75-34-3	0.5	2.2	32	119
1,2-Dichloroethane(1,2-DCA)	99.0	107-06-2	1.0	4.4	33	121
1,1-Dichloroethylene(1,1-DCE)	96.9	75-35-4	1.0	4.3	31	116
cis- 1,2-Dichloroethylene (*c* -1,2-DCE)	96.9	156-59-2	0.5	2.2	32	119
1,2-Dichloropropane	96.9	156-60-5	1.0	4.3	33	122
cis- 1,3-Dichloropropene	111.0	10061-01-5	0.5	2.5	30	110
trans- 1,3-Dichloropropene	111.0	10061-02-6	1.0	5.0	30	110
Ethylbenzene	106.1	100-41-4	1.0	4.7	60	112
Ethyl Chloride (Chloroethane)	64.5	75-00-3	1.0	2.9	32	119
Freon 11 (Trichlorofluoromethane)	137.4	75-69-4	1.0	6.1	30	113
Freon 12 (Dichlorodifluoromethane)	120.9	75-71-8	2.0	11	30	113
Freon 113 (1,1,2-Trichlorotrifluoroethane)	187.4	76-13-1	1.0	8.4	31	115
Freon 114 (1,2-Dichlorotetrafluoroethane)	170.9	76-14-2	2.0	15	31	115
Isopropylbenzene (Cumene)	120.1	98-82-8	1.0	5.4	60	112
Methyl Bromide (Bromomethane)	94.9	74-83-9	1.0	4.2	31	116
2-Methyl-1-Pentene	84.2	763-24-1	1.0	3.8	32	118
Methyl Chloride (Chloromethane)	50.5	74-87-3	1.0	2.3	32	119
Methylene Chloride (Dichloromethane)	84.8	75-09-2	5.0	19	29	108
Perchloroethylene (PCE)	165.8	127-18-4	0.5	3.7	32	117
Propylbenzene	120.1	103-65-1	1.0	5.4	30	111
Styrene	104.2	100-42-5	1.0	4.7	60	111
1,1,2,2-Tetrachloroethane	167.9	79-34-5	1.0	7.5	31	115

EPA Method TO-14/15 **CCAS** **Air Toxics Report**

Date Sampled:	**3/31/2010**	**Sampled by:**	**CCAS**	**CCAS Log No.:**	**033110**
Date Received:	**3/31/2010**	**Client:**	**CCAS**	**Client Sample ID:**	**N/A**
Date Analyzed:	**3/31/2010**	**Address:**	**2703 National Place**	**Description:**	**CCV**
Date Reported:	**4/1/2010**		**Garland, TX 75041**	**Matrix:**	**Air**
Analyst:	**Daniel Florida**			**Test Code:**	**TO-14/15**

tot. DF= 1.0 page 2 of 2

Compound	MW	CAS Number	PQL+ ppbv	PQL+ ug/M^3	Results ppbv	Results % Recov.
Toluene	92.1	108-88-3	1.0	4.1	60	111
1,1,1-Trichloroethane (1,1,1-TCA)	133.4	71-55-6	0.5	3.0	31	113
1,1,2-Trichloroethane (1,1,2-TCA)	133.4	79-00-5	0.5	3.0	29	109
Trichloroethylene (TCE)	131.3	79-01-6	0.5	2.9	31	115
1,2,4-Trimethylbenzene (Pseudocumene)	120.1	95-63-6	1.0	5.4	61	113
1,3,5-Trimethylbenzene (Mesitylene)	120.1	108-67-8	1.0	5.4	62	114
m-Xylene*	106.1	108-38-3	1.0	4.7	122	113
p-Xylene*	106.1	106-42-3	1.0	4.7	*	*
o-Xylene	106.1	95-47-6	1.0	4.7	60	112
Vinyl Chloride	62.5	75-01-4	2.0	5.6	32	118

*** Coeluting compounds, reported as sum under m-Xylene**

Sample-specific QA recoveries:		%	OK Y/N
IS	Bromochloromethane	100	Y
SS	Bromofluorobenzene	96	Y
IS	Chlorobenzene d5	100	Y
IS	1,4-Difluorobenzene	100	Y

+ Practical Quantitation Limit, a 2-4X multiple of the experimentally established Method Detection Limit.
Acceptance criteria 70-130% for SS, 60-140% for IS.
IS acceptance criteria corresponds to EPA guidelines.

TO-14/15 SPIKE 033110

Respectfully submitted,

CCAS State Certifications:
TX/NELAP T104704250-09-TX

Stephen Havlicek, Ph.D.

EXCELLENCE in ANALYSIS **CCAS** FLARE/SOIL GAS ANALYSIS

METHANE/ATMOSPHERIC GAS ANALYSIS: ASTM D-1945, TCD/FID

Date Sampled:	3/29/2010	Sampled by:	CCAS	CCAS Log No.	Spike 032910
Date Received:	3/29/2010	Client:		Client Sample ID:	N/A
Date Analyzed:	3/29/2010	Address:		Description: N/A	
Date Reported:	3/29/2010			Client Job ID: N/A	
Analyst:	Mei Ma			Sample Prep: Mei Ma	

CERTIFIED REFERENCE SPIKE

COMPOUND	(CAS RN)	DETECTION LIMIT %	TRUE VALUE PERCENT	FOUND PERCENT	PERCENT RECOVERY	QC LIMIT PERCENT
Hydrogen	1333-74-0	0.02	4.0	4.0	99	70 - 130
Oxygen	7782-44-7	0.02	5.0	5.0	101	70 - 130
Nitrogen	7727-37-9	0.05	78.1	79.7	102	70 - 130
Methane	74-82-8	0.0002	4.0	4.0	99	70 - 130
Carbon Dioxide	124-38-9	0.01	5.0	5.0	100	70 - 130
Carbon Monoxide	630-08-0	0.01	5.0	5.0	101	70 - 130

PERCENT RECOVERY 0 COMPOUNDS OUT OF 6 OUTSIDE QC LIMITS

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SPECIALISTS

Stephen C. Havlicek, Ph.D.

CCAS State Certifications:
TX/NELAP T104704250-09-TX

N.S.= Not Spiked
N/A = Not Applicable
FIX Spike 032910
MM/SCH

2703 National Place, Garland, TX 75041
Phone (972) 840-8983/Toll Free (877) 506-0629/ Fax (972) 840-8993

EXCELLENCE in ANALYSIS

CCAS

HYDROCARBON GAS ANALYSIS

Date Sampled:	3/29/2010	Sampled by:CCAS	CCAS Log No.	BLK 032910
Date Received:	3/29/2010	Client:	Client Sample ID:	N/A
Date Analyzed:	3/29/2010	Address:	PO:	N/A
Date Reported:	3/29/2010		Client Job ID:	N/A
Analysts:	Mei Ma	ASTM D1945 REPORT	Description: Full Method Blank	

Compound	MW	CAS No.	Time	PQL*	Concentration
			min.	PPMV	PPMV
Methane	16.1	74-82-8		2.0	N.D.
Ethane	30.1	74-84-0		0.4	N.D.
Ethylene	28.1	74-85-1		0.3	N.D.
Propane	44.0	74-98-6		0.4	N.D.
Propylene	42.0	115-07-1		0.3	N.D.
Butane	58.1	106-97-8		0.4	N.D.
1-Butene	56.1	106-98-9		0.4	N.D.
Pentane	72.1	109-66-0		0.2	N.D.
1-Pentene	70.1	109-67-1		0.4	N.D.
Hexane	86.1	110-54-3		0.3	N.D.
1-Hexene	84.1	592-41-6		0.2	N.D.
Isobutane	58.1	75-28-5		0.1	N.D.
Neopentane	72.1	463-82-1		0.1	N.D.
Isopentane	72.1	78-78-4		0.2	N.D.
2,2-Dimethylbutane	86.1	75-83-2		0.3	N.D.
2-Methylpentane	86.1	107-83-5		0.1	N.D.
3-Methylpentane	86.1	96-14-0		0.2	N.D.

1. PQL * = Practical Quantitation Limit. All are based on a recent, statistically established MDL study.

Respectfully Submitted,
COAST-TO-COAST ANALYTICAL SPECIALISTS

CCAS State Certifications:
TX/NELAP T104704250-09-TX

Stephen C. Havlicek, Ph.D.

HC BLK 032910

2703 National Place, Garland, TX 75041
Phone (972) 840-8983/Toll Free (877) 506-0629/ Fax (972) 840-8993

EXCELLENCE in ANALYSIS **CCAS** AIR TOXICS REPORT

HYDROCARBON GAS ANALYSIS: METHOD ASTM D1945 RECOVERY STUDY, FID

Date Spiked:	3/29/2010	Sampled by:	CCAS	CCAS Log No.	HC Spike 032910
Date Received:	3/29/2010	Client:		Client Sample ID:	N/A
Date Analyzed:	3/29/2010	Address:		Description:	Certified Standards
Date Reported:	3/29/2010			Sample Prep:	Mei Ma
Analyst:	Mei Ma				

Representative Hydrocarbon Spike
ASTM D1945 REPORT

COMPOUND	CAS R	DETECTION LIMIT PPMV	TRUE VALUE PPMV	FOUND PPMV	PERCENT RECOVERY	QC LIMIT PERCENT
Methane	74-82-8	2.0	50	50	100	70 - 130
Ethane	74-84-0	0.4	50	49	98	70 - 130
Ethylene	74-85-1	0.3	50	49	99	70 - 130
Propane	74-98-6	0.4	50	48	96	70 - 130
Propylene	115-07-1	0.3	50	48	96	70 - 130
Butane	106-97-8	0.4	50	47	95	70 - 130
1-Butene	106-98-9	0.4	50	47	94	70 - 130
Pentane	109-66-0	0.2	50	48	96	70 - 130
1-Pentene	109-67-1	0.4	50	48	95	70 - 130
Hexane	110-54-3	0.3	50	49	98	70 - 130
1-Hexene	592-41-6	0.2	50	49	97	70 - 130
Isobutane	75-28-5	0.1	50	48	96	70 - 130
Neopentane	463-82-1	0.1	50	49	97	70 - 130
Isopentane	78-78-4	0.2	50	48	95	70 - 130
2,2-Dimethylbutane	75-83-2	0.3	50	48	96	70 - 130
2-Methylpentane	107-83-5	0.1	50	48	96	70 - 130
3-Methylpentane	96-14-0	0.2	50	49	98	70 - 130

PERCENT RECOVERY 0 COMPOUNDS OUT OF17 OUTSIDE QC LIMITS

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SPECIALISTS

CCAS State Certifications:
TX/NELAP T104704250-09-TX

SAT HC SPIKE HC Spike 032910
MM/SCH

Stephen C. Havlicek, Ph.D.

2703 National Place, Garland, TX 75041
Phone (972) 840-8983/Toll Free (877) 506-0629/ Fax (972) 840-899

EPA Method TO-14/15 **CCAS** **Air Toxics Report**

Date Sampled:	3/31/2010	**Sampled by:**	CCAS	**LCS SPIKE:**	033110
Date Received:	3/31/2010	**Client:**	CCAS	**Client Sample ID:**	N/A
Date Analyzed:	3/31/2010	**Address:**	2703 National Place	**Description:**	LCS
Date Reported:	4/1/2010		Garland, TX 75041	**Matrix:**	Air
Analyst:	Daniel Florida			**Test Code:**	TO-14/15

tot. DF= 1.0 page 1 of 2

Compound	MW	CAS Number	PQL+ ppbv	PQL+ ug/M^3	Results ppbv	Results % Recov.
Benzene	78.1	71-43-2	1.0	3.5	15	83
Carbon Tetrachloride	153.8	56-23-5	0.5	3.4	8.8	97
Chlorobenzene	112.6	108-90-7	1.0	5.0	7.0	77
Chloroform	119.4	67-66-3	0.5	2.7	7.8	87
1,2-Dibromoethane (Ethylene Dibromide)	187.9	106-93-4	1.0	8.4	7.0	78
1,2-Dichlorobenzene	147.0	955-50-1	1.0	6.6	7.0	77
1,3-Dichlorobenzene	147.0	541-73-1	1.0	6.6	6.6	74
1,4-Dichlorobenzene	147.0	106-46-7	1.0	6.6	6.5	72
1,1-Dichloroethane (1,1-DCA)	99.0	75-34-3	0.5	2.2	7.6	84
1,2-Dichloroethane(1,2-DCA)	99.0	107-06-2	1.0	4.4	8.0	89
1,1-Dichloroethylene(1,1-DCE)	96.9	75-35-4	1.0	4.3	9.0	100
cis- 1,2-Dichloroethylene (*c*-1,2-DCE)	96.9	156-59-2	0.5	2.2	7.5	83
1,2-Dichloropropane	96.9	156-60-5	1.0	4.3	7.3	82
cis- 1,3-Dichloropropene	111.0	10061-01-5	0.5	2.5	7.2	80
trans- 1,3-Dichloropropene	111.0	10061-02-6	1.0	5.0	6.7	74
Ethylbenzene	106.1	100-41-4	1.0	4.7	13	72
Ethyl Chloride (Chloroethane)	64.5	75-00-3	1.0	2.9	8.5	94
Freon 11 (Trichlorofluoromethane)	137.4	75-69-4	1.0	6.1	10	113
Freon 12 (Dichlorodifluoromethane)	120.9	75-71-8	2.0	11	10	112
Freon 113 (1,1,2-Trichlorotrifluoroethane)	187.4	76-13-1	1.0	8.4	8.6	96
Freon 114 (1,2-Dichlorotetrafluoroethane)	170.9	76-14-2	2.0	15	9.6	107
Isopropylbenzene (Cumene)	120.1	98-82-8	1.0	5.4	13	74
Methyl Bromide (Bromomethane)	94.9	74-83-9	1.0	4.2	9.2	102
2-Methyl-1-Pentene	84.2	763-24-1	1.0	3.8	7.7	86
Methyl Chloride (Chloromethane)	50.5	74-87-3	1.0	2.3	8.7	96
Methylene Chloride (Dichloromethane)	84.8	75-09-2	5.0	19	8.7	97
Perchloroethylene (PCE)	165.8	127-18-4	0.5	3.7	8.0	89
Propylbenzene	120.1	103-65-1	1.0	5.4	6.6	73
Styrene	104.2	100-42-5	1.0	4.7	13	72
1,1,2,2-Tetrachloroethane	167.9	79-34-5	1.0	7.5	8.6	96

EPA Method TO-14/15 **CCAS** **Air Toxics Report**

Date Sampled:	3/31/2010	**Sampled by:**	CCAS	**LCS SPIKE:**	033110
Date Received:	3/31/2010	**Client:**	CCAS	**Client Sample ID:**	N/A
Date Analyzed:	3/31/2010	**Address:**	2703 National Place	**Description:**	LCS
Date Reported:	4/1/2010		Garland, TX 75041	**Matrix:**	Air
Analyst:	Daniel Florida			**Test Code:**	TO-14/15

tot. DF= 1.0 page 2 of 2

Compound	MW	CAS Number	PQL+ ppbv	PQL+ ug/M^3	Results ppbv	Results % Recov.
Toluene	92.1	108-88-3	1.0	4.1	14	79
1,1,1-Trichloroethane (1,1,1-TCA)	133.4	71-55-6	0.5	3.0	8.4	93
1,1,2-Trichloroethane (1,1,2-TCA)	133.4	79-00-5	0.5	3.0	7.4	82
Trichloroethylene (TCE)	131.3	79-01-6	0.5	2.9	7.7	86
1,2,4-Trimethylbenzene (Pseudocumene)	120.1	95-63-6	1.0	5.4	13	73
1,3,5-Trimethylbenzene (Mesitylene)	120.1	108-67-8	1.0	5.4	13	72
m-Xylene*	106.1	108-38-3	1.0	4.7	25	71
p-Xylene*	106.1	106-42-3	1.0	4.7	*	*
o-Xylene	106.1	95-47-6	1.0	4.7	13	74
Vinyl Chloride	62.5	75-01-4	2.0	5.6	8.8	98

*** Coeluting compounds, reported as sum under m-Xylene**

Sample-specific QA recoveries:		%	OK Y/N
IS	Bromochloromethane	104	Y
SS	Bromofluorobenzene	106	Y
IS	Chlorobenzene d5	93	Y
IS	1,4-Difluorobenzene	100	Y

+ Practical Quantitation Limit, a 2-4X multiple of the experimentally established Method Detection Limit.
Acceptance criteria 70-130% for SS, 60-140% for IS.
IS acceptance criteria corresponds to EPA guidelines.

TO-14/15 LCS XLS

Respectfully submitted,

CCAS State Certifications:
TX/NELAP T104704250-09-TX

Stephen Havlicek, Ph.D.

6603

CHAIN OF CUSTODY RECORD

100302O

PROJ. NO.

PROJECT NAME: Dial Study / Shell

SAMPLERS: (Signature)

LAB NO.	SAMPLE NO.	DATE	TIME	SAMPLE LOCATION	NO. OF CONTAINERS	TO15	TCD/FID					REMARKS
	~~1353~~	~~3-23-10~~	~~1545~~	~~Olefins Tank Farm~~	Discard							~~Primary End time 1555~~
-01	1393	3-23-10	1602	Olefins Tank Farm		X						Primary End time 1604 #1393

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
	3-23-10 1630			3-25-10	
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
			CCAS	3-25-10	
Relinquished by: (Signature)	Date / Time	Received for Laboratory by:	Date / Time		

REMARKS: PAMS

ARI ENVIRONMENTAL INC.
951 Old Rand Road, Unit 106
Wauconda, IL 60084
Telephone (847) 487-1580
Fax (847) 487-1587

PRINT FILE COPY - WHITE RECORD FILE COPY - CANARY RETAIN COPY - PINK CUSTOMER COPY - GOLDENROD

Shell HRVOC 604-343 March 23, 2010 BBH (Canister 1393 03232010)

Shell HRVOC 504-343 March 23, 2010 BBH (Canister 1393 03232010)

CHAIN OF CUSTODY DIAL

CANISTER NUMBER	1353	1393
DATE	3/23/10	3/23/10
START TIME	3:45 pm / 3:50 pm (5+ min) DIAL & SCOTT	4:02 pm / 4:07 pm (5+ min) DIAL & SCOTT
END TIME	3:56 pm / 4:01 pm	4:14 pm / 4:19 pm
INITIAL PRESSURE	-30 psi	-28 psi
FINAL PRESSURE	-1 psi	-2 psi.
TYPE OF CANISTER	6L	6L
TYPE OF SAMPLE	integrated 15 min	"
LOCATION	~~south~~ north of tank TOL downwind of 913	"
POSSIBLE SOURCE	TOL 913	"
DISTANCE FROM SOURCE	~130 yards (400 feet) north of TOL913	"
WEATHER	~~Clear, Sunny~~ cloudy	"
WIND DIRECTION	South	"
PID READING	0 - ~~500~~ 805 ppb (higher readings)	0 - 499 ppb (higher readings) 509 ppb
DIAL READING	50-100 ppb benzene	"
TAKEN BY	I DeSouza	I DeSouza
SURRENDERED TO		BARB / ART.