THREE CREEKS ODOUR ISSUE:
A REPORT ON AIR QUALITY MONITORING CONDUCTED BETWEEN FEBRUARY AND MAY 2010

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Summary

Odour complaints from the Three Creeks area were received by the Energy Resources Conservation Board and Alberta Environment. Odours were noted when the wind speed was low, and it is likely that this meteorological condition contributed to the accumulation of emitted compounds in the area. The odours in the area were identified as "hydrocarbon type" and air samples were collected at various locations within the affected area, at the potential source locations, and also at background (reference) sites. These samples were taken to a laboratory and analyzed for volatile organic compounds (also known as hydrocarbons).

Analyzed results showed that concentrations detected for samples taken during odour events were substantially higher than concentrations detected at background sites. One-hour average total volatile organic compound (excluding methane) concentrations from samples collected during odour events ranged from 41 to 521 parts per billion. In contrast, at the background sites, this concentration ranged from 2 to 13 parts per billion. Concentrations for individual volatile organic compounds were compared to known odour thresholds. The odour threshold for hexanol (green grassy odour) was exceeded twice and the threshold for nonanal (rosy citrus smell) was exceeded once. Odour was however also perceived during the collection of community samples where threshold values were not exceeded. Odour threshold resulting from a mixture of compounds can be lower than the threshold for individual compounds. Essentially, it is the presence of a mixture of odourous compounds that is likely the reason for the perceived odour at the community sample locations.

Light hydrocarbons (with less than seven carbon atoms) were found to contribute the most to concentrations detected in the collected samples. These compounds are also the most volatile and as such can be readily vented into the atmosphere. Volatile organic compounds containing sulphur are typically associated with strong odours from upstream oil and gas operations. These compounds were not detected in any of the samples collected. Although volatile organic compounds at odour affected sites were substantially higher than background sites, the established Alberta Ambient Air Quality Objectives were not exceeded.

Volatile organic compounds commonly found within the community samples were also found at most of the potential industrial emission sites. Although a direct link between source and community samples could not be made, given the distribution and proximity of the sample sites, meteorological conditions, and analysis results, community samples were likely impacted by emissions from oil and gas emission production.

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1. Introduction

From February to May 2010, a number of odour complaints from the Three Creeks area were called into the Energy Resources Conservation Board and Alberta Environment[1]. Alberta Environment staff visited the affected sites and noted various levels of "hydrocarbon" type odours. Ongoing ambient monitoring in the area indicated that the concentrations of hydrogen sulphide (H_2S) and sulphur dioxide (SO_2) were low at the time of complaints. Within the area there are a number of wells with crude oil cold flow tanks that vent to atmosphere and were identified as possible contributors to the odour complaints. To further investigate the cause of the objectionable odour, air samples were collected within the Three Creeks area and at the potential source sites. These samples were analyzed primarily for volatile organic compounds.

Volatile organic compounds (VOCs) are a large group of chemical compounds that contain carbon and hydrogen. They can be present in the atmosphere due to natural and anthropogenic (human caused) sources. Biogenic VOCs such as isoprene, α and β pinene are emitted by vegetation[2]. Methane can be emitted during anaerobic rotting of organic matter. Anthropogenic sources of VOCs include storage tanks, petroleum and chemical industries, fissile fuel (coal, oil and gas) combustion and some agriculture practices. VOCs can react in the atmosphere to produce secondary pollutants such as ground level ozone, fine particulate matter and oxygenated VOCs such as aldehydes and ketones. VOCs and their associated secondary pollutants are known to have harmful effects on human and environmental health at elevated concentrations. In 2008, the oil and gas sector is estimated to have contributed 83 percent of the total VOC emissions in this region[3].

The purpose of this report is to gain an understanding of the VOCs in the air in the areas where odours were percieved and compare VOC concentrations at these affected sites to background sites; sites where no odour was perceived. The report also aims to identify similarities between VOCs identified in commnunity and potential source samples and illustrate the complexity of relating ambient concentrations to potential sources in the area.

In addition to determining the VOC concentrations at the sample sites, an attempt is made to characterize VOCs emitted at the various source sites (i.e. identify the emissions source of the VOCs). Source apportionment of VOCs in the ambient air has been done using methodologies such as positive matrix factorization (PMF)[4]. However, such analysis requires extended (multi-year) ambient monitoring to produce meaningful results. Because a lengthy study was not feasible in this case, samples were collected at eight affected sites, with multiple (four) samples collected at one of the sites. As a result, a less complex method of emission fingerprints was used to characterize sample results. *Chemical fingerprints* of emissions from a source can be obtained through monitoring[5]. That is to say, an air mass substantially impacted by VOCs emissions from a source *can* have identifiable composition of compounds representing the *chemical fingerprint* of the source. For this to hold true, chemical transformation of the emitted VOCs prior to

[1] Odour complaints continue to be received to this day (July, 2010).
[2] Kesselmeier, j. and Staudt, M., 1999 : Biogenic Volatile Organic Compounds (VOC): An Overview on Emission, Physiology and Ecology, *Journal of Atmospheric Chemistry* **33**:23-88,
[3] Data extracted from Alber*ta Environment Regional Emission Inventory* for Lower Peace Land Use Framework region.
[4] Brown, S.G., Frankel, A. and Hafner, H.R., 2007. Source appointment of VOC in the Los Angeles area using positive matrix factorization. *Atmospheric Environment*: **41**, 227-237.
[5] Peters, J. and Stephens, A., 2001. New Directions: Fugitive emissions identified by chemical fingerprinting. *Atmospheric Environment*, **35**, 1347-1348

reaching the community sample sites must be minimal. The only change in ambient concentration from source to sample site would have to be due to dispersion that affects all compounds equally. In such a case, the fractional contribution of the emitted VOCs would be comparable at the source and sample sites. For the purpose of this study, the fractional contribution of the top ten VOCs at each site is used to compare community samples and potential source sites. For such a comparison to be robust, most of the samples would need to show a distinct characteristic. This can be the presence of specific VOCs or an identifiable contribution from a number of VOCs within a sample.

2. Monitoring methods and locations

There were two categories of sampling sites: community sites (Table 1) and potential industrial source sites (Table 2). It is important to note that sample collection occurred over a period of four months (February to May). Thus inaddition to the various emission sources, changing meteorological conditions such as temperature and the availability of solar radiation may have impacted these samples differently. Air samples are collected at the various sites by drawing air into a 6 liter evacuated stainless steel canister[6]. Two types of sample collection methods were used: the sample was either drawn in at a constant rate for a time period, or the canister was used to grab instantaneous samples. The former sampling method allows for an integrated sample and the concentrations quantified using this method is an average for the sample time. For this study the sample intervals were: one-hour, fifteen minutes and ten minutes. Air was sampled for one-hour at all sites except site *I*. A fifteen minute sample period was used at site I. A ten minutes sampling interval was used at potential source sites. Grab samples were used to collect a sample during periods of the most intense odour.

Ambient samples collected in the Three Creeks area will be referred as community samples, hereafter. Community samples were collected by Alberta Environment staff and MAXXAM Analytics[7]. Alberta Research Council (ARC, Vegreville) collected samples at the potential source sites. ARC also prepared the evacuated canisters and analyzed the air samples for Volatile Organic Compounds (VOCs) and few selected inorganic compounds. Community sample sites (letters) and potential source sites (numbers) are shown in Figure 1. The operator's comments and observations are listed in Table 3. Community sample sites where objectionable odours were present are referred to in this report as *affected sites*. At the start of the study, sample collection at these sites (*A*-*G*) was initiated by public complaints. Later on, a temporary monitoring station was established (site *I*) and air samples were collected when hydrocarbon concentrations reached a persicibed concentration (Table 3). Odour complaints were received on all sample days at site *I*. The temporary monitoring station was equipped to monitor sulphur dioxide (SO_2), total reduced sulphur (TRS) and total hydrocarbons (THC).

Each sample was analyzed for more than fifty individual target VOCs. Thirty-four target VOCs were common to all the samples analyzed. The differences in the analyzed suite can be attributed to a change in analysis method to include polar compounds[8] and the unintended inclusion of halogenated VOCs[9] for two samples. Identification of target compounds involves analytic instrument calibration using a standard; this technique provides the highest confidence. In addition to the target VOCs, any compounds identified by the analysis method are also reported. For these additional compounds, hereafter refered to as non-target compounds, a match

[6] SilocSteel® canisters were used as their high inertness ensures sample stability.
[7] MAXXAM operated the automated samples collected at Site I (see also Table 3)
[8] Alcohols, aldehydes and ketones
[9] VOCs containing fluorine, chlorine, bromine

quality (MQ) is assigned. The match quality (MQ) indicates the confidence level at which the compound was identified. Although, in most cases the match quality was above 80 percent, one should consider this confidence level when examining the identification of non-target VOCs, especially for those with MQ values lower than 70 percent.

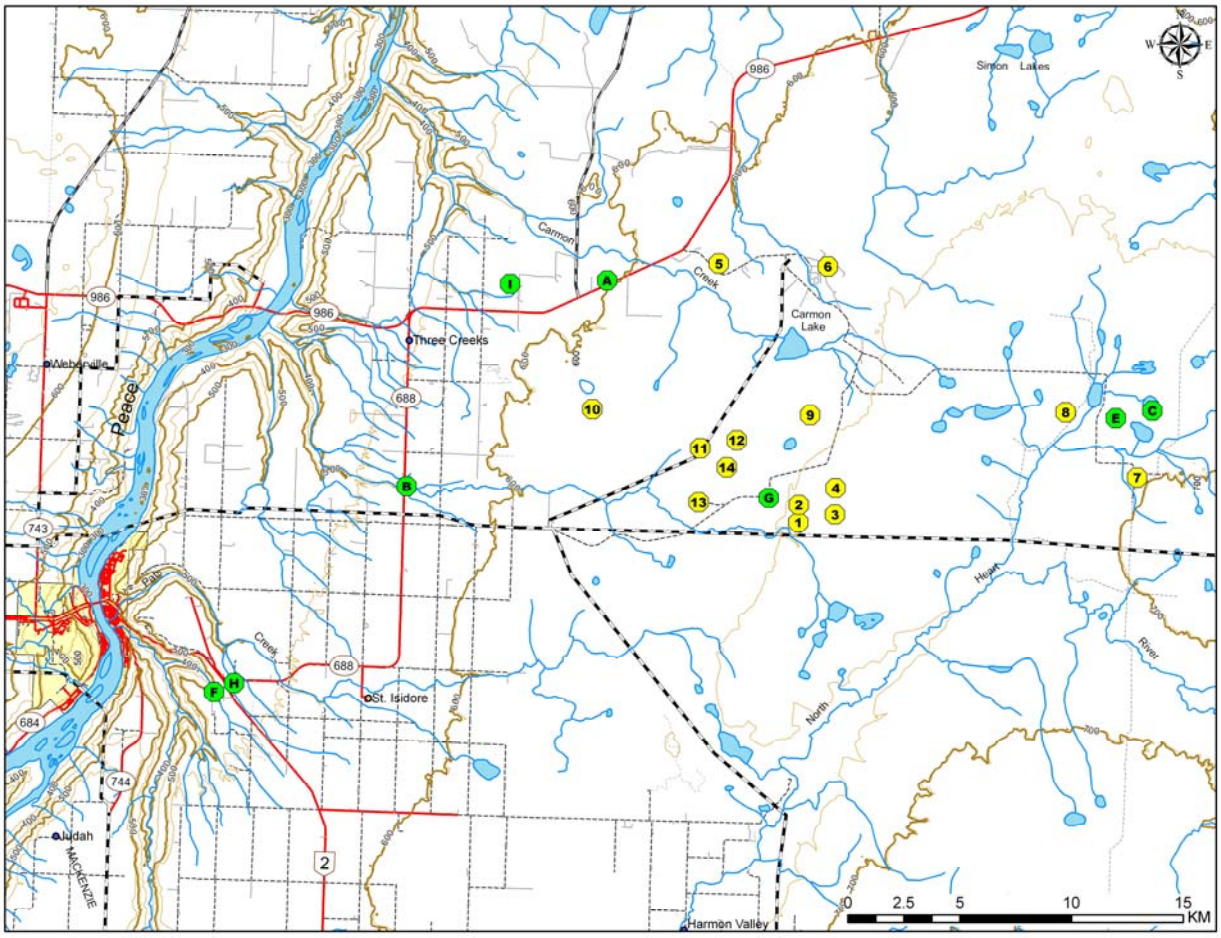

Figure 1: Map of monitoring locations. Letters indicate community sample sites and number indicate potential source sites. Monitoring locations are further described in Table 1 and 2.

Table 1: Community monitoring site descriptions

Site	Description of site
A	*Affected by odour (1-hour sample)*
B	*Background (1-hour sample)*
C	*Affected by odour (1-hour sample)*
E	*Affected by odour (1-hour sample)*
F	*Background (grab sample)*
G	*Affected by odour (1-hour sample)*
H	*Background (1-hour sample)*
I	*Affected by odour (15 minute sample)*

Table 2: Potential source sites where 10 minutes samples were collected

Site	Facility name	Sites
1	*Baytex*	*Tank 1 and Casing Gas 1*
2	*Baytex*	*Tank 2 and Casing Gas 2*
3	*Baytex*	*Tank 3 and Casing Gas 3*
4	*Baytex*	*Tank 1 and Casing Gas*
5	*CCS*	*Dry Oil Tank #8, Sales Oil Tank #12*
6	*Shell*	*Plant Sample and Tank 1010 Inlet*
7	*Shell*	*17W5 Tank, Casing Gas 13, and New Site 100*
8	*Shell*	*B Pad 10-35 and PRISP[10] 1935 Samples*
9	*Husky*	*18W5, Tank S1, Tank S2 and Scrubber Pad 32*
10	*Husky*	*18W5_2 and 18W5_3*
11	*Pennwest*	*Sulphur Pot*
12	*Pennwest*	*Casing Vent*
13	*Pennwest*	*19W5*
14	*Pennwest*	*16_24_84*

Table 3: Operator's comments and observations

[10] Peace River In Situ Plant

Site	Date	Sample start time (local)	Weather condition	Comments
A (affected)	*Feb 19*	*5:55*	*Light ESE wind, before sunrise -16℃*	Infrequent traffic ~100m north of Hwy 986, Area predominantly agriculture, livestock present, area appears to be low lying relative to surrounding grounds
B (background)	*Feb 19*	*7:27*	*Light ESE, Sunny -16℃*	Rural morning traffic east of site, Area predominantly agriculture. This sample was collected following A, the perception of the operator may have been affected by having been in area of strong odour for one hour.
C-1 (affected)	*March 7*	*09:18*	*Light wind from North*	*No comment*
C-2 (affected,grab)	*March 7*	*08:58*	*Light wind from North*	*No comment*
E (affected)	*March 5*	*08:52*	*Low wind variable direction*	*No comment*
F (background,grab)	*March 5*	*11:42*	*Moderate wind from the west*	*No comment*
G (affected)	*April 11*	*09:05*	*No comment*	*No comment*
H (background)	*April 11*	*10:50*	*No comment*	*No comment*
I-1 (affected)	*April 16*	*19:35*	*Automated sample*[11]	*THC trigger concentration 3.5 ppm for 10 mins(odour complaint at the same time)*
I-2 (affected)	*April 17*	*21:45*	*Automated sample*	*THC trigger concentration 3.5 ppm for 10 mins(odour complaint at the same time)*
I-3 (affected)	*April 19*	*12:00*	*Automated sample*	*THC trigger concentration 4 ppm for 10 mins(odour complaint at the same time)*
I-4 (affected)	*April 23*	*10:42*	*Automated sample*	*THC trigger concentration 5 ppm for 10 mins(odour complaint at the same time)*

[11] Automated samples were triggered to start collecting ambient sample when the total hydrocarbon reached a specified concentration.

3. Results

3.1. Volatile Organic Compounds from air samples collected in the Three Creeks area

Sample sites were classified as *affected* or *background* based on the perception of odours. Table A 1 presents known odour threshold for target VOCs including those not detected at the community sample sites. The table also includes non-target VOCs that were identified during the analysis. It is important to note that the listed thresholds are for individual compounds and that odour may be detected at lower than individual threshold concentrations if compounds are combined[12]. A number of odourous compounds were detected in the samples collected. However, for almost all compounds the measured concentrations were lower than their individual odour thresholds. The exceptions were: the odour threshold for hexanol (green grassy odour) which was exceeded twice, and the threshold for nonanal (rosy citrus smell) which was exceeded once. Odours described as having a hydrocarbon like smell (i.e. not "citrus" or "grassy") were perceived during the collection of community samples where thresholds were not exceeded. Within the Three Creeks area, the presence of a mixture of odourous compounds is likely the reason for the perceived odour.

VOC concentrations detected at affected sites were variable, and the number of compounds that were detected at affected sites varied from twenty-eight to forty. Comparatively, twenty-eight compounds were detected at the background site *B*[13] and nine at the background site *H*. Generally, the VOC concentrations were higher at the affected sites. Table 4 summarizes the concentrations for the target[14] VOCs, as well as average methane (CH_4) and total non-methane hydrocarbon[15] (NMHC) concentrations at each site when available.

With the exception of one affected site (*I*-2), CH_4 concentrations were notably higher at the affected sites. For example, a one-hour maximum CH_4 concentration of 14200 parts per billion (ppb) was measured at the affected site *C* which can be compared against background site *B* where the one-hour CH_4 concentration was 4800 ppb. Although detected at elevated concentrations, CH_4 is not an odours compound. Similarly, concentrations of NMHC were also higher at the affected sites. Comparatively, at the background site, one-hour total NMHC concentrations ranged from 2 to 13 ppb whereas at the affected sites, one-hour total NMHC concentrations were notably higher ranging from 41 to 521 ppb. At site *I* 15 minute average concentration for NMHC ranged from 22 to 60 ppb. Relatively low concentrations at affected sites (*I*-2 and *I*-3) was observed for samples collected when the wind speed was greater than 10 kilometer per hour. Most community samples (and therefore associated odour complaints) occurred when the wind speed was very low (Table A 2). Low windspeed promotes the accumulation of emitted compounds in the area.

The intensity of odour can vary during a sample interval, and is likely caused by more than a single compound. To investigate this variation, a grab sample was collected alongside a

[12] Laska, M. and Hudson, R., 1991. A comparison of the detection thresholds of odour mixtures and their components. *Chemcial Senses*, **16**, 651-662.
[13] Site *B*, may not have been a background site in the truest form. This site was selected by the sample operator after being in an area of strong odour for about an odour. Thus, the operator's senses may have been affected.
[14] Refer to Section 2 for an explanation on target and non target VOCs
[15] Total VOCs excluding methane

one-hour integrated sample at site *C*. A comparison between the grab sample and the one-hour integrated sample at site *C* is shown in Table 7. The grab sample was collected at the start of the sampling period when the odour was most intense. Concentrations were notably higher for the grab sample. The concentration of twenty-one VOCs were a factor of two or higher for the grab sample. The measured concentrations of these compounds were not higher than their individual odour threshold.

One-hour integrated sampling is the preferred method of collecting samples as it allows for comparison with provincial objectives. Alberta has air quality objectives for a number of the VOCs detected at the community sample sites. Table 6 presents a comparison between these established objectives and the maximum one-hour average concentrations measured at community sample sites. It is important to note that the one-hour average concentrations measured at these sites did not exceed the provincial objectives.

To analyze VOCs composition at the monitoring sites, VOCs were grouped into three subsets as determined by the number of carbon atoms present in the individual compounds. These three groups are:

- small-sized VOC molecules containing two to four carbon atoms (C2-C4),
- medium-sized VOC molecules with five to seven carbon atoms (C5-C7), and
- large-sized VOC molecules containing eight to twelve carbon atoms (C8-C12).

Figure 2 illustrates the contribution of these groups to the NMHC total. At three of the sample sites (A, *I*-3 and *I*-4) smaller compounds (C2-C4) had the highest contribution. At the remainder of the affected sites, medium-sized compounds (C5-C7) contributed the most. Medium-sized VOCs were also noted to form the highest contribution at the background site, albeit at a much lower concentrations. The number of carbons can be related to the molecular weight of the VOCs listed. Smaller VOCs (lower molecular weight) volatilize more readily and thus are more likely to be present in ambient air. Changing the composition of fuel stored to contain less low molecular VOCs, for example, is a method of reducing VOCs emissions from shipping storage tanks[16]. This is likely the reasons for observing lower concentrations for the larger VOCs (C8-C12). This being said, the smaller VOCs, although the most volatile, were not the dominant compounds at all the monitoring sites. Possible reasons for this include: the composition of the source (i.e. source emission does not contain small VOCs), or the chemical transformation[17] of small VOCs following emission so that they are not detected at the sample sites.

The most abundant VOCs for community samples were aliphatic and aromatic hydrocarbons. For example concentrations of 1-butene, pentane, toluene, xylenes and trimethylbenzene concentrations were found to be substantially higher than concentrations detected for background samples. In addition, the presence of carbonyl sulphide (COS) at concentrations notably higher than the background sites made samples collected at site *I* distinct. A number of oxygenated VOCs (aldehydes, ketones and alcohols) were also predominately found at site *I*.

[16] Rudd, H.J. and Nikolas, A.H., 2001. Measures to reduce emissions of VOCs during loading and unloading of ships in the EU. (AEAT/ENV/R/0469 Issue 2)
[17] Such as photochemical processing

Oxygen containing VOCs such as alcohols, ketones and aldehydes are known to have perceptible odour (Table A 1). Some alcohols, ketones and aldehydes were included as target compounds for samples collected at site *I* and were detected. For example ethanol, acetone and methyl ethyl ketone were among the most abundant VOCs present for samples collected at site *I*. Examination of the non-target VOCs indicated that alcohols, ketones and aldehydes were also measured at other Three Creek area sites. Table 8 lists the non-target compounds identified, the sample in which the VOC was identified, the maximum concentration measured, and the associated match quality. This table illustrates that there were a great number of non-target VOCs that were identified. Acetone, hexanal, and nonanal, for example, were also detected at more than one site, but a large number of the oxygen containing VOCs (21 of 29) were identified only at site *I*. Oxygen containing VOCs such as aldehydes and ketones are a byproduct of photochemical processing in the atmosphere. Samples at site *I* were collected in the spring, while the other samples were collected in winter or very early spring (Table 3). Thus, the availability of solar energy and warmer weather may have promoted photochemical processing at site *I*. It should be noted that, these compounds have also been measured in areas containing livestock[18] and used as solvents in industrial processes.

Many sulphur containing VOCs[19] have perceptable odour at very low concentrations (Table A 1). Hydrogen sulphide is also a compound associated with odours. Conequently, these compounds were included in the analytical suite. For the most part, concentrations of organosulfur compounds, hydrogen sulphide, and halogenated VOCs were either below detection limits or not above concentrations measured at background sites.

Table 5 presents target compounds that were not above the detection limit for at least one community sample site[20].

Sulphur dioxide (SO_2), total reduced sulphur, and total hydrocarbons measured at the temporary continuous monitoring site (located at site *I*) are included in the appendix (Table A 3, Table A 4 and A5). One-hour average total reduced sulphur was below the instrument detection limit for much of the time. SO_2 concentrations were generally low and close to the instrument detection limit although a few relatively elevated one-hour average concentrations were noted (12 and 13 ppb). This being said, Alberta's Ambient Air Quality Objective for one-hour average SO_2 of 172 ppb were not exceeded in any of these samples.

[18] Filipy J., Rumburg B., Mount G., Westberg H., Lamb B, 2006. Identification and quantification of volatile organic compounds from a dairy. *Atmospheric Environment*, **40**, 1480–1494.

[19] For example mercaptans

[20] Note that the analytical method detection limit of 0.03 ppb is higher than a number of the mercaptan odour thresholds. The failure to detect these compounds does not necessarily mean that these compounds are not present in the air at concentrations above odour detection.

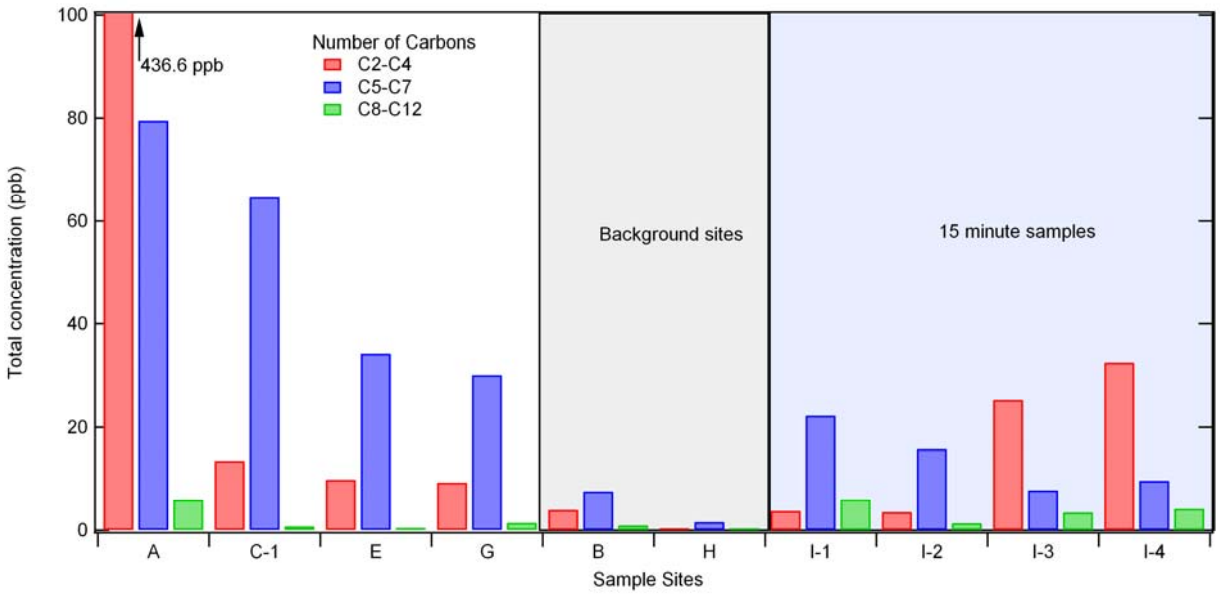

Figure 2: Total concentration by VOCs class. VOCs were clustered by the number of carbons contained into three major groups (C2-C4, C5-C7 and C8-C12). A description of the various sample sites is given in Section 2.

Table 4: Target VOCs concentrations (ppb) that were above detection limit at affected sites

				1-Hour Average						15-Min Sample			
				Affected Sites				Background		Affected Sites			
	Name	Formula	Mwt	*A*	*C-1*	*E*	*G*	*B*	*H*	*I-1*	*I-2*	*I-3*	*I-4*
1	Methane	CH4	16	6500	14200	7700	NA	4800	NA	8100	4300	9600	11600
2	Ethane	C2H6	30	400	bdl	bdl	NA	bdl	NA	bdl	bdl	bdl	bdl
3	Ethanol	C2H6O	46	NA	NA	NA	NA	NA	NA	NA	NA	1.87	1.82
4	1-Butene	C4H8	56	3.31	bdl	1.22	0.222	0.303	NA	0.429	0.446	8.92	17.9
5	cis-2-Butene	C4H8	56	0.206	bdl	bdl	NA	bdl	NA	bdl	bdl	bdl	bdl
6	Acetone	C3H6O	58	NA	NA	NA	NA	NA	NA	NA	NA	8.84	8.89
7	Butane	C4H10	58	19.8	8.23	5.5	4.93	1.89	0.209	1.91	1.59	0.799	0.591
8	Isobutane	C4H10	58	12.3	5.15	2.99	4.03	1.69	0.113	1.33	1.39	0.275	0.433
9	Isopropyl Alcohol	C3H8O	60	NA	NA	NA	NA	NA	NA	NA	NA	1.65	0.711
10	Isoprene	C5H8	68	bdl	bdl	bdl	bdl	bdl	bdl	0.14	0.137	bdl	bdl
11	2-Methyl-2-butene	C5H10	70	0.341	bdl	bdl	bdl	bdl	bdl	bdl	bdl	NA	NA
12	3-Methyl-1-butene	C5H10	70	0.514	11	bdl	bdl	bdl	bdl	bdl	bdl	NA	NA
13	cis-2-Pentene	C5H10	70	0.212	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
14	Cyclopentane	C5H10	70	2.5	0.751	0.776	0.963	0.172	bdl	bdl	bdl	bdl	bdl
15	trans-2-Pentene	C5H10	70	0.09	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
16	Methyl ethyl ketone	C4H8O	72	NA	NA	NA	NA	NA	NA	NA	NA	2.36	1.82
17	Tetrahydrofuran	C4H8O	72	NA	NA	NA	NA	NA	NA	NA	NA	0.42	0.368
18	Isopentane	C5H12	72	14.3	11.2	7.85	5.11	1.33	0.051	1.46	1.91	0.311	0.493
19	Pentane	C5H12	72	8.82	3.69	3.17	4.24	1.63	1.29	11.7	7.37	0.588	0.373
20	Benzene	C6H6	78	0.902	0.448	0.472	0.295	0.557	0.155	0.441	0.338	0.294	0.244
21	2-Methyl-1-pentene	C6H12	84	bdl	3.46	2.11	bdl	bdl	bdl	bdl	bdl	NA	NA
22	cis-2-Hexene	C6H12	84	0.074	bdl	bdl	bdl	bdl	bdl	bdl	bdl	NA	NA
23	Cyclohexane	C6H12	84	8.64	7.9	4.71	2.65	0.838	bdl	0.431	0.378	bdl	0.133
24	Methylcyclopentane	C6H12	84	4.84	2.82	1.81	2.12	0.436	bdl	0.368	0.326	0.058	0.119
25	Methylene chloride	CH2Cl2	84	NA	NA	NA	0.001	NA	0.001	NA	NA	0.001	0.001
26	2,2-Dimethylbutane	C6H14	86	0.523	0.754	0.442	0.197	0.063	bdl	bdl	bdl	bdl	bdl
27	2,3-Dimethylbutane	C6H14	86	1.84	2.76	1.62	0.625	0.14	bdl	0.156	0.199	bdl	bdl
28	2-Methylpentane	C6H14	86	6.7	2.63	1.69	2.58	0.42	bdl	0.621	0.625	0.11	0.205
29	3-Methylpentane	C6H14	86	4.9	3.44	2.13	1.91	0.356	bdl	0.474	0.457	0.088	0.137
30	Hexane	C6H14	86	3.21	0.654	bdl	1.25	bdl	bdl	1.22	1.13	0.435	0.647
31	1,4-Dioxane	C4H8O2	88	NA	NA	NA	NA	NA	NA	NA	NA	0.086	bdl
32	Methyl Tert Butyl Ether	C5H12O	88	NA	NA	NA	NA	NA	NA	NA	NA	0.667	1.54
33	Toluene	C7H8	92	6.08	0.189	0.178	1.03	0.427	bdl	3.73	1.64	1.56	1.91
34	Methylcyclohexane	C7H14	98	7.64	8.25	4.68	3.75	0.871	bdl	0.523	0.49	0.048	0.186
35	Methyl isobutyl ketone	C6H12O	100	NA	NA	NA	NA	NA	NA	NA	NA	0.477	1.24
36	2,3-Dimethylpentane	C7H16	100	1.68	2.46	1.45	0.739	0.108	bdl	0.14	0.12	0.05	bdl
37	2-Methylhexane	C7H16	100	1.84	0.375	0.239	0.738	0.07	bdl	0.202	0.15	bdl	bdl
38	3-Methylhexane	C7H16	100	3.39	1.7	0.959	1.72	bdl	bdl	0.349	0.303	bdl	bdl
39	Heptane	C7H16	100	0.418	0.139	bdl	0.212	0.054	bdl	0.23	0.102	0.22	0.109
40	Styrene	C8H8	104	0.327	bdl	bdl	bdl	bdl	bdl	0.223	0.113	0.26	0.096
41	Ethyl benzene	C8H10	106	0.928	0.066	0.031	0.277	0.148	bdl	0.933	0.221	0.243	0.364
42	m,p-Xylene	C8H10	106	1.22	0.188	0.103	0.312	0.193	bdl	2.34	0.453	0.755	0.994
43	o-Xylene	C8H10	106	0.925	0.069	0.053	0.246	0.143	bdl	1.76	0.26	0.265	0.319
44	3-Methylheptane	C8H18	114	0.391	bdl	bdl	0.147	0.03	bdl	bdl	bdl	bdl	bdl
45	Octane	C8H18	114	bdl	bdl	bdl	bdl	0.035	bdl	bdl	bdl	0.189	0.108
46	1,2,3-Trimethylbenzene	C9H12	120	NA	NA	NA	NA	NA	NA	NA	NA	bdl	0.016
47	1,2,4-Trimethylbenzene	C9H12	120	0.47	0.254	0.171	0.189	0.053	bdl	0.223	0.151	0.099	bdl
48	1,3,5-Trimethylbenzene	C9H12	120	0.189	0.127	0.067	0.073	bdl	bdl	0.077	bdl	0.052	0.03
49	Isopropylbenzene	C9H12	120	0.088	bdl	bdl	0.047	0.063	bdl	bdl	bdl	bdl	bdl
50	m-Ethyltoluene	C9H12	120	NA	NA	NA	NA	NA	NA	NA	NA	0.107	0.07
51	n-Propylbenzene	C9H12	120	bdl	bdl	bdl	0.063	0.031	bdl	0.065	bdl	0.058	0.033
52	o-Ethyltoluene	C9H12	120	NA	NA	NA	NA	NA	NA	NA	NA	0.038	bdl
53	p-Ethyltoluene	C9H12	120	NA	NA	NA	NA	NA	NA	NA	NA	0.047	0.055
54	Nonane	C9H20	128	0.085	bdl	bdl	bdl	bdl	bdl	0.169	bdl	0.129	0.071
55	m-Diethylbenzene	C10H14	134	NA	NA	NA	NA	NA	NA	NA	NA	0.054	bdl
56	p-Diethylbenzene	C10H14	134	NA	NA	NA	NA	NA	NA	NA	NA	0.127	bdl
57	alpha Pinene	C10H16	136	1.03	bdl	bdl	0.049	0.19	bdl	0.089	0.098	NA	NA
58	beta Pinene	C10H16	136	0.13	bdl	bdl	bdl	bdl	bdl	bdl	bdl	NA	NA
59	Decane	C10H22	142	NA	NA	NA	NA	NA	NA	NA	NA	0.795	1.55
60	Undecane	C11H24	156	NA	NA	NA	NA	NA	NA	NA	NA	0.147	0.105
61	Dodecane	C12H26	170	NA	NA	NA	NA	NA	NA	NA	NA	bdl	0.255
62	Freon-11	CCl3F	137	NA	NA	NA	0.206	NA	0.223	NA	NA	0.157	0.168
63	1,3-Dichlorobenzene	C6H4Cl2	147	NA	NA	NA	bdl	NA	bdl	NA	NA	0.034	bdl
64	Carbon tetrachloride	CCl4	154	NA	NA	NA	0.078	NA	0.088	NA	NA	bdl	bdl
65	Freon-113	C2Cl3F3	187	NA	NA	NA	0.073	NA	0.078	NA	NA	0.123	0.084
66	Carbon Disulphide	CS2	75	NA	NA	NA	NA	NA	NA	NA	NA	0.265	1.36
67	Carbon disulphide	CS2	76	bdl	bdl	bdl	NA	bdl	NA	0.14	0.13	0.34	1.8
68	Carbonyl sulphide	COS	60	0.42	0.87	bdl	NA	0.76	NA	1.72	1.67	4.2	13
	Total Target VOC			7021	14280	7744	--	4813	--	8134	4322	9639	11660
	Total Target NMHC			521	80	44	41	13	2	34	22	39	60

Note: **Mwt** indicates molecular weight, **NA** indicates compound was not included in the target list of the sample, **bdl** indicates target compound below detection limit, **HC** hydrocarbons, **NMHC** none methane hydrocarbons

Table 5: Target Compounds that were below detection limit

NAME	Formula	Mwt	NAME	Formula	Mwt
1,1,1-Trichloroethane	C2H3Cl3	132	Dimethyl trisulphide	C2H6S3	126
1,1,2,2-Tetrachloroethane	C2H2Cl4	166	Ethyl Acetate	C4H8O2	88
1,1,2-Trichloroethane	C2H3Cl3	132	Ethyl mercaptan	C2H6S	62
1,1-Dichloroethane	C2H4Cl2	98	Ethyl methyl sulphide	C3H8S	76
1,1-Dichloroethylene	C2H2Cl2	96	Ethyl sulphide	C4H10S	90
1,2,4-Trichlorobenzene	C6H3Cl3	180	Ethylacetylene	C4H6	54
1,2-Dibromoethane	C2H4Br2	188	Ethylene	C2H4	28
1,2-Dichlorobenzene	C6H4Cl2	146	Freon-114	C2Cl2F4	171
1,2-Dichloroethane	C2H4Cl2	98	Freon-12	CCl2F2	121
1,2-Dichloropropane	C3H6Cl2	113	Hexachlorobutadiene	C4Cl6	261
1,3-Butadiene	C4H6	54	Heptyl mercaptan	C7H16S	132
1,4-Dichlorobenzene	C6H4Cl2	147	Hexachlorobutadiene	C4Cl6	261
1-Butene	C4H8	56	Hexyl mercaptan	C6H14S	118
1-Hexene	C6H12	84	Hydrogen sulphide	H2S	34
1-Pentene	C5H10	70	Isobutane	C4H10	58
2,2,4-Trimethylpentane	C8H18	114	Isobutyl mercaptan	C4H10S	90
2,3,4-Trimethylpentane	C8H18	114	Isobutylene	C4H8	56
2,4-Dimethylpentane	C7H16	100	Isopropyl mercaptan	C3H8S	76
2,5-dimethyl Thiophene	C6H8S	112	Methyl Butyl Ketone	C6H12O	100
2-ethyl Thiophene	C6H8S	112	Methyl mercaptan	CH4S	48
2-methyl Thiophene	C5H6S	98	Methyl Methacrylate	C5H8O2	100
2-Methylheptane	C8H18	114	Octyl mercaptan	C8H18S	146
3-methyl Thiophene	C5H6S	98	Pentyl mercaptan	C5H12S	104
4-Methyl-1-pentene	C6H12	84	Propane	C3H8	44
Acetylene	C2H2	26	Propyl mercaptan	C3H8S	76
Acrolein	C3H4O	56	Propylene	C3H6	42
Allyl sulphide	C6H10S	114	Propyne	C3H4	40
Benzyl Chloride	C7H7Cl	126	sec-Butyl mercaptan	C4H10S	90
Bromodichloromethane	CHBrCl2	162	Sulphur dioxide	SO2	64
Bromomethane	CH3Br	95	tert-Butyl mercaptan	C4H10S	90
Butyl mercaptan	C4H10S	98	tert-Pentyl mercaptan	C5H12S	104
Butyl sulphide	C8H18S	146	Tetrachloroethylene	C2Cl4	166
Chlorobenzene	C6H5Cl	113	Tetrafluoroethane	CF3CH2F	102
Chloroethane	C2H5Cl	65	Thiophene	C4H4S	84
Chloroform	CHCl3	119	trans-1,2-Dichloroethylene	C2H2Cl2	97
Chloromethane	CH3Cl	50	trans-1,3-Dichloropropylene	C3H4Cl2	111
cis-1,2-Dichloroethylene	C2H2Cl2	97	trans-2-Butene	C4H8	56
cis-1,3-Dichloropropylene	C3H4Cl2	111	trans-2-Butene	C4H8	56
cis-2-Butene	C4H8	56	trans-2-Hexene	C6H12	84
Cyclopentene	C5H8	68	Tribromomethane	CHBr3	250
Dibromochloromethane	CHBr2Cl	206	Trichloroethylene	C2HCl3	131
Dimethyl disulphide	C2H6S2	94	Vinyl Acetate	C4H6O2	86
Dimethyl sulphide	C2H6S	62	Vinyl chloride	C2H3Cl	63
Dimethylether	C2H6O	46	--	--	--

Note: **Mwt** molecular weight in grams per mole

Table 6: Comparison of maximum one-hour average VOCs concentrations (ppb) measured at community sample sites to Alberta's Ambient Air Quality Objectives

Name	*Max Conc.*	*AAAQO*
2-ethyl hexanol	ND	111
Acetaldehyde	ND	50
Acetone	ND	2400
Benzene	0.90	9
Carbon disulphide	bdl	10
Ethylbenzene	0.93	460
Ethylene	BDL	1044
Ethylene oxide	ND	8
Formaldehyde	ND	53
Isopropanol	ND	3190
Methanol	ND	2000
n-Hexane	3.21	5958
Phenol	ND	26
Propylene oxide	ND	201
Styrene	0.33	52
Toluene	6.08	499
Xylenes	2.15	529

Note: **AAAQO** Alberta's Ambient Air Quality Objectives**, BDL** below detection limit for target compounds, **ND**- not detected as a non target comound

Table 7: Target VOCs concentration (ppb) at Site C

	Name	Formula	Mwt	Site C	
				1-hour	*grab*
1	Methane	CH4	16	14200	19600
2	Ethane	C2H6	30	bdl	bdl
3	1-Butene	C4H8	56	bdl	1.20
4	cis-2-Butene	C4H8	56	bdl	bdl
5	Butane	C4H10	58	8.23	18.60
6	Isobutane	C4H10	58	5.15	15.90
7	2-Methyl-2-butene	C5H10	70	bdl	bdl
8	3-Methyl-1-butene	C5H10	70	11.00	bdl
9	cis-2-Pentene	C5H10	70	bdl	bdl
10	Cyclopentane	C5H10	70	0.75	3.10
11	trans-2-Pentene	C5H10	70	bdl	bdl
12	Isopentane	C5H12	72	11.20	30.90
13	Pentane	C5H12	72	3.69	6.83
14	Benzene	C6H6	78	0.45	0.51
15	2-Methyl-1-pentene	C6H12	84	3.46	10.40
16	cis-2-Hexene	C6H12	84	bdl	bdl
17	Cyclohexane	C6H12	84	7.90	22.60
18	Methylcyclopentane	C6H12	84	2.82	8.14
19	2,2-Dimethylbutane	C6H14	86	0.75	2.72
20	2,3-Dimethylbutane	C6H14	86	2.76	9.48
21	2-Methylpentane	C6H14	86	2.63	8.15
22	3-Methylpentane	C6H14	86	3.44	10.50
23	Hexane	C6H14	86	0.65	1.92
24	Toluene	C7H8	92	0.19	0.21
25	Methylcyclohexane	C7H14	98	8.25	24.50
26	2,3-Dimethylpentane	C7H16	100	2.46	8.37
27	2-Methylhexane	C7H16	100	0.38	1.33
28	3-Methylhexane	C7H16	100	1.70	6.02
29	Heptane	C7H16	100	0.14	0.43
30	Styrene	C8H8	104	bdl	bdl
31	Ethyl benzene	C8H10	106	0.07	0.13
32	m,p-Xylene	C8H10	106	0.19	0.52
33	o-Xylene	C8H10	106	0.07	0.18
34	3-Methylheptane	C8H18	114	bdl	bdl
35	1,2,4-Trimethylbenzene	C9H12	120	0.25	0.87
36	1,3,5-Trimethylbenzene	C9H12	120	0.13	0.46
37	Isopropylbenzene	C9H12	120	bdl	bdl
38	n-Propylbenzene	C9H12	120	bdl	bdl
39	Nonane	C9H20	128	bdl	bdl
40	alpha Pinene	C10H16	136	bdl	bdl
41	beta Pinene	C10H16	136	bdl	bdl
42	Methylene chloride	CH2Cl2	84	NA	NA
43	Freon-11	CCl3F	137	NA	NA
44	Carbon tetrachloride	CCl4	154	NA	NA
45	Freon-113	C2Cl3F3	187	NA	NA
46	Carbonyl sulphide	COS	60	0.87	bdl

Note: **Mwt** indicates molecular weight, **NA** indicates compound was not included in the target list of the sample, **bdl** indicates target compound below detection limit, **1-hour** indicates integrated sample collected over a period of one hour, and **grab** constitutes an air sample collected during a notable odour event.

Table 8: Non-target VOCs concentrations (ppb), maximum concentrations at affected and background sites.

	NAME	Formula	Mwt	Sample	Max 1-hour sample		Max all sample*		Site B (background)	
					Conc	MQ	Conc	MQ	Conc	MQ
1	1-Propene	C3H6	42	I	ND	--	0.19	83	ND	--
2	Cyclopropane	C3H6	42	I	ND	--	0.125	72	ND	--
3	Ethanol	C2H6O	46	I	ND	--	0.122	43	ND	--
4	Acetone	C3H6O	58	A,G	2.2	80	2.2	80	ND	--
5	Sulfur dioxide(DOT)	O2S	64	I	ND	--	0.069	9	ND	--
6	2-Butanone	C4H8O	72	E	0.836	72	0.836	72	1.48	72
7	2-Propanol, 2-methyl-	C4H10O	74	I	ND	--	3.61	78	ND	--
8	Propanal, 2,2-dimethyl-	C5H10O	86	I	ND	--	0.373	64	ND	--
9	Propane, 2-methoxy-2-methyl-	C5H12O	88	I	ND	--	0.178	47	ND	--
10	2-Furancarboxaldehyde	C5H4O2	96	A	2.43	90	2.43	90	ND	--
11	Cyclohexanone	C6H10O	98	I	ND	--	0.223	27	ND	--
12	Cyclopentane, 1,2-dimethyl-, cis-	C7H14	98	C	ND	--	4.32	94	ND	--
13	Cyclopentane, 1,3-dimethyl-	C7H14	98	A,C,E,G	2.78	95	4.67	95	0.295	64
14	Cyclopentane, 1,3-dimethyl-, cis-	C7H14	98	A,C,G,C	2.48	91	3.37	94	0.325	50
15	Cyclopentane, 1,3-dimethyl-, trans-	C7H14	98	E	0.896	90	0.896	90	ND	--
16	Cyclopentane, ethyl-	C7H14	98	A,C,E,G	1.76	95	1.76	95	0.229	89
17	Isopropylcyclobutane	C7H14	98	A,C,E,I	3.19	94	3.19	94	0.397	91
18	Butane, 2,2,3-trimethyl-	C7H16	100	E	0.16	27	0.16	27	ND	--
19	Hexanal	C6H12O	100	A,G,I	1.14	90	1.14	90	ND	--
20	Methyl Isobutyl Ketone	C6H12O	100	I	ND	--	0.182	62	ND	--
21	Pentane, 2,4-dimethyl-	C7H16	100	C	0.248	50	0.248	50	ND	--
22	1-Butanol, 2-ethyl-	C6H14O	102	A	1.15	72	1.15	72	ND	--
23	Benzaldehyde	C7H6O	106	I	ND	--	0.266	72	ND	--
24	4-Cyanocyclohexene	C7H9N	107	I	ND	--	0.413	91	ND	--
25	3-Cyclohexene-1-carbonitrile	C7H9N	107	I	ND	--	0.675	96	ND	--
26	1,2,4-TRIMETHYL-CYCLOPENTANE	C8H16	112	C,E,I	1.3	93	1.3	93	ND	--
27	1-Heptene, 2-methyl-	C8H16	112	I	ND	--	0.326	35	ND	--
28	1-Heptene, 6-methyl-	C8H16	112	C	0.359	49	0.359	49	ND	--
29	1-Hexene, 5,5-dimethyl-	C8H16	112	I	ND	--	0.699	50	ND	--
30	1-methyl-2-ethylcyclopentane isomer 1	C8H16	112	C	ND	--	3.18	93	ND	--
31	1-Pentene, 2,4,4-trimethyl-	C8H16	112	I	ND	--	0.544	47	ND	--
32	1-trans-2-cis-3-trans-trimethylcyclopent	C8H16	112	G	0.493	94	0.493	94	ND	--
33	1-trans-2-cis-3-trans-trimethylcyclopent	C8H16	112	C	1.49	96	1.49	96	ND	--
34	cis-1-Methyl-2-ethylcyclopentane	C8H16	112	E	0.568	96	0.568	96	ND	--
35	Cycloheptane, methyl-	C8H16	112	A,C	1.26	74	1.26	74	0.216	76

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Table 5 continued: Non-target VOCs concentrations (ppb), maximum concentrations maximum concentrations at affected and background sites.

	NAME	Formula	Mwt	Sample	Max 1-hour sample		Max all sample*		Site B (background)	
					Conc	MQ	Conc	MQ	Conc	MQ
36	Cyclohexane, 1,1-dimethyl-	C8H16	112	E,G,C	0.459	60	2.67	58	ND	--
37	Cyclohexane, 1,2-dimethyl-, trans-	C8H16	112	A,C,E,G	1.81	94	4.11	94	0.259	93
38	Cyclohexane, 1,3-dimethyl-, cis-	C8H16	112	A,C,E,G	3.97	95	8.96	95	0.408	87
39	Cyclohexane, 1,3-dimethyl-, trans-	C8H16	112	E	0.213	91	0.213	91	ND	--
40	Cyclohexane, 1,4-dimethyl-, cis-	C8H16	112	C	0.45	96	1.34	97	ND	--
41	Cyclohexane, ethyl-	C8H16	112	A,C,E,G	1.47	97	1.87	97	0.207	91
42	Cyclooctane	C8H16	112	E,C	0.189	49	1.08	72	ND	--
43	Cyclopentane, 1,2,3-trimethyl-, (1.alpha	C8H16	112	A,C	1.8	95	3.95	97	ND	--
44	CYCLOPENTANE, 1,2,3-TRIMETHYL-, CIS,CIS,	C8H16	112	E	0.79	95	0.79	95	ND	--
45	Cyclopentane, 1,2,4-trimethyl-	C8H16	112	C	ND	--	3.47	94	ND	--
46	Cyclopentane, 1-ethyl-2-methyl-	C8H16	112	C	1.18	94	1.18	94	ND	--
47	Cyclopentane, 1-ethyl-2-methyl-, cis-	C8H16	112	A	1.77	97	1.77	97	0.253	96
48	Cyclopentane, 1-ethyl-3-methyl-	C8H16	112	G	0.527	93	0.527	93	ND	--
49	Cyclopentane, propyl-	C8H16	112	G	0.52	93	0.52	93	ND	--
50	2-Pentanone, 4,4-dimethyl-	C7H14O	114	I	ND	--	2.14	87	ND	--
51	Heptane, 4-methyl-	C8H18	114	G	0.266	68	0.266	68	ND	--
52	Hexane, 2,3-dimethyl-	C8H18	114	C,E	0.403	90	1.17	91	ND	--
53	Hexane, 2,4-dimethyl-	C8H18	114	A,C,E,G	0.899	95	1.2	94	ND	--
54	Hexane, 3-ethyl-	C8H18	114	G,C	0.276	52	0.789	91	ND	--
55	Pentane, 3-ethyl-2-methyl-	C8H18	114	C,E	0.284	87	0.764	95	ND	--
56	1,2-Cyclohexanediol	C6H12O2	116	I	ND	--	0.282	50	ND	--
57	Acetic acid, butyl ester	C6H12O2	116	I	ND	--	0.149	53	ND	--
58	alpha-Methylstyrene	C9H10	118	I	ND	--	1.62	98	ND	--
59	Acetophenone	C8H8O	120	I	ND	--	0.417	95	ND	--
60	Benzene, 1-ethyl-3-methyl-	C9H12	120	G,I	0.506	91	3.08	98	ND	--
61	Benzene, 1-ethyl-4-methyl-	C9H12	120	A	1.64	46	1.64	46	ND	--
62	Ethanone, 1-phenyl-	C8H8O	120	I	ND	--	0.493	42	ND	--
63	Cyclohexane, 2-propenyl-	C9H16	124	C	ND	--	1.61	70	ND	--
64	1-Ethyl-3-methylcyclohexane (c,t)	C9H18	126	E	0.114	60	0.114	60	ND	--
65	1-Ethyl-4-methylcyclohexane	C9H18	126	C	ND	--	1.22	95	ND	--
66	2,3-Dimethyl-3-heptene	C9H18	126	C	ND	--	2.29	49	ND	--
67	2-Hexene, 3,5,5-trimethyl-	C9H18	126	I	ND	--	0.094	27	ND	--
68	3-Heptene, 2,6-dimethyl-	C9H18	126	E	0.35	50	0.35	50	ND	--
69	6-methly-5-hepten-2-one B	C8H14O	126	I	ND	--	0.332	90	ND	--
70	cis-1-Ethyl-3-methyl-cyclohexane	C9H18	126	C	0.346	95	0.346	95	ND	--

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Table 5 continued: Non-target VOCs concentrations (ppb), maximum concentrations at affected and background sites.

	NAME	Formula	Mwt	Sample	Max 1-hour sample		Max all sample*		Site B (background)	
					Conc	MQ	Conc	MQ	Conc	MQ
71	Cyclohexane, 1,1,3-trimethyl-	C9H18	126	A,C,E,G	2.16	97	5.65	97	0.308	94
72	Cyclohexane, 1,2,4-trimethyl-	C9H18	126	E	0.284	42	0.284	42	ND	--
73	Cyclohexane, 1,2,4-trimethyl-, (1.alpha.	C9H18	126	C	0.661	94	2.01	94	ND	--
74	Cyclohexane, 1-ethyl-2-methyl-	C9H18	126	A,C,G	0.68	81	1.44	87	ND	--
75	Cyclohexane, 1-ethyl-2-methyl-, cis-	C9H18	126	E	0.206	92	0.206	92	ND	--
76	Cyclohexane, 1-ethyl-4-methyl-, trans-	C9H18	126	C	0.445	70	1.38	93	ND	--
77	Cyclohexane, propyl-	C9H18	126	A,C	1.16	62	1.16	62	ND	--
78	Cyclooctane, methyl-	C9H18	126	E,C	0.365	86	2.16	83	ND	--
79	Cyclopentane, 1-methyl-2-propyl-	C9H18	126	A	1.21	87	1.21	87	ND	--
80	Cyclopentane, butyl-	C9H18	126	G	0.354	55	0.354	55	ND	--
81	TRANS NONENE-3	C9H18	126	C	0.763	60	0.763	60	ND	--
82	Heptane, 2,2-dimethyl-	C9H20	128	A	1.17	59	1.17	59	ND	--
83	Heptane, 2,3-dimethyl-	C9H20	128	A	0.937	49	0.937	49	0.111	18
84	Heptane, 2,6-dimethyl-	C9H20	128	A	0.754	83	0.754	83	ND	--
85	Octanal	C8H16O	128	I	ND	--	0.3	58	ND	--
86	(l) 3-amino-2-ethylbutanoic acid	C6H13NO2	131	E	0.117	32	0.117	32	ND	--
87	Benzene, methyl(1-methylethyl)-	C10H14	134	I	ND	--	0.155	93	ND	--
88	Benzene, 1-methyl-4-(1-methylethyl)- (CA	C10H14	134	I	ND	--	0.116	50	ND	--
89	(1R)-2,6,6-Trimethylbicyclo[3.1.1]hept-2	C10H16	136	E	0.274	95	0.274	95	ND	--
90	(1S)-2,6,6-Trimethylbicyclo[3.1.1]hept-2	C10H16	136	C	ND	--	1.56	97	ND	--
91	1,3,6-Octatriene, 3,7-dimethyl-, (E)- (C	C10H16	136	C	ND	--	0.831	45	ND	--
92	1-Isopropylidene-3-methyl-3-vinylcyclobu	C10H16	136	C	0.196	16	0.196	16	ND	--
93	Benzenemethanol, .alpha.,.alpha.-dimethy	C9H12O	136	I	ND	--	1.27	94	ND	--
94	Camphene	C10H16	136	I	ND	--	0.139	91	ND	--
95	dl-Limonene	C10H16	136	I	ND	--	0.095	59	ND	--
96	Limonene	C10H16	136	I	ND	--	1.4	99	ND	--
97	Methane, trichlorofluoro-	CCl3F	136	E	0.122	83	0.122	83	0.153	86
98	Sabinene	C10H16	136	E	0.212	46	0.212	46	ND	--
99	1,1,2,3-TETRAMETHYLCYCLOHEXANE	C10H20	140	C,E	0.499	94	1.79	76	ND	--
100	1,3-(D2)MENTH-2-ENE	C10H16D2	140	C	0.285	58	0.285	58	ND	--
101	2,4-(D2)MENTH-2-ENE	C10H16D2	140	C	ND	--	1.12	60	ND	--
102	Cyclohexane, isothiocyanato-	C7H11NS	141	I	ND	--	0.149	46	ND	--
103	Decane	C10H22	142	I	ND	--	0.2	25	ND	--
104	Nonanal	C9H18O	142	G,I	0.218	58	0.613	87	ND	--
105	Decanal	C10H20O	156	I	ND	--	0.383	86	ND	--

Continued on the next page…

Table 5 continued: Non-target VOCs concentrations (ppb), maximum concentrations at affected and background sites.

	NAME	Formula	Mwt	Sample	Max 1-hour sample		Max all sample*		Site B (background)	
					Conc	MQ	Conc	MQ	Conc	MQ
106	Decane, 3-methyl-	C11H24	156	I	ND	--	1.96	38	ND	--
107	Nonane, 3,7-dimethyl-	C11H24	156	A	2.65	70	2.65	70	ND	--
108	Octane, 2,2,6-trimethyl-	C11H24	156	A	1.27	53	1.27	53	ND	--
109	Octane, 2,5,6-trimethyl-	C11H24	156	G	0.364	64	0.364	64	ND	--
110	Undecane	C11H24	156	A	0.716	76	0.716	76	ND	--
111	1-Propene, 2-methyl-, trimer	C12H24	168	I	ND	--	0.107	47	ND	--
112	3-Heptene, 2,2,4,6,6-pentamethyl-	C12H24	168	I	ND	94	12	94	ND	--
113	Decane, 2,2-dimethyl-	C12H26	170	G	1.17	78	1.17	72	ND	--
114	Decane, 3,7-dimethyl-	C12H26	170	A	ND	--	1.44	78	ND	--
115	Dodecane	C12H26	170	I	ND	--	0.244	55	ND	--
116	Heptane, 2,2,4,6,6-pentamethyl-	C12H26	170	I	ND	--	0.322	50	ND	--
117	Heptane, 5-ethyl-2,2,3-trimethyl-	C12H26	170	G	0.463	72	0.463	72	ND	--
118	Decane, 2,2,9-trimethyl-	C13H28	184	I	0.444	72	0.444	55	ND	--
119	Tridecane	C13H28	184	I	ND	--	0.12	38	ND	--
120	Undecane, 4,8-dimethyl-	C13H28	184	I	ND	--	0.189	43	ND	--
121	1-Octanol, 2-butyl-	C12H26O	186	G	0.765	72	0.765	72	ND	--
122	Tetradecane	C14H30	198	I	ND	--	0.161	25	ND	--
123	Tridecane, 6-methyl-	C14H30	198	I	ND	--	0.162	49	ND	--
124	Dodecane, 2,2,11,11-tetramethyl-	C16H34	226	I	0.197	50	0.197	76	ND	--
125	Propanedioic acid, hexyl-, diethyl ester	C13H24O4	244	I	ND	--	0.18	38	ND	--
126	1-Iodo-2-methylnonane	C10H21I	268	G	0.266	53	0.266	53	ND	--
127	Nonadecane	C19H40	268	I	ND	--	0.08	30	ND	--
128	Eicosane	C20H42	282	G	ND	--	0.169	50	ND	--
129	3,10-Dinitrodiftalone	C16H10N4O6	354	I	ND	--	0.105	25	ND	--
130	Benzene, 1,1'-oxybis[3-phenoxy-	C24H18O3	354	I	ND	--	0.087	38	ND	--
131	Benzene, 1,1'-oxybis[4-phenoxy-	C24H18O3	354	I	ND	--	0.159	35	ND	--

Note: **MQ** indicates match quality in percentage, **Mwt** indicates molecular weight, **Conc** indicates maximum concentration, **Sample** indicates sample in which the listed compound was detected, **ND** indicates non-target compound was not detected, * Maximum concentration detected including grab sample collected at site *D*.

3.2. Comparison of Volatile Organic Compounds collected in the Three Creeks area and potential source sites

There are a number of potential sources of VOCs in the area. Their distribution relative to the community sites is presented in Figure 1. Clustering the VOCs into major groups as in Section 3.1 provides a general indication of the type of compounds present. Concentrations of VOCs at potential source sample sites are listed in Appendix B. In order to compare VOCs detected within the community to VOCs measured at potential industrial source sites, the proportional contribution of individual VOCs to the total NMHC was calculated for each site. Similarities between samples were examined using the top ten contributing VOCs. Limiting the number of VOCs in this comparison simplified the examination as in most cases the top ten VOCs contributed to more than 70 percent[21] of the total concentration measured at the site. The assumption when doing this comparison was that diffusion was the only transformation these emitted VOCs underwent between the source and sample site, which is assumed to equally affect all compounds. A single sample was collected from potential industrial source sites, thus an additional assumption was that the collected samples are representative of the site from which they were collected. The community samples were expected to be the most complex, as they could potentially be impacted by more than a single source.

Samples collected within the community showed some similarities. There were also notable differences between sites and even between samples collected at single site (site *I*). Figure 3 illustrates the fractional contribution of the top ten VOCs to the NMHC at community sample sites. These differences imply that more than a single source was impacting the air samples collected at the various community sites. Fingerprint characterization is facilitated by distinct features for each sample site. Such features were sought for each sample collected. Isobutane, butane, pentane, isopentane and methylpentane were among the top ten contributors to one hour average NMHC at all community sample sites. With the exception of samples collected at site *I*, concentrations for these VOCs was notably higher than background. At most sites there was no single predominant compound, rather a number of VOCs contributed 10 percent or less to the total one-hour concentration, thus lacking distinct characterization that could be attributed to specific site or sample. VOCs found to be common for community samples were also found at most of the potential industrial source sites; the exception was Tank 8 at CCS[22] site. Given the distribution of these potential source sites and their proximity to the affected areas, emissions from these sources likely impacted one or more air samples collected within the community.

Dispite similarities between community and potential source samples, there were VOCs that were soly detected in the potential source site samples. Ethane, propyne and/or propane were detected in substantial amounts at all the potential source sites (Figures 4-8). Concentrations of these VOCs were below the detection limit for all but one community sample. These are the smallest VOCs; their absence at the community sample is an indication that some emitted VOCs may have undergone chemical transformation or may have dispersed or been removed from the atmosphere differently from the larger VOCs.

The community site *I* was distinct in that carbonyl sulphide, toluene and oxygenated VOCs were detected notably above background concentraitons. Carbony sulphide concentrations for all four samples at site *I* were higher than concentrations measured at background sites. The most important of the oxygenated VOCs were ethanol, acetone and methyl ethyl ketone.

[21] For community sample site this fraction was greater than 80%.
[22] One hour average butane and isobutane concentrations at Oil Tank 8 were below detection limit.

Oxygenated VOCs may have been emitted or may be products of photochemical processing of emitted compounds. Carbonyl sulphide was a notable VOC at the Shell sample sites (PRISP 1935, sample 1 and 2); acetone was also detected in the second sample at this site.

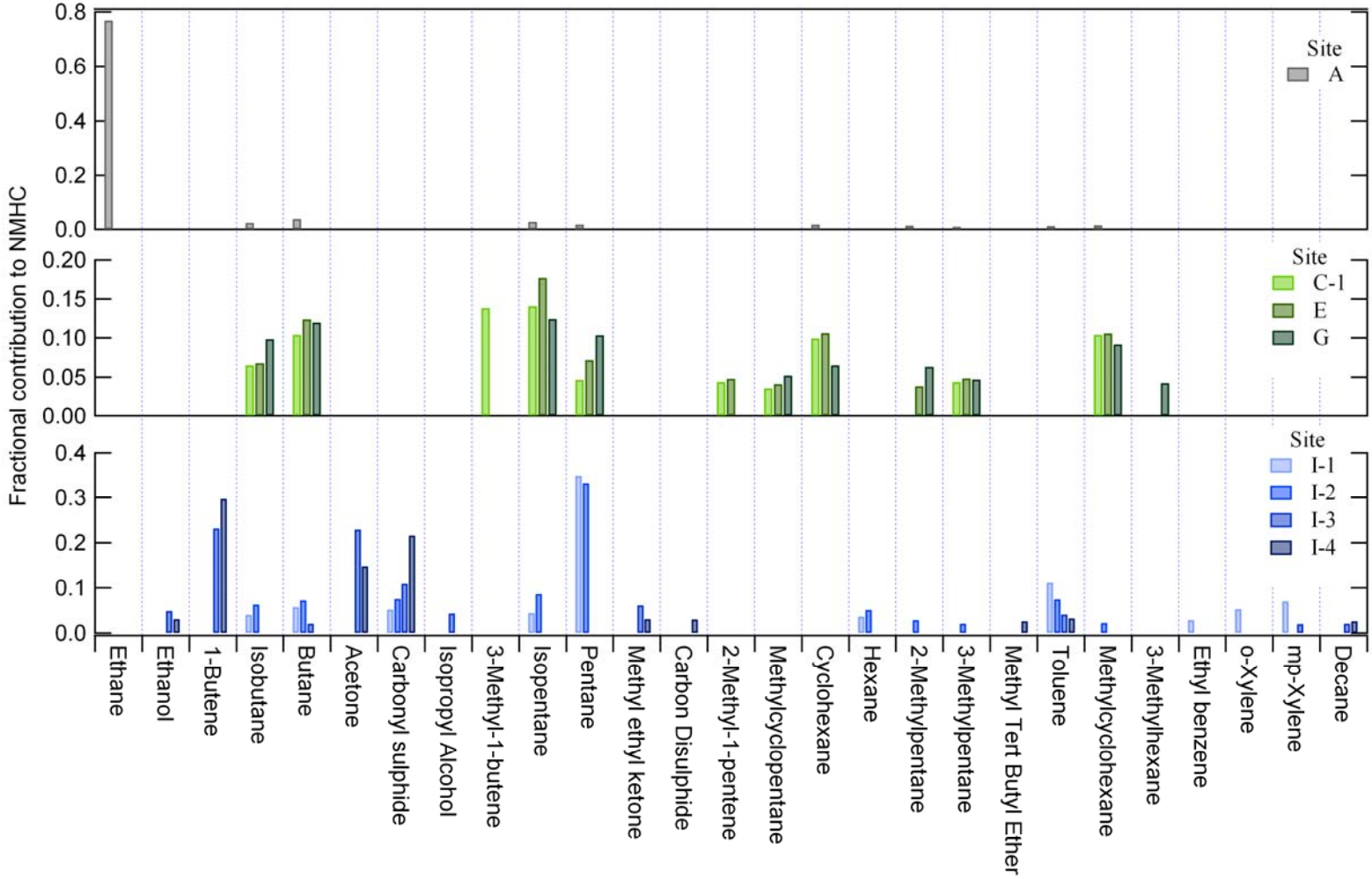

Figure 3: Top ten VOCs contributing to total non-methane hydrocarbons (NMHC) at the community sample sites. The presented VOCs composed over 80% of the total concentration.

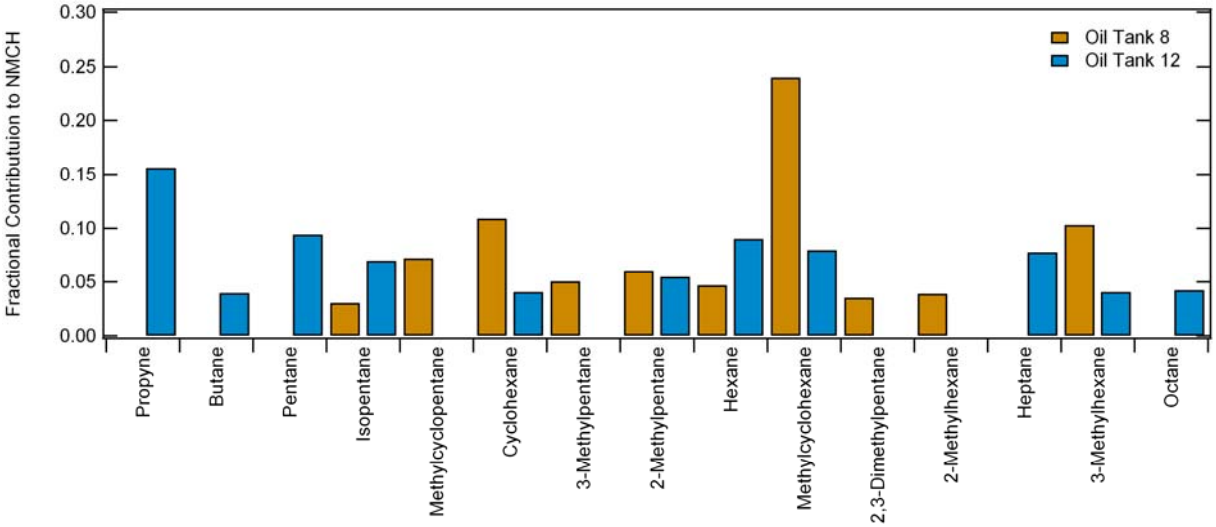

Figure 4: Top ten VOCs contributing to total non-methane hydrocarbons (NMHC) at the CCS sample sites.

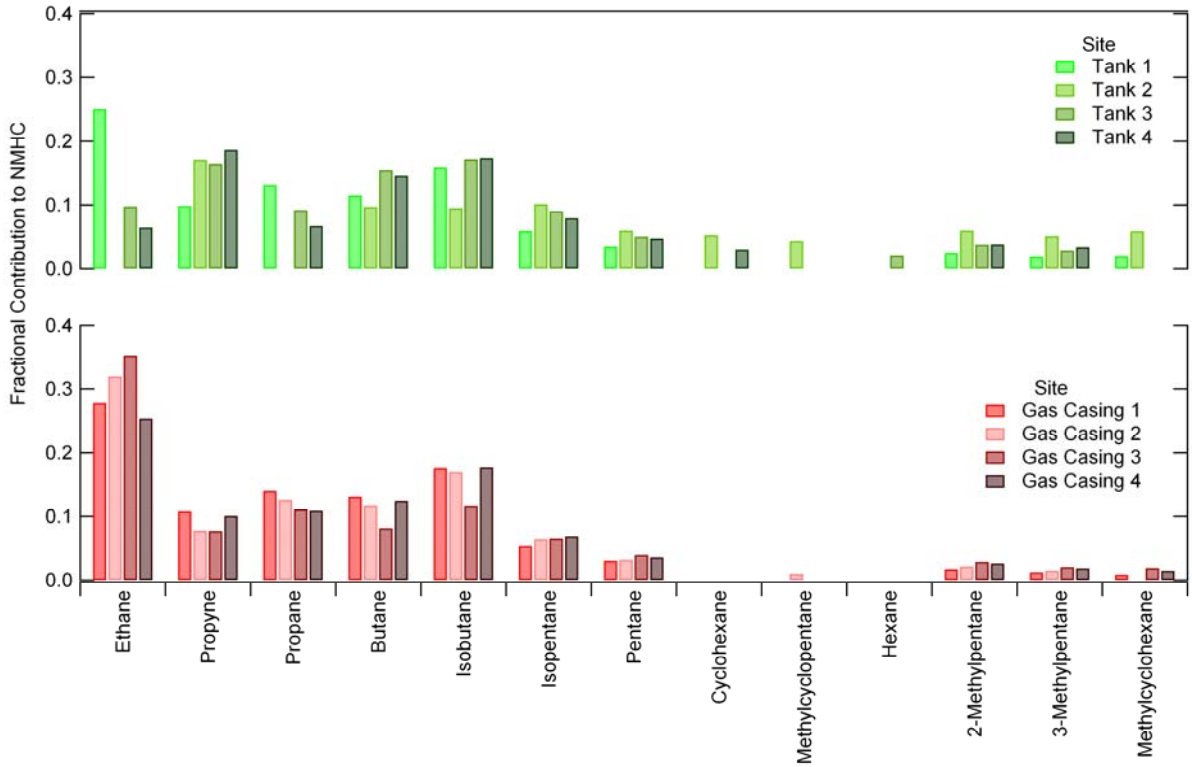

Figure 5: Top ten VOCs contributing to total non-methane hydrocarbons (NMHC) at the Baytex sample sites.

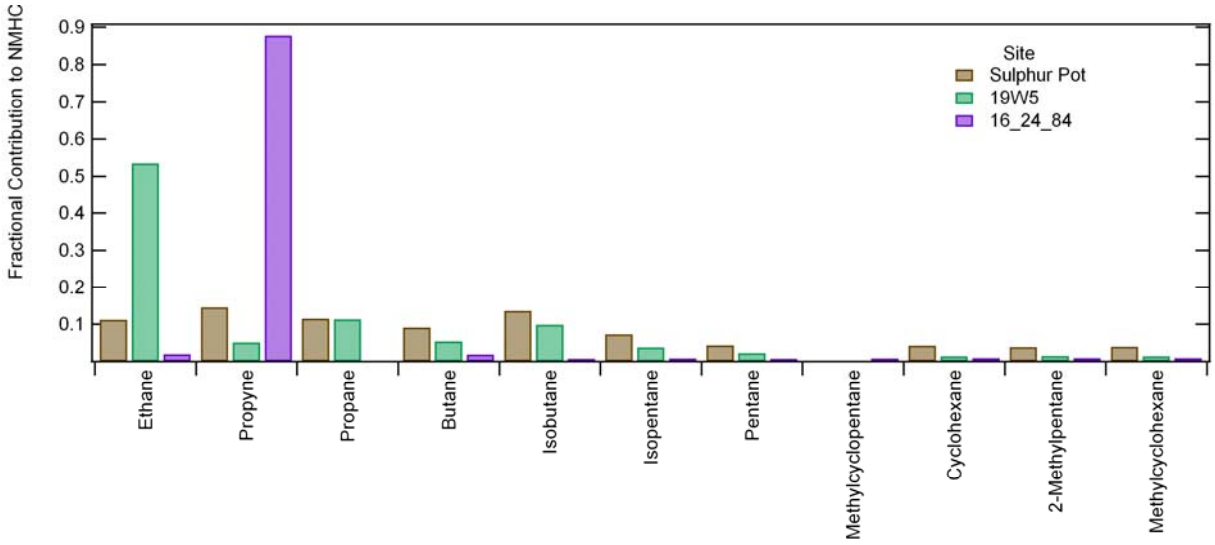

Figure 6: Top ten VOCs contributing to total non-methane hydrocarbons (NMHC) at the Pennwest sample sites.

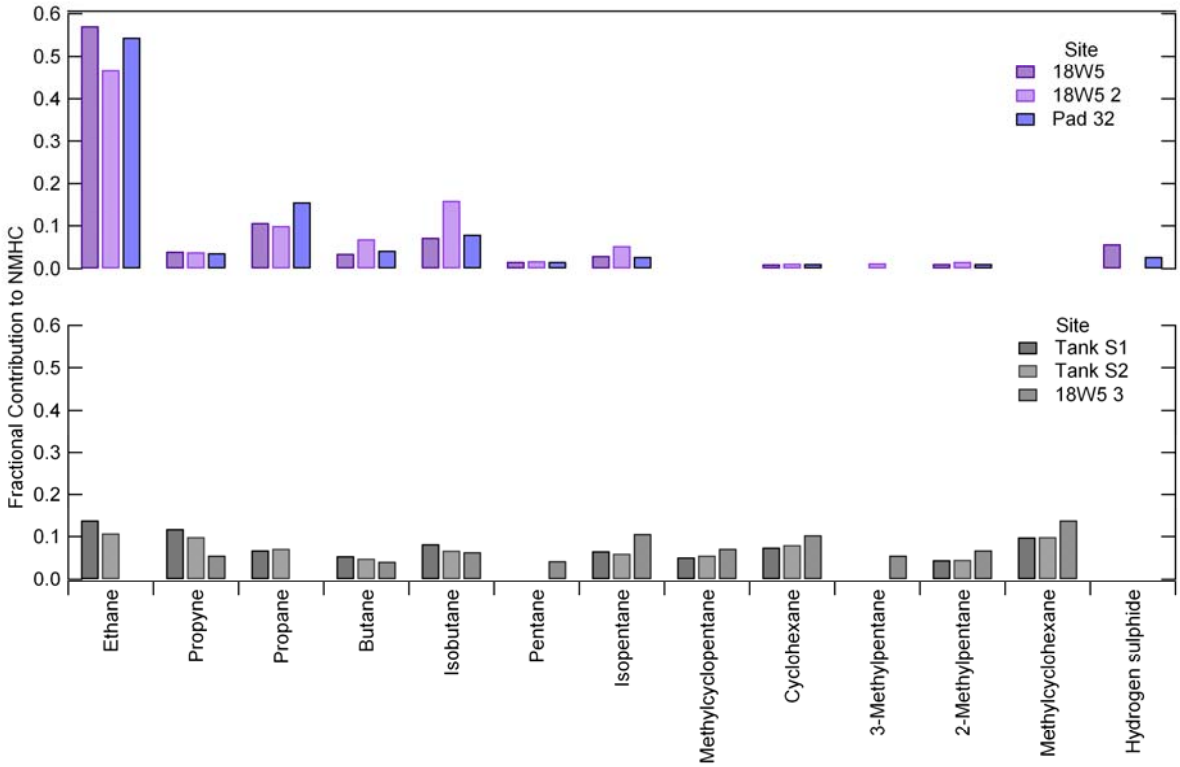

Figure 7: Top ten VOCs contributing to total non-methane hydrocarbons (NMHC) at the Husky sample sites.

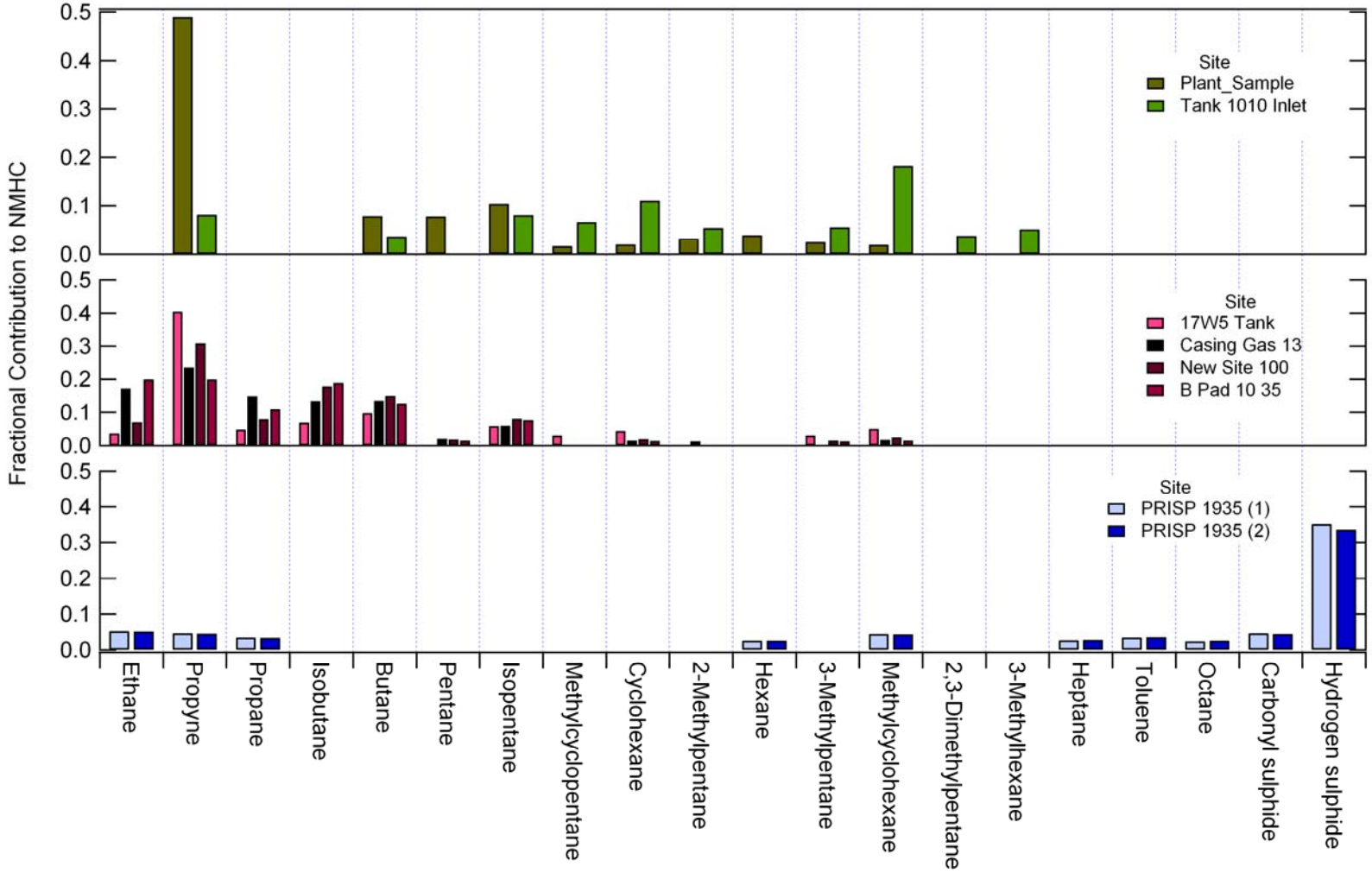

Figure 8: Top ten VOCs contributing to total non-methane hydrocarbons (NMHC) at the Shell sample sites.

4. Conclusions

When compared to background locations, the concentrations of samples taken from odour affected sites were found to be noticeably higher. Higher concentrations were detected from samples taken during calm (i.e. not windy) conditions. This is not unexpected as calm conditions would promote the build up of emitted VOCs in the area. It is important to note that although VOCs concentrations at odour affected sites were substantially higher than background sites, they were not in exceedence of Alberta's Ambient Air Quality Objectives.

Not all of the elevated VOCs within the community were known odourants. In fact, exceedances of odour thresholds were only observed for two compounds and this occurred in only a small fraction of the samples. The odour threshold resulting from a mixture of compounds can be lower than the threshold for individual VOCs. Because a strong odour was observed at the time samples were collected, a likely conclusion is that the odours are the result of the mixing of compounds that individually, are below their odour threshold values. Sulphur containing VOCs are typically associated with odours from upstream oil and gas operations. These compounds were not detected for samples collected.

Lighter VOC molecules, with less than seven carbon atoms, were the predominant compounds found in samples taken within the community. These are also the most volatile VOCs which can readily be vented into the atmosphere from storage facilities. Samples collected at potential emission sites suggest that these sites can be sources for VOCs. There were a number of commonalities between the community samples and the potential source samples. A number of the most abundant VOCs in community samples were also detected at the potential source sites. Although this does not form a definite link between the source and sample sites, the findings do suggest that identified potential sources in the area likely impacted and contributed to the samples collected within the community. The observed differences between the community samples indicate that varying processes and/or multiple sources contributed to the odours perceived within the community.

Emitted VOCs likely underwent some level of atmospheric chemical transformation, especially for samples collected during the spring. Very light VOCs molecules detected at the source sites were not measured at the sample sites. Oxygenated VOCs species were detected in the Three Creeks area but were not prominent at the potential source sites. As a result, *chemical fingerprinting* of emission is not a robust method for linking specific source and ambient sites. Nevertheless, there is a strong likelihood that the emissions from oil and gas production in the area contributed to the reported odour complaints in the Three Creeks area.

5. Appendix A: Supporting information for community sample sites

Table A 1: Odour thresholds[23] and maximum concentrations detected at community sample sites

Name	Formula	Odour threshold (ppb)	Max detected concentration (ppb)
n-Butyl mercaptane	$C_4H_{10}S$	0.0028	bdl
Isopropyl mercaptane	C_3H_8S	0.006	bdl
Isobutyl mercaptane	$C_4H_{10}S$	0.0068	bdl
Ethyl mercaptane	C_2H_6S	0.0087	bdl
n-Propyl mercaptane	C_3H_8S	0.013	bdl
n-Hexyl mercaptane	$C_6H_{14}S$	0.015	bdl
terc. Butyl mercaptane	$C_4H_{10}S$	0.029	bdl
sek. Butyl mercaptane	$C_4H_{10}S$	0.03	bdl
Diethyl sulphide	$C_4H_{10}S$	0.033	bdl
Methyl mercaptane	CH_4S	0.07	bdl
Diallyl sulphide	$C_6H_{10}S$	0.22	bdl
n-Hexanal	*$C_6H_{12}O$*	*0.28*	*1.140*
n-Nonanal	*$C_9H_{18}O$*	*0.34*	*0.613*
p-Diethyl benzene	$C_{10}H_{14}$	0.39	0.127
n-Decanal	$C_{10}H_{20}O$	0.40	0.383
Sulphan	H_2S	0.41	bdl
Thiophene	C_4H_4S	0.56	bdl
Dimethyl disulphide	$C_2H_6S_2$	2.2	bdl
Dimethyl sulphide	C_2H_6S	3	bdl
Acroleine	C_3H_4O	3.6	bdl
n-Propyl benzene	C_9H_{12}	3.8	0.065
p-Ethyl toluene	C_9H_{12}	8.3	0.055
Isopropyl benzene	C_9H_{12}	8.4	0.088
m-Ethyl toluene	C_9H_{12}	18	0.107
a-Pinene	$C_{10}H_{16}$	18	1.030
Methyl-n-butyl ketone	$C_6H_{12}O$	24	bdl
ß-Pinene	$C_{10}H_{16}$	33	0.130

[23] http://www.odour.cz/english/thresholds/thresholds.html

Table A 1: Odour thresholds[23] and maximum concentrations detected at community sample sites

Name	Formula	Odour threshold (ppb)	Max detected concentration (ppb)
Styrene	C_8H_8	35	0.327
Limonene	$C_{10}H_{16}$	38	1.400
m-Xylene	C_8H_{10}	41	2.340
Isoprene	C_5H_8	48	0.140
p-Xylene	C_8H_{10}	58	2.340
o-Ethyl toluene	C_9H_{12}	74	0.038
n-Propanol	C_3H_8O	94	1.650
1-Pentene	C_5H_{10}	100	bdl
2-Methyl heptane	C_8H_{18}	110	bdl
n-Dodecane	$C_{12}H_{26}$	110	0.255
1,2,4-Trimethyl benzene	C_9H_{12}	120	0.470
1-Hexene	C_6H_{12}	140	bdl
Methyl cyclohexane	C_7H_{14}	150	8.250
1,3,5-Trimethyl benzene	C_9H_{12}	170	0.189
Ethyl benzene	C_8H_{10}	170	0.933
Methylisobutyl ketone	$C_6H_{12}O$	170	1.240
Carbon disulphide	CS_2	210	1.800
Methyl methacrylate	$C_5H_8O_2$	210	bdl
1,3-Butadiene	C_4H_6	230	bdl
Toluene	C_7H_8	330	6.080
1-Butene	C_4H_8	360	17.900
o-Xylene	C_8H_{10}	380	1.760
2-Methyl hexane	C_7H_{16}	420	1.840
2,3-Dimethyl butane	C_6H_{14}	420	2.760
Methylethyl ketone	C_4H_8O	440	2.360
Ethanol	C_2H_6O	520	1.870
Carbonyl sulphide	COS	550	13.000
n-Dekan	$C_{10}H_{22}$	620	1.550
2,2,4-Trimethyl pentane	C_8H_{18}	670	bdl
n-Heptane	C_7H_{16}	670	0.418
Tetrachloroethylene	$C_2H_2Cl_4$	770	bdl

Table A 1: Odour thresholds[23] and maximum concentrations detected at community sample sites

Name	Formula	Odour threshold (ppb)	Max detected concentration (ppb)
3-Methyl hexane	C_7H_{16}	840	3.390
Sulphur dioxide	SO_2	870	0.069
Ethyl acetate	$C_4H_8O_2$	870	bdl
n-Undecane	$C_{11}H_{24}$	870	0.147
2,4-Dimethyl pentane	C_7H_{16}	940	bdl
Isopentane	C_5H_{12}	1300	14.300
n-Pentane	C_5H_{12}	1400	11.700
3-Methyl heptane	C_8H_{18}	1500	0.391
n-Hexane	C_6H_{14}	1500	3.210
n-Oktane	C_8H_{18}	1700	0.189
4-Methyl heptane	C_8H_{18}	1700	0.266
Methyl cyclopentane	C_6H_{12}	1700	4.840
n-Nonane	C_9H_{20}	2200	0.169
Cyclohexane	C_6H_{12}	2500	8.640
Benzene	C_6H_6	2700	0.902
Chloroform	$CHCl_3$	3800	bdl
Trichloroethylene	$C_2H_3Cl_3$	3900	bdl
2,3-Dimethyl pentane	C_7H_{16}	4500	2.460
terc. Butanol	$C_4H_{10}O$	4500	3.610
Tetrachlormethane	CCl_4	4600	0.078
2-Methyl pentane	C_6H_{14}	7000	6.700
3-Methyl pentane	C_6H_{14}	8900	4.900
Propylene	C_3H_6	13000	bdl
2,2-Dimethyl butane	C_6H_{14}	20000	0.754
Acetone	C_3H_6O	42000	8.890
Dichloromethane	CH_2Cl_2	160000	0.001
n-Butane	C_4H_{10}	1200000	20
Propane	C_3H_8	1500000	Bdl

Table A 2: Wind speed and direction during the various sample times.

Site	Date	Sample start time (local)	Wind condition	
			WSP (kph)	WDR (degrees)
A	*Feb 19*	*05:55*	*6*	*290*
B	*Feb 19*	*07:27*	*Calm*	*n/a*
C-1	*March 7*	*09:18*	*Clam*	*n/a*
C-2	*March 7*	*08:58*	*Calm*	*n/a*
E	*March 5*	*08:52*	*7*	*210*
F	*March 5*	*11:42*	*20*	*220*
G	*April 11*	*09:05*	*3.7*	*305*
H	*April 11*	*10:50*	*5.0*	*286*
I-1	*April 16*	*19:35*	*2.5*	*155*
I-2	*April 17*	*21:45*	*18.5*	*106*
I-3	*April 19*	*12:00*	*10.9*	*165*
I-4	*April 23*	*10:42*	*7.7*	*325*

Note: WSP – wind speed in kilometers per hour WDR – wind direction in degrees

Information for sites A to F data is obtained from Canada's National Climate Archive (http://climate.weatheroffice.gc.ca/climateData/canada_e.html). The closest station (Peace River) was ~15 kilometers from the area of study. Information for sites G to I was obtained from Pennwest station (Site *I*).

Table A 3: One-hour average sulphur dioxide concentration (ppb) as measured at site *I*

Month	March 2010			April 2010			May 2010			June 2010		
Day	Max	Avg	Rds	Max	Avg	Rds	Max	Avg	Rds	Max	Avg	Rds
1				0	0	23	0	0	23	0	0	16
2				13	0	23	0	0	23	1	0	23
3				8	1	23	1	0	23	2	0	23
4				0	0	23	0	0	23	0	0	23
5				6	0	23	0	0	23	0	0	23
6				1	0	23	0	0	23	0	0	23
7				0	0	23	2	0	23	0	0	6
8				0	0	23	0	0	23			
9				0	0	23	0	0	23			
10				0	0	23	0	0	23			
11				0	0	23	0	0	19			
12				3	0	23	0	0	23			
13				1	0	23	0	0	23			
14				0	0	18	0	0	21			
15				1	0	23	2	0	23			
16				1	0	23	1	0	23			
17				1	0	23	4	0	23			
18	13	1	7	1	0	23	4	0	23			
19	0	0	23	1	0	23	3	0	23			
20	0	0	16	1	0	23	0	0	23			
21	0	0	23	1	0	23	0	0	23			
22	1	0	23	1	0	23	0	0	23			
23	1	0	23	0	0	23	0	0	23			
24	2	0	20	0	0	23	0	0	23			
25	0	0	22	2	0	23	2	0	23			
26	1	0	23	4	0	23	8	0	23			
27	0	0	23	3	0	23	8	2	23			
28	0	0	23	1	0	23	12	2	23			
29	0	0	23	0	0	23	3	0	23			
30	0	0	23	5	0	23	1	0	23			
31	0	0	23				0	0	6			

Note: Ave – one hour average concentration **Max** – one hour maximum concentration **Rds** – number of hours of data

Table A 4: One-hour average total reduced sulphur concentration (ppb) as measured at site *I*

Month	March 2010			April 2010			May 2010			June 2010		
Day	Max	Avg	Rds	Max	Avg	Rds	Max	Avg	Rds	Max	Avg	Rds
1				0	0	23	0	0	23	0	0	15
2				0	0	23	0	0	23	0	0	23
3				0	0	23	2	0	23	0	0	23
4				0	0	23	1	0	23	0	0	23
5				0	0	23	0	0	23	0	0	23
6				0	0	23	0	0	23	0	0	23
7				0	0	23	0	0	23	0	0	6
8				0	0	23	1	0	23			
9				0	0	23	0	0	23			
10				0	0	23	0	0	23			
11				0	0	23	0	0	20			
12				0	0	23	0	0	23			
13				0	0	23	0	0	23			
14				0	0	18	0	0	21			
15				0	0	23	0	0	23			
16				0	0	23	0	0	23			
17				0	0	23	0	0	23			
18	1	0	7	0	0	23	0	0	23			
19	0	0	23	0	0	23	0	0	23			
20	0	0	13	0	0	23	0	0	23			
21	0	0	23	0	0	23	0	0	23			
22	0	0	23	0	0	23	0	0	23			
23	0	0	22	0	0	23	0	0	23			
24	0	0	20	0	0	23	0	0	23			
25	0	0	22	0	0	23	0	0	23			
26	0	0	23	0	0	23	0	0	23			
27	0	0	23	0	0	23	0	0	23			
28	0	0	23	0	0	23	0	0	23			
29	0	0	23	0	0	23	0	0	23			
30	0	0	23	0	0	23	0	0	23			
31	0	0	23				0	0	6			

Note: Ave – one hour average concentration **Max** – one hour maximum concentration **Rds** – number of hours of data

Table A 5: One-hour average total hydrocarbon concentration as measured at site *I*

Month	March 2010			April 2010			May 2010			June 2010		
Day	Max	Avg	Rds	Max	Avg	Rds	Max	Avg	Rds	Max	Avg	Rds
1				3.4	2.4	23	3	2.4	23	2.4	2	14
2				2.8	2.3	23	2.7	2.3	23	2.2	1.9	23
3				3	2.4	23	2.5	2.2	23	2.3	1.8	23
4				2.8	2.3	23	2.4	2.3	23	2.3	1.8	23
5				4.3	2.5	23	2.7	2.4	23	2	1.8	23
6				3.2	2.5	23	2.6	2.4	23	2.1	1.8	23
7				2.5	2.2	23	2.8	2.4	23	1.9	1.8	6
8				2.6	2.2	23	5.1	2.8	23			
9				2.2	2.1	23	2.8	2.4	23			
10				3.4	2.2	23	3.9	2.6	23			
11				3.6	2.5	23	4	2.7	19			
12				3.1	2.5	23	2.3	2.2	23			
13				2.8	2.4	23	2.3	2.2	23			
14				2.8	2.4	20	2.4	2.2	21			
15				5.9	2.9	23	2.5	2.2	23			
16				2.9	2.4	23	2.5	2.1	23			
17				4	2.7	23	2.9	2.2	23			
18	2.7	2.3	7	2.8	2.4	23	2.1	2	23			
19	2.2	2	16	3.4	2.5	23	2	1.9	23			
20	2.5	2.4	8	2.6	2.4	23	2	2	23			
21	2.4	2.3	23	2.5	2.3	23	2	1.9	23			
22	2.4	2.3	23	2.7	2.2	23	2	1.9	23			
23	2.4	2.3	23	2.9	2.3	23	2.2	2	23			
24	2.6	2.4	23	2.5	2.3	23	2.5	2.1	23			
25	2.5	2.1	19	3	2.4	23	3.1	2.2	23			
26	3.6	2.3	23	3	2.5	23	2.3	2	23			
27	3.2	2.5	23	2.4	2.3	23	2.1	2	23			
28	2.9	2.3	23	2.3	2.3	23	2.2	2	23			
29	2.9	2.3	23	2.5	2.3	23	3.3	2.1	23			
30	2.3	2.2	23	2.6	2.3	23	2.3	2	23			
31	3	2.4	23				2.1	2	6			

Note: **Ave** – one hour average concentration **Max** – one hour maximum concentration **Rds** – number of hours of data

6. Appendix B: VOCs concentrations at source site determined from 10 minute integrated air samples

Baytex Tank 1		
NAME	**Type**	**Conc (ppb)**
Methane	T	746000000
Ethane	T	4780000
Ethylene	T	0
Propane	T	2500000
Propylene	T	0
Isobutane	T	3030000
Acetylene	T	0
Butane	T	2190000
trans-2-Butene	T	0
1-Butene	T	0
Isobutylene	T	0
cis-2-Butene	T	0
Propyne	T	1870000
1,3-Butadiene	T	0
Ethylacetylene	T	0
Unknown Sulphurs (MW=32)	0	29500
Hydrogen sulphide	T	0
Carbonyl sulphide	T	0
Methyl mercaptan	T	0
Ethyl mercaptan	T	0
Dimethyl sulphide	T	0
Carbon disulphide	T	0
Isopropyl mercaptan	T	0
tert-Butyl mercaptan	T	0
Propyl mercaptan	T	0
Ethyl methyl sulphide	T	0
Thiophene	T	64
sec-Butyl mercaptan	T	0
Isobutyl mercaptan	T	0
Ethyl sulphide	T	0
Butyl mercaptan	T	3.34
tert-Pentyl mercaptan	T	0
Dimethyl disulphide	T	0
2-methyl Thiophene	T	58.5
3-methyl Thiophene	T	908
Pentyl mercaptan	T	0
2-ethyl Thiophene	T	0
Allyl sulphide	T	302
2,5-dimethyl Thiophene	T	556
Hexyl mercaptan	T	0
Dimethyl trisulphide	T	0
Heptyl mercaptan	T	0

Baytex Tank 1		
NAME	**Type**	**Conc (ppb)**
Butyl sulphide	T	0
Octyl mercaptan	T	0
Cyclopentane, 1,3-dimethyl-, cis-	91	54500
Cyclopentane, 1,3-dimethyl-	90	39800
Cyclopentane, 1,2-dimethyl-, trans-	91	60100
Hexane, 2,4-dimethyl-	95	18300
Cyclopentane, ethyl-	91	32900
Cyclopentane, 1,2,4-trimethyl-	87	27700
1-trans-2-cis-3-trans-trimethylcyclopent	95	33400
Hexane, 2,3-dimethyl-	91	13500
Heptane, 4-methyl-	64	26900
Cyclohexane, 1,3-dimethyl-, cis-	97	84400
Cyclohexane, 1,1-dimethyl-	64	29000
Cyclopentane, 1-ethyl-2-methyl-, cis-	97	39700
Cyclohexane, 1,2-dimethyl-, trans-	87	41500
Cyclohexane, 1,4-dimethyl-	97	14000
Heptane, 2,4-dimethyl-	91	13500
Octane, 2-methyl-	76	21100
Cyclopentane, propyl-	58	49700
Cyclohexane, ethyl-	97	38400
Cyclohexane, 1,1,3-trimethyl-	97	61600
Heptane, 2,3-dimethyl-	87	34300
Cyclopentane, 1-methyl-2-propyl-	64	43700
1-Ethyl-4-methylcyclohexane	94	20900
Cyclohexane, 1-ethyl-4-methyl-, trans-	94	24400
Cyclohexane, 1-ethyl-4-methyl-, cis- (CA	60	39000
Octane, 3,5-dimethyl-	58	22200
Cyclopentane, (2-methylpropyl)-	74	48300
Heptane, 3-ethyl-2-methyl-	86	13800
Benzene, 1-ethyl-3-methyl-	86	51800
Benzene, 1-ethyl-2-methyl-	68	29400
Benzene, 1,3,5-trimethyl-	96	15900
1-Butene	T	0
trans-2-Butene	T	0
cis-2-Butene	T	0
3-Methyl-1-butene	T	0
Isopentane	T	1120000
1-Pentene	T	0
Pentane	T	655000
trans-2-Pentene	T	0
Isoprene	T	0
cis-2-Pentene	T	0
2-Methyl-2-butene	T	0
2,2-Dimethylbutane	T	45700
Cyclopentene	T	0

Baytex Tank 1		
NAME	**Type**	**Conc (ppb)**
4-Methyl-1-pentene	T	0
2,3-Dimethylbutane	T	139000
Cyclopentane	T	123000
2-Methylpentane	T	454000
3-Methylpentane	T	361000
2-Methyl-1-pentene	T	0
Hexane	T	265000
cis-2-Hexene	T	0
trans-2-Hexene	T	0
2,4-Dimethylpentane	T	0
Methylcyclopentane	T	263000
Cyclohexane	T	308000
Benzene	T	4240
2-Methylhexane	T	78700
2,3-Dimethylpentane	T	89000
3-Methylhexane	T	197000
2,2,4-Trimethylpentane	T	0
Heptane	T	20100
Methylcyclohexane	T	367000
2,3,4-Trimethylpentane	T	0
2-Methylheptane	T	0
Toluene	T	35700
3-Methylheptane	T	33100
Octane	T	0
Ethyl benzene	T	29200
m,p-Xylene	T	46700
Nonane	T	0
Styrene	T	0
o-Xylene	T	34900
Isopropylbenzene	T	7970
alpha Pinene	T	0
n-Propylbenzene	T	10800
1,3,5-Trimethylbenzene	T	11400
beta Pinene	T	0
1,2,4-Trimethylbenzene	T	23000

Baytex Tank 2		
NAME	**Type**	**Conc (ppb)**
Methane	T	41300000
Ethane	T	734000
Ethylene	T	0
Propane	T	800000
Propylene	T	0
Isobutane	T	2070000
Acetylene	T	0
Butane	T	2110000
trans-2-Butene	T	0
1-Butene	T	0
Isobutylene	T	0
cis-2-Butene	T	0
Propyne	T	3730000
1,3-Butadiene	T	0
Ethylacetylene	T	0
Unknown Sulphurs (MW=32)	0	10700
Hydrogen sulphide	T	0
Carbonyl sulphide	T	0
Methyl mercaptan	T	0
Ethyl mercaptan	T	0
Dimethyl sulphide	T	0
Carbon disulphide	T	0
Isopropyl mercaptan	T	0
tert-Butyl mercaptan	T	0
Propyl mercaptan	T	0
Ethyl methyl sulphide	T	0
Thiophene	T	277
sec-Butyl mercaptan	T	0
Isobutyl mercaptan	T	0
Ethyl sulphide	T	0
Butyl mercaptan	T	0
tert-Pentyl mercaptan	T	0
Dimethyl disulphide	T	0
2-methyl Thiophene	T	0
3-methyl Thiophene	T	2220
Pentyl mercaptan	T	0
2-ethyl Thiophene	T	0
Allyl sulphide	T	0
2,5-dimethyl Thiophene	T	0
Hexyl mercaptan	T	0
Dimethyl trisulphide	T	0
Heptyl mercaptan	T	0
Butyl sulphide	T	0

Baytex Tank 2		
NAME	**Type**	**Conc (ppb)**
Octyl mercaptan	T	0
Pentane, 2,2-dimethyl-	78	32200
Pentane, 3,3-dimethyl-	83	21100
Cyclopentane, 1,3-dimethyl-	93	260000
Isopropylcyclobutane	90	195000
Cyclopentane, 1,2-dimethyl-, trans-	91	303000
Hexane, 2,5-dimethyl-	90	48900
Hexane, 2,4-dimethyl-	90	74500
Cyclopentane, ethyl-	94	151000
1,2,4-TRIMETHYL-CYCLOPENTANE	87	110000
1-trans-2-cis-3-trans-trimethylcyclopent	95	129000
Hexane, 2,3-dimethyl-	94	41100
1-Butanol, 2-ethyl-	78	81700
Cyclohexane, 1,3-dimethyl-, cis-	95	255000
Cyclopentane, 1-ethyl-3-methyl-	60	82700
Cyclopentane, 1-ethyl-2-methyl-, cis-	97	116000
Cyclohexane, 1,2-dimethyl-, trans-	90	109000
Cyclohexane, 1,4-dimethyl-	97	35500
Cyclopentane, (1-methylethyl)-	72	23300
Heptane, 2,4-dimethyl-	91	23400
Heptane, 2,6-dimethyl-	58	37100
Cyclopentane, propyl-	76	82300
Cyclohexane, ethyl-	97	74600
Cyclohexane, 1,1,3-trimethyl-	97	96500
Cyclohexane, 1,2,4-trimethyl-, (1.alpha.	96	32700
Cyclopentane, 1-methyl-2-propyl-	64	46700
1-Ethyl-4-methylcyclohexane	95	23200
Cyclohexane, 1-ethyl-2-methyl-	93	23500
Cyclohexane, 1-ethyl-4-methyl-, cis- (CA	70	35700
Cyclohexane, propyl-	74	32500
Benzene, 1-ethyl-3-methyl-	56	35300
1-Butene	T	0
trans-2-Butene	T	0
cis-2-Butene	T	0
3-Methyl-1-butene	T	0
Isopentane	T	2210000
1-Pentene	T	0
Pentane	T	1290000
trans-2-Pentene	T	0
Isoprene	T	0
cis-2-Pentene	T	0
2-Methyl-2-butene	T	0
2,2-Dimethylbutane	T	113000
Cyclopentene	T	0
4-Methyl-1-pentene	T	0

Baytex Tank 2		
NAME	**Type**	**Conc (ppb)**
2,3-Dimethylbutane	T	392000
Cyclopentane	T	479000
2-Methylpentane	T	1290000
3-Methylpentane	T	1100000
2-Methyl-1-pentene	T	0
Hexane	T	669000
cis-2-Hexene	T	0
trans-2-Hexene	T	0
2,4-Dimethylpentane	T	0
Methylcyclopentane	T	932000
Cyclohexane	T	1140000
Benzene	T	21000
2-Methylhexane	T	262000
2,3-Dimethylpentane	T	320000
3-Methylhexane	T	689000
2,2,4-Trimethylpentane	T	0
Heptane	T	59600
Methylcyclohexane	T	1270000
2,3,4-Trimethylpentane	T	0
2-Methylheptane	T	0
Toluene	T	61300
3-Methylheptane	T	48100
Octane	T	0
Ethyl benzene	T	22300
m,p-Xylene	T	42400
Nonane	T	0
Styrene	T	0
o-Xylene	T	32400
Isopropylbenzene	T	5700
alpha Pinene	T	0
n-Propylbenzene	T	4730
1,3,5-Trimethylbenzene	T	6360
beta Pinene	T	0
1,2,4-Trimethylbenzene	T	9510

Baytex Tank 3		
NAME	**Type**	**Conc (ppb)**
Methane	T	462000000
Ethane	T	14300000
Ethylene	T	0
Propane	T	13400000
Propylene	T	0
Isobutane	T	25200000
Acetylene	T	0
Butane	T	22700000
trans-2-Butene	T	0
1-Butene	T	0
Isobutylene	T	0
cis-2-Butene	T	0
Propyne	T	24100000
1,3-Butadiene	T	0
Ethylacetylene	T	0
Unknown Sulphurs (MW=32)	0	8810
Hydrogen sulphide	T	0
Carbonyl sulphide	T	0
Methyl mercaptan	T	0
Ethyl mercaptan	T	128
Dimethyl sulphide	T	18.1
Carbon disulphide	T	0
Isopropyl mercaptan	T	104
tert-Butyl mercaptan	T	0
Propyl mercaptan	T	0
Ethyl methyl sulphide	T	0
Thiophene	T	309
sec-Butyl mercaptan	T	0
Isobutyl mercaptan	T	0
Ethyl sulphide	T	0
Butyl mercaptan	T	0
tert-Pentyl mercaptan	T	0
Dimethyl disulphide	T	0
2-methyl Thiophene	T	49.8
3-methyl Thiophene	T	569
Pentyl mercaptan	T	0
2-ethyl Thiophene	T	0
Allyl sulphide	T	0
2,5-dimethyl Thiophene	T	0
Hexyl mercaptan	T	0
Dimethyl trisulphide	T	0
Heptyl mercaptan	T	0
Butyl sulphide	T	0

Baytex Tank 3		
NAME	**Type**	**Conc (ppb)**
Octyl mercaptan	T	0
Propane, 2,2-dimethyl-	59	104000
Pentane, 2,2-dimethyl-	78	116000
Butane, 2,2,3-trimethyl-	83	26700
Pentane, 3,3-dimethyl-	83	59100
Cyclopentane, 1,3-dimethyl-	93	647000
Cyclopentane, 1,3-dimethyl-, cis-	90	465000
Cyclopentane, 1,2-dimethyl-, trans-	91	735000
Hexane, 2,5-dimethyl-	91	104000
Hexane, 2,4-dimethyl-	95	135000
Cyclopentane, ethyl-	97	271000
Cyclopentane, 1,2,4-trimethyl-	87	197000
1-trans-2-cis-3-trans-trimethylcyclopent	96	226000
Hexane, 2,3-dimethyl-	91	64000
Pentane, 3-ethyl-2-methyl-	83	21900
Heptane, 2-methyl-	91	21300
1-Butanol, 2-ethyl-	86	139000
Heptane, 3-methylene-	52	27100
Cyclohexane, 1,4-dimethyl-	94	348000
Cycloheptane, methyl-	87	112000
CYCLOPENTANE, 1-ETHYL-2-METHYL-	97	141000
Cyclohexane, 1,2-dimethyl- (cis/trans) $	93	136000
Cyclohexane, 1,3-dimethyl-, trans-	97	41000
Cyclopentane, (1-methylethyl)-	53	21000
Heptane, 2,4-dimethyl-	53	28500
Heptane, 2,6-dimethyl-	64	35600
Cyclopentane, propyl-	68	74900
Cyclohexane, ethyl-	97	87200
Cyclohexane, 1,1,3-trimethyl-	90	121000
Heptane, 2,3-dimethyl-	43	27500
1-Methyl-2-(4-methylpentyl)cyclopentane	64	29700
1-Butene	T	0
trans-2-Butene	T	0
cis-2-Butene	T	0
3-Methyl-1-butene	T	0
Isopentane	T	13200000
1-Pentene	T	0
Pentane	T	7270000
trans-2-Pentene	T	0
Isoprene	T	0
cis-2-Pentene	T	0
2-Methyl-2-butene	T	0
2,2-Dimethylbutane	T	441000
Cyclopentene	T	0
4-Methyl-1-pentene	T	0

Baytex Tank 3		
NAME	**Type**	**Conc (ppb)**
2,3-Dimethylbutane	T	1430000
Cyclopentane	T	1420000
2-Methylpentane	T	5470000
3-Methylpentane	T	4090000
2-Methyl-1-pentene	T	0
Hexane	T	2950000
cis-2-Hexene	T	0
trans-2-Hexene	T	0
2,4-Dimethylpentane	T	0
Methylcyclopentane	T	2590000
Cyclohexane	T	2640000
Benzene	T	55000
2-Methylhexane	T	892000
2,3-Dimethylpentane	T	685000
3-Methylhexane	T	1750000
2,2,4-Trimethylpentane	T	0
Heptane	T	167000
Methylcyclohexane	T	2170000
2,3,4-Trimethylpentane	T	0
2-Methylheptane	T	0
Toluene	T	174000
3-Methylheptane	T	114000
Octane	T	0
Ethyl benzene	T	29600
m,p-Xylene	T	21200
Nonane	T	0
Styrene	T	0
o-Xylene	T	17500
Isopropylbenzene	T	0
alpha Pinene	T	0
n-Propylbenzene	T	0
1,3,5-Trimethylbenzene	T	0
beta Pinene	T	0
1,2,4-Trimethylbenzene	T	0

Baytex Gas Casing 1		
NAME	**Type**	**Conc (ppb)**
Methane	T	800000000
Ethane	T	4780000
Ethylene	T	0
Propane	T	2410000
Propylene	T	0
Isobutane	T	3020000
Acetylene	T	0
Butane	T	2250000
trans-2-Butene	T	0
1-Butene	T	0
Isobutylene	T	0
cis-2-Butene	T	0
Propyne	T	1850000
1,3-Butadiene	T	0
Ethylacetylene	T	0
Unknown Sulphurs (MW=32)	0	3120
Hydrogen sulphide	T	0
Carbonyl sulphide	T	0
Methyl mercaptan	T	0
Ethyl mercaptan	T	0
Dimethyl sulphide	T	0
Carbon disulphide	T	0
Isopropyl mercaptan	T	0
tert-Butyl mercaptan	T	0
Propyl mercaptan	T	0
Ethyl methyl sulphide	T	0
Thiophene	T	17.8
sec-Butyl mercaptan	T	0
Isobutyl mercaptan	T	0
Ethyl sulphide	T	0
Butyl mercaptan	T	0
tert-Pentyl mercaptan	T	0
Dimethyl disulphide	T	0
2-methyl Thiophene	T	12.1
3-methyl Thiophene	T	146
Pentyl mercaptan	T	0
2-ethyl Thiophene	T	0
Allyl sulphide	T	0
2,5-dimethyl Thiophene	T	0
Hexyl mercaptan	T	0
Dimethyl trisulphide	T	0
Heptyl mercaptan	T	0
Butyl sulphide	T	0

Baytex Gas Casing 1		
NAME	**Type**	**Conc (ppb)**
Octyl mercaptan	T	0
Propane, 2,2-dimethyl-	72	8860
Butane, 2,2,3-trimethyl-	78	5920
Cyclopentane, 1,3-dimethyl-, cis-	91	36400
Cyclopentane, 1,3-dimethyl-	94	25900
CYCLOBUTANE, ISOPROPYL-	94	39700
Hexane, 2,5-dimethyl-	91	6090
Hexane, 2,4-dimethyl-	91	9470
Cyclopentane, ethyl-	91	18000
1,2,4-TRIMETHYL-CYCLOPENTANE	90	14400
1-trans-2-cis-3-trans-trimethylcyclopent	95	16900
Hexane, 2,3-dimethyl-	91	5820
1-Butanol, 2-ethyl-	78	10500
Cyclohexane, 1,4-dimethyl-, cis-	91	35000
Cycloheptane, methyl-	72	11600
Cyclopentane, 1-ethyl-2-methyl-, cis-	97	15600
Cyclohexane, 1,2-dimethyl- (cis/trans)	91	15500
Cyclohexane, 1,3-dimethyl-, trans-	96	4990
Heptane, 2,4-dimethyl-	90	4140
Heptane, 2,6-dimethyl-	58	5600
Cyclopentane, propyl-	94	12500
Cyclohexane, ethyl-	97	11500
Cyclohexane, 1,1,3-trimethyl-	97	17400
Heptane, 2,3-dimethyl-	72	6880
Cyclopentane, 1-ethyl-3-methyl-, cis-	58	8170
1-Ethyl-4-methylcyclohexane	94	3660
Cyclohexane, 1-ethyl-4-methyl-, trans-	93	4120
Cyclohexane, 1-ethyl-4-methyl-, cis-	58	6010
Cyclohexane, (1-methylethyl)-	58	6890
Benzene, 1-ethyl-3-methyl-	68	6180
1-butyl-2-methylcyclopentene	38	3320
1-Butene	T	0
trans-2-Butene	T	0
cis-2-Butene	T	0
3-Methyl-1-butene	T	0
Isopentane	T	918000
1-Pentene	T	0
Pentane	T	519000
trans-2-Pentene	T	0
Isoprene	T	0
cis-2-Pentene	T	0
2-Methyl-2-butene	T	0
2,2-Dimethylbutane	T	30000
Cyclopentene	T	0
4-Methyl-1-pentene	T	0

Baytex Gas Casing 1		
NAME	**Type**	**Conc (ppb)**
2,3-Dimethylbutane	T	81600
Cyclopentane	T	75500
2-Methylpentane	T	291000
3-Methylpentane	T	205000
2-Methyl-1-pentene	T	0
Hexane	T	139000
cis-2-Hexene	T	0
trans-2-Hexene	T	0
2,4-Dimethylpentane	T	0
Methylcyclopentane	T	133000
Cyclohexane	T	143000
Benzene	T	1970
2-Methylhexane	T	35300
2,3-Dimethylpentane	T	36800
3-Methylhexane	T	86500
2,2,4-Trimethylpentane	T	0
Heptane	T	7270
Methylcyclohexane	T	145000
2,3,4-Trimethylpentane	T	0
2-Methylheptane	T	0
Toluene	T	10600
3-Methylheptane	T	8010
Octane	T	0
Ethyl benzene	T	4050
m,p-Xylene	T	5880
Nonane	T	0
Styrene	T	0
o-Xylene	T	3870
Isopropylbenzene	T	745
alpha Pinene	T	0
n-Propylbenzene	T	879
1,3,5-Trimethylbenzene	T	873
beta Pinene	T	0
1,2,4-Trimethylbenzene	T	1570

Baytex Gas Casing 2		
NAME	**Type**	**Conc (ppb)**
Methane	T	838000000
Ethane	T	4270000
Ethylene	T	0
Propane	T	1680000
Propylene	T	0
Isobutane	T	2270000
Acetylene	T	0
Butane	T	1570000
trans-2-Butene	T	0
1-Butene	T	0
Isobutylene	T	0
cis-2-Butene	T	0
Propyne	T	1030000
1,3-Butadiene	T	0
Ethylacetylene	T	0
Unknown Sulphurs (MW=32)	0	1850
Hydrogen sulphide	T	0
Carbonyl sulphide	T	3.34
Methyl mercaptan	T	0
Ethyl mercaptan	T	0
Dimethyl sulphide	T	0
Carbon disulphide	T	0
Isopropyl mercaptan	T	0
tert-Butyl mercaptan	T	0
Propyl mercaptan	T	0
Ethyl methyl sulphide	T	0
Thiophene	T	11.8
sec-Butyl mercaptan	T	0
Isobutyl mercaptan	T	0
Ethyl sulphide	T	0
Butyl mercaptan	T	0
tert-Pentyl mercaptan	T	0
Dimethyl disulphide	T	0
2-methyl Thiophene	T	0
3-methyl Thiophene	T	84.1
Pentyl mercaptan	T	0
2-ethyl Thiophene	T	0
Allyl sulphide	T	0
2,5-dimethyl Thiophene	T	0
Hexyl mercaptan	T	0
Dimethyl trisulphide	T	0
Heptyl mercaptan	T	0
Butyl sulphide	T	0

Baytex Gas Casing 2		
NAME	**Type**	**Conc (ppb)**
Octyl mercaptan	T	0
Propane, 2,2-dimethyl-	64	7870
Butane, 2,2,3-trimethyl-	72	5650
Pentane, 3,3-dimethyl-	83	2810
Cyclopentane, 1,3-dimethyl-, cis-	90	30900
Cyclopentane, 1,3-dimethyl-	94	21700
CYCLOBUTANE, ISOPROPYL-	91	33900
Hexane, 2,5-dimethyl-	91	4960
Hexane, 2,4-dimethyl-	94	7460
Cyclopentane, ethyl-	91	14200
Cyclopentane, 1,2,4-trimethyl-	87	10900
1-trans-2-cis-3-trans-trimethylcyclopent	95	12500
Hexane, 2,3-dimethyl-	91	3910
1-Pentanol, 2-methyl-	78	7880
Cyclohexane, 1,3-dimethyl-, cis-	94	24400
Cyclopentane, 1-ethyl-3-methyl-	55	8300
Cyclopentane, 1-ethyl-2-methyl-, cis-	97	10700
Cyclohexane, 1,2-dimethyl- (cis/trans)	95	10700
Cyclohexane, 1,3-dimethyl-, trans-	97	3450
Octane	80	2790
Heptane, 2,6-dimethyl-	72	3410
Cyclopentane, propyl-	81	8370
Cyclohexane, ethyl-	97	7770
Cyclohexane, 1,1,3-trimethyl-	97	10400
Cyclohexane, 1,2,4-trimethyl-	81	3450
Cyclopentane, 1-methyl-2-propyl-	87	5110
Cyclohexane, 1-ethyl-4-methyl-, cis- (CA	87	2360
Cyclohexane, 1-ethyl-2-methyl-	87	2710
1-Ethyl-4-methylcyclohexane	52	2490
Cyclohexane, propyl-	72	3580
Cyclohexane, 1,1,2,3-tetramethyl-	92	3170
1-Butene	T	0
trans-2-Butene	T	0
cis-2-Butene	T	0
3-Methyl-1-butene	T	0
Isopentane	T	857000
1-Pentene	T	0
Pentane	T	421000
trans-2-Pentene	T	0
Isoprene	T	0
cis-2-Pentene	T	0
2-Methyl-2-butene	T	0
2,2-Dimethylbutane	T	27800
Cyclopentene	T	0
4-Methyl-1-pentene	T	0

Baytex Gas Casing 2		
NAME	**Type**	**Conc (ppb)**
2,3-Dimethylbutane	T	75000
Cyclopentane	T	80400
2-Methylpentane	T	279000
3-Methylpentane	T	198000
2-Methyl-1-pentene	T	0
Hexane	T	100000
cis-2-Hexene	T	0
trans-2-Hexene	T	0
2,4-Dimethylpentane	T	0
Methylcyclopentane	T	126000
Cyclohexane	T	125000
Benzene	T	2370
2-Methylhexane	T	25100
2,3-Dimethylpentane	T	31700
3-Methylhexane	T	70000
2,2,4-Trimethylpentane	T	0
Heptane	T	4740
Methylcyclohexane	T	115000
2,3,4-Trimethylpentane	T	0
2-Methylheptane	T	0
Toluene	T	3790
3-Methylheptane	T	3720
Octane	T	0
Ethyl benzene	T	1570
m,p-Xylene	T	3010
Nonane	T	0
Styrene	T	0
o-Xylene	T	2330
Isopropylbenzene	T	508
alpha Pinene	T	0
n-Propylbenzene	T	382
1,3,5-Trimethylbenzene	T	469
beta Pinene	T	0
1,2,4-Trimethylbenzene	T	623

Baytex Gas Casing 3		
NAME	**Type**	**Conc (ppb)**
Methane	T	770000000
Ethane	T	3770000
Ethylene	T	0
Propane	T	1180000
Propylene	T	0
Isobutane	T	1250000
Acetylene	T	0
Butane	T	862000
trans-2-Butene	T	0
1-Butene	T	0
Isobutylene	T	0
cis-2-Butene	T	0
Propyne	T	817000
1,3-Butadiene	T	0
Ethylacetylene	T	0
Unknown Sulphurs (MW=32)	0	2390
Hydrogen sulphide	T	98.6
Carbonyl sulphide	T	0
Methyl mercaptan	T	0
Ethyl mercaptan	T	0
Dimethyl sulphide	T	0
Carbon disulphide	T	0
Isopropyl mercaptan	T	0
tert-Butyl mercaptan	T	0
Propyl mercaptan	T	0
Ethyl methyl sulphide	T	0
Thiophene	T	0
sec-Butyl mercaptan	T	0
Isobutyl mercaptan	T	0
Ethyl sulphide	T	0
Butyl mercaptan	T	0
tert-Pentyl mercaptan	T	0
Dimethyl disulphide	T	0
2-methyl Thiophene	T	9.89
3-methyl Thiophene	T	41.2
Pentyl mercaptan	T	0
2-ethyl Thiophene	T	0
Allyl sulphide	T	0
2,5-dimethyl Thiophene	T	0
Hexyl mercaptan	T	0
Dimethyl trisulphide	T	0
Heptyl mercaptan	T	0
Butyl sulphide	T	0

Baytex Gas Casing 3		
NAME	**Type**	**Conc (ppb)**
Octyl mercaptan	T	0
Propane, 2,2-dimethyl-	64	3930
Pentane, 2,4-dimethyl-	72	5710
Cyclopentane, 1,3-dimethyl-	97	43100
Isopropylcyclobutane	70	31800
Cyclopentane, 1,2-dimethyl-	94	49400
Hexane, 2,5-dimethyl-	90	9670
Hexane, 2,4-dimethyl-	95	13000
Cyclopentane, ethyl-	91	24200
1,2,4-TRIMETHYL-CYCLOPENTANE	87	19500
1-trans-2-cis-3-trans-trimethylcyclopent	96	23300
Hexane, 2,3-dimethyl-	94	7760
Pentane, 3-ethyl-2-methyl-	91	5770
Heptane, 2-methyl-	94	6240
Heptane, 4-methyl-	72	18600
Cyclohexane, 1,3-dimethyl-, cis-	94	46400
Cycloheptane, methyl-	90	15200
Cyclopentane, 1-ethyl-2-methyl-, cis-	97	19600
Cyclohexane, 1,2-dimethyl- (cis/trans)	87	20200
Cyclohexane, 1,4-dimethyl-	97	6430
1-Pentene, 3-methyl-	46	4350
Heptane, 2,4-dimethyl-	90	5100
Heptane, 2,6-dimethyl-	64	9010
2-Hexene, 2,5-dimethyl-	60	15700
Cyclohexane, ethyl-	97	13200
Cyclohexane, 1,1,3-trimethyl-	97	18400
Heptane, 2,3-dimethyl-	68	8450
1-Ethyl-4-methylcyclohexane	90	3670
Cyclohexane, 1-ethyl-4-methyl-, trans-	87	4260
Cyclohexane, 1-ethyl-2-methyl-	74	4260
Cyclohexane, propyl-	64	5790
1-Butene	T	0
trans-2-Butene	T	0
cis-2-Butene	T	0
3-Methyl-1-butene	T	0
Isopentane	T	692000
1-Pentene	T	0
Pentane	T	421000
trans-2-Pentene	T	0
Isoprene	T	0
cis-2-Pentene	T	0
2-Methyl-2-butene	T	0
2,2-Dimethylbutane	T	20200
Cyclopentene	T	0
4-Methyl-1-pentene	T	0

Baytex Gas Casing 3		
NAME	**Type**	**Conc (ppb)**
2,3-Dimethylbutane	T	69900
Cyclopentane	T	76300
2-Methylpentane	T	305000
3-Methylpentane	T	215000
2-Methyl-1-pentene	T	0
Hexane	T	190000
cis-2-Hexene	T	0
trans-2-Hexene	T	0
2,4-Dimethylpentane	T	0
Methylcyclopentane	T	157000
Cyclohexane	T	175000
Benzene	T	3510
2-Methylhexane	T	61200
2,3-Dimethylpentane	T	46600
3-Methylhexane	T	124000
2,2,4-Trimethylpentane	T	0
Heptane	T	14500
Methylcyclohexane	T	201000
2,3,4-Trimethylpentane	T	0
2-Methylheptane	T	0
Toluene	T	17300
3-Methylheptane	T	16100
Octane	T	0
Ethyl benzene	T	5050
m,p-Xylene	T	4550
Nonane	T	268
Styrene	T	0
o-Xylene	T	3440
Isopropylbenzene	T	657
alpha Pinene	T	0
n-Propylbenzene	T	720
1,3,5-Trimethylbenzene	T	573
beta Pinene	T	0
1,2,4-Trimethylbenzene	T	655

Husky 18W5		
NAME	**Type**	**Conc (ppb)**
Methane	T	824000000
Ethane	T	6860000
Ethylene	T	0
Propane	T	1280000
Propylene	T	0
Isobutane	T	864000
Acetylene	T	0
Butane	T	419000
trans-2-Butene	T	0
1-Butene	T	0
Isobutylene	T	0
cis-2-Butene	T	32300
Propyne	T	477000
1,3-Butadiene	T	0
Ethylacetylene	T	0
Hydrogen sulphide	T	687000
Carbonyl sulphide	T	0
Methyl mercaptan	T	120
Ethyl mercaptan	T	1360
Dimethyl sulphide	T	0
Carbon disulphide	T	0
Isopropyl mercaptan	T	0
tert-Butyl mercaptan	T	790
Propyl mercaptan	T	29.4
Ethyl methyl sulphide	T	0
Thiophene	T	0
sec-Butyl mercaptan	T	0
Isobutyl mercaptan	T	0
Ethyl sulphide	T	0
Butyl mercaptan	T	0
tert-Pentyl mercaptan	T	419
Dimethyl disulphide	T	0
2-methyl Thiophene	T	23
3-methyl Thiophene	T	0
Pentyl mercaptan	T	40
2-ethyl Thiophene	T	0
Allyl sulphide	T	0
2,5-dimethyl Thiophene	T	29.8
Hexyl mercaptan	T	0
Dimethyl trisulphide	T	0
Heptyl mercaptan	T	0
Butyl sulphide	T	0
Octyl mercaptan	T	0
Propane, 2,2-dimethyl-	72	6670
Pentane, 2,4-dimethyl-	72	5870

Husky 18W5		
NAME	**Type**	**Conc (ppb)**
Pentane, 3,3-dimethyl-	83	3390
Cyclopentane, 1,3-dimethyl-, cis-	91	32200
Isopropylcyclobutane	90	23300
Cyclopentane, 1,2-dimethyl-, trans-	91	32800
Hexane, 2,5-dimethyl-	87	3850
Hexane, 2,4-dimethyl-	94	7790
Cyclopentane, ethyl-	91	12400
1,2,4-TRIMETHYL-CYCLOPENTANE	87	14000
1-trans-2-cis-3-trans-trimethylcyclopent	95	16400
Hexane, 2,3-dimethyl-	91	4660
1-cis,2-cis,3-trans-trimethylcyclopentan	52	7140
Cyclohexane, 1,3-dimethyl-, cis-	97	28600
Cycloheptane, methyl-	90	9350
Cyclopentane, 1-ethyl-2-methyl-, cis-	97	10900
Cyclohexane, 1,2-dimethyl- (cis/trans)	91	13100
Cyclohexane, 1,4-dimethyl-, cis-	97	3240
Hexane, 3-ethyl-	64	3100
Heptane, 2,6-dimethyl-	72	3630
Cyclopentane, propyl-	64	8300
Cyclohexane, ethyl-	97	8890
Cyclohexane, 1,1,3-trimethyl-	91	13200
Heptane, 2,3-dimethyl-	64	6460
Heptane, 3-ethyl-2-methyl-	43	2990
1-Methyl-2-(4-methylpentyl)cyclopentane	72	4700
Cyclohexane, 1,3-dimethyl-, trans-	64	3450
Cyclohexane, propyl-	72	4110
1,1,2,3-TETRAMETHYLCYCLOHEXANE	25	2510
1-Butene	T	0
trans-2-Butene	T	0
cis-2-Butene	T	0
3-Methyl-1-butene	T	0
Isopentane	T	351000
1-Pentene	T	0
Pentane	T	189000
trans-2-Pentene	T	0
Isoprene	T	0
cis-2-Pentene	T	0
2-Methyl-2-butene	T	0
2,2-Dimethylbutane	T	22100
Cyclopentene	T	0
4-Methyl-1-pentene	T	0
2,3-Dimethylbutane	T	59300
Cyclopentane	T	52300
2-Methylpentane	T	129000
3-Methylpentane	T	99200

Husky 18W5		
NAME	**Type**	**Conc (ppb)**
2-Methyl-1-pentene	T	0
Hexane	T	49100
cis-2-Hexene	T	0
trans-2-Hexene	T	0
2,4-Dimethylpentane	T	0
Methylcyclopentane	T	102000
Cyclohexane	T	120000
Benzene	T	1830
2-Methylhexane	T	17400
2,3-Dimethylpentane	T	30800
3-Methylhexane	T	47100
2,2,4-Trimethylpentane	T	0
Heptane	T	3500
Methylcyclohexane	T	117000
2,3,4-Trimethylpentane	T	0
2-Methylheptane	T	0
Toluene	T	1130
3-Methylheptane	T	5240
Octane	T	0
Ethyl benzene	T	976
m,p-Xylene	T	1590
Nonane	T	0
Styrene	T	0
o-Xylene	T	360
Isopropylbenzene	T	447
alpha Pinene	T	0
n-Propylbenzene	T	0
1,3,5-Trimethylbenzene	T	421
beta Pinene	T	0
1,2,4-Trimethylbenzene	T	0

Husky 18W5_2		
NAME	**Type**	**Conc (ppb)**
Methane	T	611000000
Ethane	T	6180000
Ethylene	T	0
Propane	T	1320000
Propylene	T	0
Isobutane	T	2120000
Acetylene	T	0
Butane	T	911000
trans-2-Butene	T	0
1-Butene	T	0
Isobutylene	T	0
cis-2-Butene	T	47000
Propyne	T	507000
1,3-Butadiene	T	0
Ethylacetylene	T	0
Hydrogen sulphide	T	39200
Carbonyl sulphide	T	0
Methyl mercaptan	T	122
Ethyl mercaptan	T	584
Dimethyl sulphide	T	0
Carbon disulphide	T	0
Isopropyl mercaptan	T	0
tert-Butyl mercaptan	T	661
Propyl mercaptan	T	0
Ethyl methyl sulphide	T	0
Thiophene	T	0
sec-Butyl mercaptan	T	0
Isobutyl mercaptan	T	0
Ethyl sulphide	T	0
Butyl mercaptan	T	0
tert-Pentyl mercaptan	T	377
Dimethyl disulphide	T	0
2-methyl Thiophene	T	0
3-methyl Thiophene	T	0
Pentyl mercaptan	T	0
2-ethyl Thiophene	T	0
Allyl sulphide	T	0
2,5-dimethyl Thiophene	T	0
Hexyl mercaptan	T	0
Dimethyl trisulphide	T	0
Heptyl mercaptan	T	0
Butyl sulphide	T	0
Octyl mercaptan	T	0
Propane, 2,2-dimethyl-	78	10300

Husky 18W5_2		
NAME	**Type**	**Conc (ppb)**
Pentane, 2,4-dimethyl-	78	7870
Pentane, 3,3-dimethyl-	83	5000
Hexane, 3-methyl-	76	56200
Cyclopentane, 1,3-dimethyl-	94	44600
Cycloheptane	83	32300
CYCLOBUTANE, ISOPROPYL-	94	42500
Hexane, 2,5-dimethyl-	87	5040
Hexane, 2,4-dimethyl-	94	10400
Cyclopentane, ethyl-	91	16400
1,2,4-TRIMETHYL-CYCLOPENTANE	90	21500
1-trans-2-cis-3-trans-trimethylcyclopent	95	24400
Hexane, 2,3-dimethyl-	94	6380
TETRAHYDROGERANYL BUTYRATE	64	9170
Cyclohexane, 1,3-dimethyl-, trans-	94	29900
Cyclohexane, 1,1-dimethyl-	50	13100
CYCLOPENTANE, 1-ETHYL-2-METHYL-	96	15600
Cyclohexane, 1,2-dimethyl- (cis/trans)	90	18500
Cyclohexane, 1,4-dimethyl-, trans-	97	5530
1-Octene	53	4730
Cyclooctane, methyl-	90	11500
Cyclohexane, ethyl-	97	10600
Cyclohexane, 1,1,3-trimethyl-	97	24300
Heptane, 2,3-dimethyl-	64	4260
Cyclopentane, 1-methyl-2-propyl-	58	8100
Cyclohexane, 1-ethyl-4-methyl-, trans-	91	4400
Cyclohexane, 1-ethyl-2-methyl-	76	6590
Cyclohexane, propyl-	58	6090
Cyclohexane, 1,1,2,3-tetramethyl-	81	4240
1-Butene	T	0
trans-2-Butene	T	0
cis-2-Butene	T	0
3-Methyl-1-butene	T	0
Isopentane	T	693000
1-Pentene	T	0
Pentane	T	232000
trans-2-Pentene	T	0
Isoprene	T	0
cis-2-Pentene	T	0
2-Methyl-2-butene	T	0
2,2-Dimethylbutane	T	37700
Cyclopentene	T	0
4-Methyl-1-pentene	T	0
2,3-Dimethylbutane	T	101000
Cyclopentane	T	86000
2-Methylpentane	T	214000

Husky 18W5_2		
NAME	**Type**	**Conc (ppb)**
3-Methylpentane	T	162000
2-Methyl-1-pentene	T	0
Hexane	T	58800
cis-2-Hexene	T	0
trans-2-Hexene	T	0
2,4-Dimethylpentane	T	0
Methylcyclopentane	T	141000
Cyclohexane	T	157000
Benzene	T	2180
2-Methylhexane	T	22100
2,3-Dimethylpentane	T	48200
3-Methylhexane	T	0
2,2,4-Trimethylpentane	T	0
Heptane	T	5700
Methylcyclohexane	T	146000
2,3,4-Trimethylpentane	T	0
2-Methylheptane	T	0
Toluene	T	1300
3-Methylheptane	T	7070
Octane	T	0
Ethyl benzene	T	774
m,p-Xylene	T	2060
Nonane	T	0
Styrene	T	0
o-Xylene	T	1530
Isopropylbenzene	T	520
alpha Pinene	T	0
n-Propylbenzene	T	0
1,3,5-Trimethylbenzene	T	413
beta Pinene	T	0
1,2,4-Trimethylbenzene	T	550

Husky 18W5_3		
NAME	**Type**	**Conc (ppb)**
Methane	T	3290000
Ethane	T	113000
Ethylene	T	0
Propane	T	69300
Propylene	T	0
Isobutane	T	211000
Acetylene	T	0
Butane	T	138000
trans-2-Butene	T	0
1-Butene	T	0
Isobutylene	T	0
cis-2-Butene	T	0
Propyne	T	186000
1,3-Butadiene	T	0
Ethylacetylene	T	0
Unknown Sulphurs (MW=32)	0	42000
Hydrogen sulphide	T	17100
Carbonyl sulphide	T	0
Methyl mercaptan	T	72.5
Ethyl mercaptan	T	200
Dimethyl sulphide	T	0
Carbon disulphide	T	0
Isopropyl mercaptan	T	0
tert-Butyl mercaptan	T	613
Propyl mercaptan	T	0
Ethyl methyl sulphide	T	0
Thiophene	T	36.2
sec-Butyl mercaptan	T	0
Isobutyl mercaptan	T	0
Ethyl sulphide	T	0
Butyl mercaptan	T	0
tert-Pentyl mercaptan	T	876
Dimethyl disulphide	T	0
2-methyl Thiophene	T	39.4
3-methyl Thiophene	T	11
Pentyl mercaptan	T	0
2-ethyl Thiophene	T	0
Allyl sulphide	T	0
2,5-dimethyl Thiophene	T	0
Hexyl mercaptan	T	0
Dimethyl trisulphide	T	0
Heptyl mercaptan	T	0
Butyl sulphide	T	0
Octyl mercaptan	T	0

Husky 18W5_3		
NAME	**Type**	**Conc (ppb)**
Hexane, 3-methyl-	76	98400
Cyclopentane, 1,3-dimethyl-	93	85800
Cyclopentane, 1,3-dimethyl-, trans-	68	63800
Cyclopentane, 1,2-dimethyl-, trans-	91	82900
Hexane, 2,5-dimethyl-	91	12600
Hexane, 2,4-dimethyl-	90	23900
Cyclopentane, ethyl-	91	46000
Cyclopentane, 1,2,4-trimethyl-	90	55200
1-trans-2-cis-3-trans-trimethylcyclopent	95	65200
Hexane, 2,3-dimethyl-	94	18300
Heptane, 4-methyl-	52	25600
Cyclohexane, 1,4-dimethyl-	94	121000
Cycloheptane, methyl-	78	40000
Cyclopentane, 1-ethyl-2-methyl-, cis-	97	47800
Cyclohexane, 1,2-dimethyl- (cis/trans)	90	57600
Cyclohexane, 1,4-dimethyl-	96	17600
Octane, 2-methyl-	70	15000
Cyclopentane, propyl-	94	37500
Cyclohexane, ethyl-	97	33800
Cyclohexane, 1,1,3-trimethyl-	97	51600
Heptane, 2,3-dimethyl-	68	32300
Cyclopentane, 1-methyl-2-propyl-	64	33600
1-Ethyl-4-methylcyclohexane	93	18000
Cyclohexane, 1-ethyl-4-methyl-, trans-	91	19100
Cyclohexane, 1-ethyl-4-methyl-, cis- (CA	70	32600
Octane, 2,3-dimethyl-	46	18700
Cyclohexane, propyl-	64	38400
Cyclohexane, 1,1,2,3-tetramethyl-	83	27900
Cyclohexane, 1,3-dimethyl-, trans-	60	18800
1-Butene	T	0
trans-2-Butene	T	0
cis-2-Butene	T	0
3-Methyl-1-butene	T	0
Isopentane	T	353000
1-Pentene	T	0
Pentane	T	141000
trans-2-Pentene	T	0
Isoprene	T	0
cis-2-Pentene	T	0
2-Methyl-2-butene	T	0
2,2-Dimethylbutane	T	26200
Cyclopentene	T	0
4-Methyl-1-pentene	T	0
2,3-Dimethylbutane	T	96500
Cyclopentane	T	95700

Husky 18W5_3		
NAME	**Type**	**Conc (ppb)**
2-Methylpentane	T	227000
3-Methylpentane	T	186000
2-Methyl-1-pentene	T	0
Hexane	T	83600
cis-2-Hexene	T	0
trans-2-Hexene	T	0
2,4-Dimethylpentane	T	0
Methylcyclopentane	T	239000
Cyclohexane	T	345000
Benzene	T	5510
2-Methylhexane	T	46200
2,3-Dimethylpentane	T	106000
3-Methylhexane	T	0
2,2,4-Trimethylpentane	T	0
Heptane	T	17400
Methylcyclohexane	T	461000
2,3,4-Trimethylpentane	T	0
2-Methylheptane	T	0
Toluene	T	108000
3-Methylheptane	T	26800
Octane	T	0
Ethyl benzene	T	4450
m,p-Xylene	T	12500
Nonane	T	0
Styrene	T	0
o-Xylene	T	9290
Isopropylbenzene	T	3410
alpha Pinene	T	0
n-Propylbenzene	T	2830
1,3,5-Trimethylbenzene	T	3670
beta Pinene	T	0
1,2,4-Trimethylbenzene	T	6400

Husky Tank S1		
NAME	**Type**	**Conc (ppb)**
Methane	T	25100000
Ethane	T	834000
Ethylene	T	0
Propane	T	412000
Propylene	T	0
Isobutane	T	497000
Acetylene	T	0
Butane	T	326000
trans-2-Butene	T	0
1-Butene	T	0
Isobutylene	T	0
cis-2-Butene	T	25800
Propyne	T	715000
1,3-Butadiene	T	0
Ethylacetylene	T	0
Unknown Sulphurs (MW=32)	0	11400
Hydrogen sulphide	T	2200
Carbonyl sulphide	T	0
Methyl mercaptan	T	0
Ethyl mercaptan	T	0
Dimethyl sulphide	T	0
Carbon disulphide	T	0
Isopropyl mercaptan	T	0
tert-Butyl mercaptan	T	604
Propyl mercaptan	T	0
Ethyl methyl sulphide	T	0
Thiophene	T	0
sec-Butyl mercaptan	T	0
Isobutyl mercaptan	T	0
Ethyl sulphide	T	0
Butyl mercaptan	T	0
tert-Pentyl mercaptan	T	581
Dimethyl disulphide	T	0
2-methyl Thiophene	T	0
3-methyl Thiophene	T	0
Pentyl mercaptan	T	0
2-ethyl Thiophene	T	0
Allyl sulphide	T	0
2,5-dimethyl Thiophene	T	0
Hexyl mercaptan	T	0
Dimethyl trisulphide	T	0
Heptyl mercaptan	T	0
Butyl sulphide	T	0
Octyl mercaptan	T	0

Husky Tank S1		
NAME	**Type**	**Conc (ppb)**
Hexane, 3-methyl-	60	111000
Cyclopentane, 1,3-dimethyl-	93	94500
Cyclopentane, 1,3-dimethyl-, cis-	91	71000
Cyclopentane, 1,2-dimethyl-	91	100000
Hexane, 2,5-dimethyl-	91	15700
Hexane, 2,4-dimethyl-	95	31200
Cyclopentane, ethyl-	91	52000
Cyclopentane, 1,2,4-trimethyl-	87	56600
1-trans-2-cis-3-trans-trimethylcyclopent	95	68500
Heptane, 4-methyl-	78	22400
Hexane, 2,3-dimethyl-	52	33300
Cyclohexane, 1,3-dimethyl-, cis-	95	143000
Cycloheptane, methyl-	78	46100
CYCLOPENTANE, 1-ETHYL-2-METHYL-	96	56700
Cyclohexane, 1,2-dimethyl- (cis/trans)	91	67900
Cyclohexane, 1,3-dimethyl-, trans-	96	19800
Heptane, 2,4-dimethyl-	91	15200
Heptane, 2,6-dimethyl-	64	21800
Cyclopentane, propyl-	76	50800
Cyclohexane, ethyl-	97	48900
Cyclohexane, 1,1,3-trimethyl-	97	64900
Heptane, 2,3-dimethyl-	87	42600
1-Butoxy-2-ethylhexane	50	14900
Cyclopentane, 1-methyl-2-propyl-	52	32600
1-Ethyl-4-methylcyclohexane	95	14900
Cyclohexane, 1-ethyl-4-methyl-, cis-	94	13900
Cyclohexane, 1-ethyl-2-methyl-, trans- $	70	30300
Decane	58	19100
Cyclohexane, propyl-	80	35200
Benzene, 1-ethyl-2-methyl-	56	18100
1-Butene	T	0
trans-2-Butene	T	0
cis-2-Butene	T	0
3-Methyl-1-butene	T	0
Isopentane	T	396000
1-Pentene	T	0
Pentane	T	259000
trans-2-Pentene	T	0
Isoprene	T	0
cis-2-Pentene	T	0
2-Methyl-2-butene	T	0
2,2-Dimethylbutane	T	34800
Cyclopentene	T	0
4-Methyl-1-pentene	T	0
2,3-Dimethylbutane	T	120000

Husky Tank S1		
NAME	**Type**	**Conc (ppb)**
Cyclopentane	T	114000
2-Methylpentane	T	269000
3-Methylpentane	T	229000
2-Methyl-1-pentene	T	0
Hexane	T	138000
cis-2-Hexene	T	0
trans-2-Hexene	T	0
2,4-Dimethylpentane	T	0
Methylcyclopentane	T	311000
Cyclohexane	T	451000
Benzene	T	6520
2-Methylhexane	T	53200
2,3-Dimethylpentane	T	129000
3-Methylhexane	T	0
2,2,4-Trimethylpentane	T	0
Heptane	T	20500
Methylcyclohexane	T	595000
2,3,4-Trimethylpentane	T	0
2-Methylheptane	T	0
Toluene	T	44700
3-Methylheptane	T	40200
Octane	T	0
Ethyl benzene	T	11200
m,p-Xylene	T	18700
Nonane	T	0
Styrene	T	0
o-Xylene	T	4020
Isopropylbenzene	T	4310
alpha Pinene	T	0
n-Propylbenzene	T	4240
1,3,5-Trimethylbenzene	T	4980
beta Pinene	T	0
1,2,4-Trimethylbenzene	T	0

Husky Tank S2		
NAME	**Type**	**Conc (ppb)**
Methane	T	20600000
Ethane	T	453000
Ethylene	T	0
Propane	T	302000
Propylene	T	0
Isobutane	T	283000
Acetylene	T	0
Butane	T	204000
trans-2-Butene	T	0
1-Butene	T	0
Isobutylene	T	0
cis-2-Butene	T	14500
Propyne	T	418000
1,3-Butadiene	T	0
Ethylacetylene	T	0
Unknown Sulphurs (MW=32)	0	45100
Hydrogen sulphide	T	12500
Carbonyl sulphide	T	0
Methyl mercaptan	T	51.1
Ethyl mercaptan	T	630
Dimethyl sulphide	T	0
Carbon disulphide	T	0
Isopropyl mercaptan	T	0
tert-Butyl mercaptan	T	933
Propyl mercaptan	T	23.1
Ethyl methyl sulphide	T	0
Thiophene	T	270
sec-Butyl mercaptan	T	0
Isobutyl mercaptan	T	0
Ethyl sulphide	T	0
Butyl mercaptan	T	0
tert-Pentyl mercaptan	T	1570
Dimethyl disulphide	T	0
2-methyl Thiophene	T	143
3-methyl Thiophene	T	481
Pentyl mercaptan	T	0
2-ethyl Thiophene	T	0
Allyl sulphide	T	0
2,5-dimethyl Thiophene	T	0
Hexyl mercaptan	T	0
Dimethyl trisulphide	T	0
Heptyl mercaptan	T	0
Butyl sulphide	T	0
Octyl mercaptan	T	0

Husky Tank S2		
NAME	**Type**	**Conc (ppb)**
Cyclopentane, 1,3-dimethyl-	93	71200
Cyclopentane, 1,2-dimethyl-, cis-	91	53300
CYCLOBUTANE, ISOPROPYL-	94	81100
Hexane, 2,5-dimethyl-	94	12800
Hexane, 2,4-dimethyl-	87	23500
Cyclopentane, ethyl-	91	42500
Cyclopentane, 1,2,4-trimethyl-	87	40300
1-trans-2-cis-3-trans-trimethylcyclopent	95	48100
Hexane, 2,3-dimethyl-	91	16100
Heptane, 4-methyl-	64	25300
Cyclohexane, 1,3-dimethyl-, cis-	97	102000
Cyclohexane, 1,2-dimethyl-, cis-	83	33000
Cyclopentane, 1-ethyl-2-methyl-, cis-	96	44700
Cyclohexane, 1,2-dimethyl-, trans-	90	47000
Cyclohexane, 1,3-dimethyl-, trans-	96	13800
Cyclopentane, (1-methylethyl)-	72	11500
Heptane, 2,4-dimethyl-	83	11000
Octane, 2-methyl-	76	18100
Cyclooctane, methyl-	76	39500
Cyclohexane, ethyl-	97	35100
Cyclohexane, 1,1,3-trimethyl-	97	70400
Heptane, 2,3-dimethyl-	68	23200
Cyclopentane, 1-methyl-2-propyl-	68	27300
1-Ethyl-3-methylcyclohexane (c,t)	93	14000
Cyclohexane, 1-ethyl-4-methyl-, trans-	91	14000
Thiophene, 2-propyl-	83	22500
Octane, 3,5-dimethyl-	58	12200
Cyclohexane, propyl-	74	24800
Benzene, 1-ethyl-3-methyl-	83	22300
Benzene, 1-ethyl-2-methyl-	56	12400
1-Butene	T	0
trans-2-Butene	T	0
cis-2-Butene	T	0
3-Methyl-1-butene	T	0
Isopentane	T	254000
1-Pentene	T	0
Pentane	T	180000
trans-2-Pentene	T	0
Isoprene	T	0
cis-2-Pentene	T	0
2-Methyl-2-butene	T	0
2,2-Dimethylbutane	T	20100
Cyclopentene	T	0
4-Methyl-1-pentene	T	0
2,3-Dimethylbutane	T	70500

Husky Tank S2		
NAME	**Type**	**Conc (ppb)**
Cyclopentane	T	87300
2-Methylpentane	T	193000
3-Methylpentane	T	152000
2-Methyl-1-pentene	T	0
Hexane	T	109000
cis-2-Hexene	T	0
trans-2-Hexene	T	0
2,4-Dimethylpentane	T	0
Methylcyclopentane	T	233000
Cyclohexane	T	337000
Benzene	T	15700
2-Methylhexane	T	41600
2,3-Dimethylpentane	T	79800
3-Methylhexane	T	143000
2,2,4-Trimethylpentane	T	0
Heptane	T	16200
Methylcyclohexane	T	418000
2,3,4-Trimethylpentane	T	0
2-Methylheptane	T	0
Toluene	T	82200
3-Methylheptane	T	22800
Octane	T	0
Ethyl benzene	T	19600
m,p-Xylene	T	25400
Nonane	T	0
Styrene	T	0
o-Xylene	T	17200
Isopropylbenzene	T	3110
alpha Pinene	T	0
n-Propylbenzene	T	3940
1,3,5-Trimethylbenzene	T	3980
beta Pinene	T	0
1,2,4-Trimethylbenzene	T	5830

Husky Pad 32		
NAME	**Type**	**Conc (ppb)**
Methane	T	914000000
Ethane	T	7450000
Ethylene	T	0
Propane	T	2140000
Propylene	T	0
Isobutane	T	1090000
Acetylene	T	0
Butane	T	568000
trans-2-Butene	T	0
1-Butene	T	0
Isobutylene	T	0
cis-2-Butene	T	0
Propyne	T	498000
1,3-Butadiene	T	0
Ethylacetylene	T	0
Hydrogen sulphide	T	372000
Carbonyl sulphide	T	0
Methyl mercaptan	T	193
Ethyl mercaptan	T	768
Dimethyl sulphide	T	0
Carbon disulphide	T	0
Isopropyl mercaptan	T	0
tert-Butyl mercaptan	T	413
Propyl mercaptan	T	0
Ethyl methyl sulphide	T	0
Thiophene	T	55.5
sec-Butyl mercaptan	T	0
Isobutyl mercaptan	T	0
Ethyl sulphide	T	0
Butyl mercaptan	T	0
tert-Pentyl mercaptan	T	283
Dimethyl disulphide	T	0
2-methyl Thiophene	T	11.4
3-methyl Thiophene	T	41.9
Pentyl mercaptan	T	0
2-ethyl Thiophene	T	0
Allyl sulphide	T	0
2,5-dimethyl Thiophene	T	0
Hexyl mercaptan	T	0
Dimethyl trisulphide	T	0
Heptyl mercaptan	T	0
Butyl sulphide	T	0
Octyl mercaptan	T	0
Propane, 2,2-dimethyl-	78	7830

Husky Pad 32		
NAME	**Type**	**Conc (ppb)**
Pentane, 2,4-dimethyl-	78	5750
Pentane, 3,3-dimethyl-	90	3430
Hexane, 3-methyl-	70	47300
Cyclopentane, 1,3-dimethyl-, cis-	90	34600
Cyclopentane, 1,3-dimethyl-	94	25700
Cyclopentane, 1,2-dimethyl-, trans-	90	39000
Hexane, 2,5-dimethyl-	94	4890
Hexane, 2,4-dimethyl-	97	8730
Cyclopentane, ethyl-	94	15800
1,2,4-TRIMETHYL-CYCLOPENTANE	87	14900
1-trans-2-cis-3-trans-trimethylcyclopent	94	17700
Hexane, 2,3-dimethyl-	94	5500
Heptane, 4-methyl-	68	8290
Cyclohexane, 1,3-dimethyl-, cis-	94	32300
Cyclopentane, 1-ethyl-3-methyl-	60	10400
Cyclopentane, 1-ethyl-2-methyl-, cis-	96	13200
Cyclohexane, 1,2-dimethyl- (cis/trans) $	93	14300
Cyclohexane, 1,3-dimethyl-, trans-	94	3970
Heptane, 2,6-dimethyl-	72	4510
Cyclopentane, propyl-	93	10100
Cyclohexane, ethyl-	97	10600
Cyclohexane, 1,1,3-trimethyl-	97	15400
Heptane, 2,3-dimethyl-	50	5830
Cyclopentane, 1-methyl-2-propyl-	81	6300
Cyclohexane, 1-ethyl-2-methyl-	90	3420
Cyclohexane, 1-ethyl-4-methyl-, cis-	62	4750
Acetic acid, mercapto-, cyclohexyl ester	53	5070
Benzene, 1-ethyl-3-methyl-	60	3550
1-Butene	T	0
trans-2-Butene	T	0
cis-2-Butene	T	0
3-Methyl-1-butene	T	0
Isopentane	T	378000
1-Pentene	T	0
Pentane	T	216000
trans-2-Pentene	T	0
Isoprene	T	0
cis-2-Pentene	T	0
2-Methyl-2-butene	T	0
2,2-Dimethylbutane	T	21900
Cyclopentene	T	0
4-Methyl-1-pentene	T	0
2,3-Dimethylbutane	T	57700
Cyclopentane	T	65900
2-Methylpentane	T	150000

Husky Pad 32		
NAME	**Type**	**Conc (ppb)**
3-Methylpentane	T	109000
2-Methyl-1-pentene	T	0
Hexane	T	65600
cis-2-Hexene	T	0
trans-2-Hexene	T	0
2,4-Dimethylpentane	T	0
Methylcyclopentane	T	127000
Cyclohexane	T	153000
Benzene	T	6490
2-Methylhexane	T	18200
2,3-Dimethylpentane	T	33300
3-Methylhexane	T	0
2,2,4-Trimethylpentane	T	0
Heptane	T	5140
Methylcyclohexane	T	145000
2,3,4-Trimethylpentane	T	0
2-Methylheptane	T	0
Toluene	T	16100
3-Methylheptane	T	5570
Octane	T	0
Ethyl benzene	T	3430
m,p-Xylene	T	4360
Nonane	T	0
Styrene	T	0
o-Xylene	T	2840
Isopropylbenzene	T	600
alpha Pinene	T	0
n-Propylbenzene	T	632
1,3,5-Trimethylbenzene	T	621
beta Pinene	T	0
1,2,4-Trimethylbenzene	T	847

CCS Sale Oil Tank 8		
NAME	**Type**	**Conc (ppb)**
Methane	T	13200
Ethane	T	0
Ethylene	T	0
Propane	T	0
Propylene	T	0
Isobutane	T	0
Acetylene	T	0
Butane	T	0
trans-2-Butene	T	0
1-Butene	T	0
Isobutylene	T	0
cis-2-Butene	T	0
Propyne	T	0
1,3-Butadiene	T	0
Ethylacetylene	T	0
Unknown Sulphurs (MW=32)	0	3460
Hydrogen sulphide	T	7.11
Carbonyl sulphide	T	0
Methyl mercaptan	T	0
Ethyl mercaptan	T	0
Dimethyl sulphide	T	0
Carbon disulphide	T	0
Isopropyl mercaptan	T	0
tert-Butyl mercaptan	T	0
Propyl mercaptan	T	0
Ethyl methyl sulphide	T	0
Thiophene	T	0
sec-Butyl mercaptan	T	0
Isobutyl mercaptan	T	0
Ethyl sulphide	T	0
Butyl mercaptan	T	0
tert-Pentyl mercaptan	T	0
Dimethyl disulphide	T	0
2-methyl Thiophene	T	0
3-methyl Thiophene	T	38.2
Pentyl mercaptan	T	0
2-ethyl Thiophene	T	0
Allyl sulphide	T	0
2,5-dimethyl Thiophene	T	0
Hexyl mercaptan	T	0
Dimethyl trisulphide	T	0
Heptyl mercaptan	T	0
Butyl sulphide	T	0
Octyl mercaptan	T	0
Cyclopentane, 1,3-dimethyl-	95	3140

CCS Sale Oil Tank 8		
NAME	**Type**	**Conc (ppb)**
Cycloheptane	80	2240
Cyclopentane, 1,2-dimethyl-, trans-	90	3590
Cyclopentane, ethyl-	95	2480
1,2,4-TRIMETHYL-CYCLOPENTANE	90	2250
1-trans-2-cis-3-trans-trimethylcyclopent	94	2660
1-Butanol, 2-ethyl-	78	2410
Cyclohexane, 1,3-dimethyl-, trans-	94	7260
Cyclopentane, 1-ethyl-3-methyl-	55	2490
Cyclopentane, 1-ethyl-2-methyl-	97	3620
Cyclohexane, 1,2-dimethyl- (cis/trans)	90	3720
Decane, 2-methyl-	64	2480
Cyclopentane, propyl-	76	4650
Cyclohexane, ethyl-	97	3400
Cyclohexane, 1,1,3-trimethyl-	97	7820
Cyclohexane, 1,2,4-trimethyl-	60	2270
Cyclopentane, 1-methyl-2-propyl-	52	4670
1-Ethyl-4-methylcyclohexane	95	2200
Cyclohexane, 1-ethyl-4-methyl-, trans- $	87	2530
Cyclohexane, 1-ethyl-2-methyl-, trans- $	46	3230
Octane, 3,5-dimethyl-	59	3120
Cyclohexane, (1-methylethyl)-	52	5990
Cyclohexane, 1,1,2-trimethyl-	64	6670
Cycloheptane, methyl-	89	4650
Nonane, 4-methyl-5-propyl-	72	3460
Benzene, 1,2,3-trimethyl-	70	3830
Cyclohexane, (2-methylpropyl)-	70	2210
Benzene, 1-ethyl-2,3-dimethyl-	38	2400
1-Docosene	68	2460
Cyclopentane, hexyl-	46	2370
1-Butene	T	0
trans-2-Butene	T	0
cis-2-Butene	T	0
3-Methyl-1-butene	T	0
Isopentane	T	2180
1-Pentene	T	0
Pentane	T	1440
trans-2-Pentene	T	0
Isoprene	T	0
cis-2-Pentene	T	0
2-Methyl-2-butene	T	0
2,2-Dimethylbutane	T	0
Cyclopentene	T	0
4-Methyl-1-pentene	T	0
2,3-Dimethylbutane	T	799
Cyclopentane	T	709

CCS Sale Oil Tank 8		
NAME	**Type**	**Conc (ppb)**
2-Methylpentane	T	4350
3-Methylpentane	T	3630
2-Methyl-1-pentene	T	0
Hexane	T	3380
cis-2-Hexene	T	0
trans-2-Hexene	T	0
2,4-Dimethylpentane	T	0
Methylcyclopentane	T	5190
Cyclohexane	T	7850
Benzene	T	397
2-Methylhexane	T	2800
2,3-Dimethylpentane	T	2540
3-Methylhexane	T	7420
2,2,4-Trimethylpentane	T	0
Heptane	T	888
Methylcyclohexane	T	17300
2,3,4-Trimethylpentane	T	0
2-Methylheptane	T	0
Toluene	T	1410
3-Methylheptane	T	1300
Octane	T	0
Ethyl benzene	T	1200
m,p-Xylene	T	1610
Nonane	T	0
Styrene	T	0
o-Xylene	T	1730
Isopropylbenzene	T	517
alpha Pinene	T	0
n-Propylbenzene	T	634
1,3,5-Trimethylbenzene	T	1060
beta Pinene	T	0
1,2,4-Trimethylbenzene	T	1700

CCS Sale Oil Tank 12		
NAME	**Type**	**Conc (ppb)**
Methane	T	16700
Ethane	T	0
Ethylene	T	0
Propane	T	0
Propylene	T	0
Acetylene	T	0
trans-2-Butene	T	0
1-Butene	T	0
Isobutylene	T	0
cis-2-Butene	T	0
Propyne	T	1600
1,3-Butadiene	T	0
Ethylacetylene	T	0
Hydrogen sulphide	T	0
Carbonyl sulphide	T	0
Methyl mercaptan	T	0
Ethyl mercaptan	T	0
Dimethyl sulphide	T	0
Carbon disulphide	T	0
Isopropyl mercaptan	T	0
tert-Butyl mercaptan	T	0
Propyl mercaptan	T	0
Ethyl methyl sulphide	T	0
Thiophene	T	0
sec-Butyl mercaptan	T	0
Isobutyl mercaptan	T	0
Ethyl sulphide	T	0
Butyl mercaptan	T	0
tert-Pentyl mercaptan	T	0
Dimethyl disulphide	T	0
2-methyl Thiophene	T	0
3-methyl Thiophene	T	0
Pentyl mercaptan	T	0
2-ethyl Thiophene	T	0
Allyl sulphide	T	0
2,5-dimethyl Thiophene	T	0
Hexyl mercaptan	T	0
Dimethyl trisulphide	T	0
Heptyl mercaptan	T	0
Butyl sulphide	T	0
Octyl mercaptan	T	0
Cyclopentane, 1,3-dimethyl-	76	150
Cyclopentane, 1,2-dimethyl-	94	153
Cyclopentane, 1,2,3-trimethyl-, (1.alpha	83	95.6

CCS Sale Oil Tank 12		
NAME	**Type**	**Conc (ppb)**
Cyclohexane, 1,3-dimethyl-, trans-	91	330
Cyclohexane, 1,2-dimethyl- (cis/trans)	91	141
Heptane, 2,6-dimethyl-	80	151
Cyclohexane, ethyl-	94	136
Cyclohexane, 1,1,3-trimethyl-	97	170
Heptane, 2,3-dimethyl-	45	96.6
Octane, 2-methyl-	81	128
Octane, 3-methyl-	64	120
Cyclopentane, 1-methyl-2-propyl-	52	103
Cyclohexane, propyl-	83	146
Cyclohexane, 1,1,2-trimethyl-	41	150
Decane	80	104
1-Heptadecene	74	207
Undecane, 5-ethyl-	53	235
Heneicosane	64	119
Decane, 3,7-dimethyl-	86	334
Decane, 2,3,7-trimethyl-	50	116
Cyclododecane	64	489
Benzene, 1,2,4,5-tetramethyl-	46	152
Cyclopentane, 1-butyl-2-propyl-	91	236
1-Decanol, 2-hexyl-	49	237
Cyclopentane, 1-pentyl-2-propyl-	42	222
Cyclohexane, 2-butyl-1,1,3-trimethyl-	95	329
Cyclohexane, 1-propenyl-	49	185
Bicyclo[3.1.1]heptane, 2,6,6-trimethyl-,	46	197
7-Tetradecene, (Z)-	89	112
Unresolved Hyrocarbons (C12+)		18000
Isobutane	T	145
1-Butene	T	0
Butane	T	429
trans-2-Butene	T	0
cis-2-Butene	T	0
3-Methyl-1-butene	T	0
Isopentane	T	714
1-Pentene	T	0
Pentane	T	963
trans-2-Pentene	T	0
Isoprene	T	0
cis-2-Pentene	T	0
2-Methyl-2-butene	T	0
2,2-Dimethylbutane	T	32.5
Cyclopentene	T	0
4-Methyl-1-pentene	T	0
2,3-Dimethylbutane	T	79.9
Cyclopentane	T	58.7

CCS Sale Oil Tank 12		
NAME	**Type**	**Conc (ppb)**
2-Methylpentane	T	561
3-Methylpentane	T	328
2-Methyl-1-pentene	T	0
Hexane	T	925
cis-2-Hexene	T	0
trans-2-Hexene	T	0
2,4-Dimethylpentane	T	0
Methylcyclopentane	T	238
Cyclohexane	T	416
Benzene	T	121
2-Methylhexane	T	337
2,3-Dimethylpentane	T	115
3-Methylhexane	T	415
2,2,4-Trimethylpentane	T	0
Heptane	T	795
Methylcyclohexane	T	817
2,3,4-Trimethylpentane	T	0
2-Methylheptane	T	252
Toluene	T	340
3-Methylheptane	T	171
Octane	T	433
Ethyl benzene	T	71.7
m,p-Xylene	T	156
Nonane	T	173
Styrene	T	0
o-Xylene	T	85.6
Isopropylbenzene	T	0
alpha Pinene	T	0
n-Propylbenzene	T	0
1,3,5-Trimethylbenzene	T	24.1
beta Pinene	T	0
1,2,4-Trimethylbenzene	T	44.8

Pennwest Sulphur Pot		
NAME	**Type**	**Conc (ppb)**
Methane	T	50900000
Ethane	T	1860000
Ethylene	T	0
Propane	T	1910000
Propylene	T	0
Isobutane	T	2250000
Acetylene	T	0
Butane	T	1500000
trans-2-Butene	T	0
1-Butene	T	0
Isobutylene	T	0
cis-2-Butene	T	0
Propyne	T	2420000
1,3-Butadiene	T	0
Ethylacetylene	T	0
Unknown Sulphurs (MW=32)	0	0
Hydrogen sulphide	T	0
Carbonyl sulphide	T	0
Methyl mercaptan	T	0
Ethyl mercaptan	T	6.08
Dimethyl sulphide	T	0
Carbon disulphide	T	0
Isopropyl mercaptan	T	0
tert-Butyl mercaptan	T	0
Propyl mercaptan	T	0
Ethyl methyl sulphide	T	0
Thiophene	T	1160
sec-Butyl mercaptan	T	0
Isobutyl mercaptan	T	0
Ethyl sulphide	T	0
Butyl mercaptan	T	0
tert-Pentyl mercaptan	T	0
Dimethyl disulphide	T	0
2-methyl Thiophene	T	230
3-methyl Thiophene	T	296
Pentyl mercaptan	T	0
2-ethyl Thiophene	T	0
Allyl sulphide	T	0
2,5-dimethyl Thiophene	T	0
Hexyl mercaptan	T	0
Dimethyl trisulphide	T	0
Heptyl mercaptan	T	0
Butyl sulphide	T	0
Octyl mercaptan	T	0
Propane, 2,2-dimethyl-	64	33200

Pennwest Sulphur Pot		
NAME	**Type**	**Conc (ppb)**
Pentane, 2,2-dimethyl-	78	34900
Butane, 2,2,3-trimethyl-	83	13100
Pentane, 3,3-dimethyl-	90	22300
Hexane, 3-methyl-	81	247000
Cyclopentane, 1,3-dimethyl-, cis-	91	181000
Cyclopentane, 1,3-dimethyl-	94	139000
Cyclopentane, 1,2-dimethyl-, trans-	91	208000
Hexane, 2,5-dimethyl-	91	21400
Hexane, 2,4-dimethyl-	90	37400
Cyclopentane, ethyl-	96	68000
Cyclopentane, 1,2,4-trimethyl-, (1.alpha	87	61300
1-trans-2-cis-3-trans-trimethylcyclopent	95	67100
Hexane, 2,3-dimethyl-	91	18900
Pentane, 3-ethyl-2-methyl-	58	13100
Heptane, 2-methyl-	94	13400
2-ethyl butanol	59	34300
Cyclopentane, 1,2,3-trimethyl-, (1.alpha	46	8780
Cyclohexane, 1,3-dimethyl-, cis-	97	106000
Cyclohexane, 1,2-dimethyl-, cis-	74	33000
CYCLOPENTANE, 1-ETHYL-2-METHYL-	96	37500
Cyclohexane, 1,2-dimethyl- (cis/trans)	94	41200
Cyclohexane, 1,4-dimethyl-	97	11500
Heptane, 2,6-dimethyl-	62	11300
Cyclopentane, propyl-	94	21700
Cyclohexane, ethyl-	97	22800
Cyclohexane, 1,1,3-trimethyl-	97	24400
Heptane, 2,3-dimethyl-	72	13300
Cyclopentane, 1-methyl-2-propyl-	90	10100
1-Butene	T	0
trans-2-Butene	T	0
cis-2-Butene	T	0
3-Methyl-1-butene	T	0
Isopentane	T	1210000
1-Pentene	T	0
Pentane	T	718000
trans-2-Pentene	T	0
Isoprene	T	0
cis-2-Pentene	T	0
2-Methyl-2-butene	T	0
2,2-Dimethylbutane	T	148000
Cyclopentene	T	0
4-Methyl-1-pentene	T	0
2,3-Dimethylbutane	T	340000
Cyclopentane	T	304000
2-Methylpentane	T	637000

Pennwest Sulphur Pot		
NAME	**Type**	**Conc (ppb)**
3-Methylpentane	T	492000
2-Methyl-1-pentene	T	0
Hexane	T	343000
cis-2-Hexene	T	0
trans-2-Hexene	T	0
2,4-Dimethylpentane	T	0
Methylcyclopentane	T	554000
Cyclohexane	T	693000
Benzene	T	30100
2-Methylhexane	T	158000
2,3-Dimethylpentane	T	190000
3-Methylhexane	T	0
2,2,4-Trimethylpentane	T	0
Heptane	T	32400
Methylcyclohexane	T	653000
2,3,4-Trimethylpentane	T	0
2-Methylheptane	T	0
Toluene	T	87200
3-Methylheptane	T	25000
Octane	T	0
Ethyl benzene	T	11000
m,p-Xylene	T	12400
Nonane	T	0
Styrene	T	0
o-Xylene	T	7290
Isopropylbenzene	T	1060
alpha Pinene	T	0
n-Propylbenzene	T	1200
1,3,5-Trimethylbenzene	T	910
beta Pinene	T	0
1,2,4-Trimethylbenzene	T	1580

Pennwest Casing Vent		
NAME	**Type**	**Conc (ppb)**
Methane	T	933000000
Ethane	T	6650000
Ethylene	T	0
Propane	T	2460000
Propylene	T	0
Isobutane	T	827000
Acetylene	T	0
Butane	T	334000
trans-2-Butene	T	0
1-Butene	T	0
Isobutylene	T	0
cis-2-Butene	T	0
Propyne	T	220000
1,3-Butadiene	T	0
Ethylacetylene	T	0
Hydrogen sulphide	T	20000
Carbonyl sulphide	T	0
Methyl mercaptan	T	17.1
Ethyl mercaptan	T	490
Dimethyl sulphide	T	0
Carbon disulphide	T	0
Isopropyl mercaptan	T	266
tert-Butyl mercaptan	T	31
Propyl mercaptan	T	0
Ethyl methyl sulphide	T	0
Thiophene	T	175
sec-Butyl mercaptan	T	0
Isobutyl mercaptan	T	0
Ethyl sulphide	T	0
Butyl mercaptan	T	0
tert-Pentyl mercaptan	T	0
Dimethyl disulphide	T	0
2-methyl Thiophene	T	34
3-methyl Thiophene	T	57.2
Pentyl mercaptan	T	0
2-ethyl Thiophene	T	0
Allyl sulphide	T	0
2,5-dimethyl Thiophene	T	0
Hexyl mercaptan	T	0
Dimethyl trisulphide	T	0
Heptyl mercaptan	T	0
Butyl sulphide	T	0
Octyl mercaptan	T	0
Propane, 2,2-dimethyl-	72	6640

Pennwest Casing Vent		
NAME	**Type**	**Conc (ppb)**
Butane, 2,2,3-trimethyl-	72	4490
Cyclopentane, 1,3-dimethyl-, cis-	91	27500
Cyclopentane, 1,3-dimethyl-	68	20900
CYCLOBUTANE, ISOPROPYL-	94	32500
Hexane, 2,5-dimethyl-	91	4370
Hexane, 2,4-dimethyl-	94	7720
Cyclopentane, ethyl-	91	13300
Cyclopentane, 1,2,4-trimethyl-	87	13100
1-trans-2-cis-3-trans-trimethylcyclopent	95	15400
Hexane, 2,3-dimethyl-	91	4830
Pentane, 3-ethyl-2-methyl-	90	3290
1,2,3-Trimethylcyclopentane	49	9140
Cyclohexane, 1,3-dimethyl-, cis-	97	31500
Cyclohexane, 1,2-dimethyl-, cis-	72	10000
Cyclopentane, 1-ethyl-2-methyl-	97	12400
Cyclohexane, 1,2-dimethyl-, trans-	90	13500
Cyclohexane, 1,3-dimethyl-, trans-	97	4210
Heptane, 2,4-dimethyl-	64	3370
Heptane, 2,6-dimethyl-	64	5020
Cyclooctane, methyl-	74	9530
Cyclohexane, ethyl-	97	10400
Cyclohexane, 1,1,3-trimethyl-	91	13800
Heptane, 2,3-dimethyl-	81	5900
Cyclopentane, 1-methyl-2-propyl-	62	5990
Cyclohexane, 1-ethyl-4-methyl-, trans-	94	3050
Cyclohexane, 1-ethyl-2-methyl-, cis- (CA	59	4010
Cyclohexane, propyl-	83	5250
Benzene, 1-ethyl-4-methyl-	83	5020
1-Butene	T	0
trans-2-Butene	T	0
cis-2-Butene	T	0
3-Methyl-1-butene	T	0
Isopentane	T	166000
1-Pentene	T	0
Pentane	T	88900
trans-2-Pentene	T	0
Isoprene	T	0
cis-2-Pentene	T	0
2-Methyl-2-butene	T	0
2,2-Dimethylbutane	T	13700
Cyclopentene	T	0
4-Methyl-1-pentene	T	0
2,3-Dimethylbutane	T	32200
Cyclopentane	T	29900
2-Methylpentane	T	78400

Pennwest Casing Vent		
NAME	**Type**	**Conc (ppb)**
3-Methylpentane	T	52500
2-Methyl-1-pentene	T	0
Hexane	T	36500
cis-2-Hexene	T	0
trans-2-Hexene	T	0
2,4-Dimethylpentane	T	0
Methylcyclopentane	T	80500
Cyclohexane	T	111000
Benzene	T	5140
2-Methylhexane	T	18000
2,3-Dimethylpentane	T	23400
3-Methylhexane	T	42100
2,2,4-Trimethylpentane	T	0
Heptane	T	4430
Methylcyclohexane	T	133000
2,3,4-Trimethylpentane	T	0
2-Methylheptane	T	0
Toluene	T	16000
3-Methylheptane	T	6290
Octane	T	0
Ethyl benzene	T	3820
m,p-Xylene	T	4930
Nonane	T	0
Styrene	T	0
o-Xylene	T	3310
Isopropylbenzene	T	679
alpha Pinene	T	0
n-Propylbenzene	T	783
1,3,5-Trimethylbenzene	T	715
beta Pinene	T	0
1,2,4-Trimethylbenzene	T	1320

Pennwest 19W5		
NAME	**Type**	**Conc (ppb)**
Methane	T	838000000
Ethane	T	6330000
Ethylene	T	0
Propane	T	1340000
Propylene	T	0
Isobutane	T	1170000
Acetylene	T	0
Butane	T	635000
trans-2-Butene	T	0
1-Butene	T	0
Isobutylene	T	0
cis-2-Butene	T	0
Propyne	T	603000
1,3-Butadiene	T	0
Ethylacetylene	T	0
Hydrogen sulphide	T	0
Carbonyl sulphide	T	0
Methyl mercaptan	T	0
Ethyl mercaptan	T	0
Dimethyl sulphide	T	0
Carbon disulphide	T	0
Isopropyl mercaptan	T	0
tert-Butyl mercaptan	T	0
Propyl mercaptan	T	0
Ethyl methyl sulphide	T	0
Thiophene	T	108
sec-Butyl mercaptan	T	0
Isobutyl mercaptan	T	0
Ethyl sulphide	T	0
Butyl mercaptan	T	0
tert-Pentyl mercaptan	T	0
Dimethyl disulphide	T	0
2-methyl Thiophene	T	8.25
3-methyl Thiophene	T	49.4
Pentyl mercaptan	T	0
2-ethyl Thiophene	T	0
Allyl sulphide	T	0
2,5-dimethyl Thiophene	T	0
Hexyl mercaptan	T	0
Dimethyl trisulphide	T	0
Heptyl mercaptan	T	0
Butyl sulphide	T	0
Octyl mercaptan	T	0
Propane, 2,2-dimethyl-	78	10900

Pennwest 19W5		
NAME	**Type**	**Conc (ppb)**
Pentane, 2,2-dimethyl-	83	7210
Pentane, 3,3-dimethyl-	90	4530
Pentane, 2,3-dimethyl-	58	42300
Cyclopentane, 1,3-dimethyl-, cis-	91	39300
Cyclopentane, 1,3-dimethyl-	94	30300
Cyclopentane, 1,2-dimethyl-, trans-	91	44300
Hexane, 2,5-dimethyl-	91	4390
Hexane, 2,4-dimethyl-	94	7970
Cyclopentane, ethyl-	91	15500
Cyclopentane, 1,2,4-trimethyl-	90	16000
1-trans-2-cis-3-trans-trimethylcyclopent	95	18300
Hexane, 2,3-dimethyl-	91	3230
4(1H)-Pyrimidinone, 2-amino-	64	2630
Cyclohexane, 1,4-dimethyl-	94	34000
Cyclohexane, 1,1-dimethyl-	76	10800
Cyclopentane, 1-ethyl-2-methyl-	97	12300
Cyclohexane, 1,2-dimethyl- (cis/trans)	91	15300
Cyclohexane, 1,4-dimethyl-	94	4240
Heptane, 2,4-dimethyl-	59	2630
1-Octene	47	2740
2-Hexene, 2,5-dimethyl-	70	8480
Cyclohexane, ethyl-	95	9280
Cyclohexane, 1,1,3-trimethyl-	97	12500
Cyclohexane, 1,2,4-trimethyl-	53	4470
Cyclopentane, 1-methyl-2-propyl-	58	4910
Cyclohexane, 1-ethyl-4-methyl-, cis- (CA	91	2600
Cyclohexane, 1-ethyl-2-methyl-, cis-	81	3370
Cyclohexane, propyl-	72	3310
1-Butene	T	0
trans-2-Butene	T	0
cis-2-Butene	T	0
3-Methyl-1-butene	T	0
Isopentane	T	436000
1-Pentene	T	0
Pentane	T	258000
trans-2-Pentene	T	10600
Isoprene	T	0
cis-2-Pentene	T	0
2-Methyl-2-butene	T	0
2,2-Dimethylbutane	T	32100
Cyclopentene	T	0
4-Methyl-1-pentene	T	0
2,3-Dimethylbutane	T	70200
Cyclopentane	T	77800
2-Methylpentane	T	168000

Pennwest 19W5		
NAME	**Type**	**Conc (ppb)**
3-Methylpentane	T	109000
2-Methyl-1-pentene	T	0
Hexane	T	77300
cis-2-Hexene	T	0
trans-2-Hexene	T	0
2,4-Dimethylpentane	T	0
Methylcyclopentane	T	134000
Cyclohexane	T	162000
Benzene	T	5930
2-Methylhexane	T	20000
2,3-Dimethylpentane	T	25700
3-Methylhexane	T	0
2,2,4-Trimethylpentane	T	0
Heptane	T	5280
Methylcyclohexane	T	154000
2,3,4-Trimethylpentane	T	0
2-Methylheptane	T	1590
Toluene	T	16400
3-Methylheptane	T	3440
Octane	T	0
Ethyl benzene	T	2260
m,p-Xylene	T	2140
Nonane	T	0
Styrene	T	0
o-Xylene	T	1340
Isopropylbenzene	T	0
alpha Pinene	T	0
n-Propylbenzene	T	0
1,3,5-Trimethylbenzene	T	0
beta Pinene	T	0
1,2,4-Trimethylbenzene	T	0

Pennwest 16_24_84		
NAME	**Type**	**Conc (ppb)**
Methane	T	681000
Ethane	T	5500
Ethylene	T	0
Propane	T	1400
Propylene	T	0
Isobutane	T	1900
Acetylene	T	0
Butane	T	5200
trans-2-Butene	T	0
1-Butene	T	0
Isobutylene	T	0
cis-2-Butene	T	0
Propyne	T	252000
1,3-Butadiene	T	0
Ethylacetylene	T	0
Hydrogen sulphide	T	0
Carbonyl sulphide	T	0
Methyl mercaptan	T	0
Ethyl mercaptan	T	0
Dimethyl sulphide	T	0
Carbon disulphide	T	0
Isopropyl mercaptan	T	0
tert-Butyl mercaptan	T	0
Propyl mercaptan	T	0
Ethyl methyl sulphide	T	0
Thiophene	T	0
sec-Butyl mercaptan	T	0
Isobutyl mercaptan	T	0
Ethyl sulphide	T	0
Butyl mercaptan	T	0
tert-Pentyl mercaptan	T	0
Dimethyl disulphide	T	0
2-methyl Thiophene	T	0
3-methyl Thiophene	T	0
Pentyl mercaptan	T	0
2-ethyl Thiophene	T	0
Allyl sulphide	T	0
2,5-dimethyl Thiophene	T	0
Hexyl mercaptan	T	0
Dimethyl trisulphide	T	0
Heptyl mercaptan	T	0
Butyl sulphide	T	0
Octyl mercaptan	T	0
Methyl Alcohol	4	5120

Pennwest 16_24_84		
NAME	**Type**	**Conc (ppb)**
Pentane, 2,2-dimethyl-	59	103
Cyclopentane, 1,3-dimethyl-, cis-	91	642
Cyclopentane, 1,3-dimethyl-	90	477
Cyclopentane, 1,2-dimethyl-	97	733
Hexane, 2,5-dimethyl-	87	93.1
Hexane, 2,4-dimethyl-	95	166
Cyclopentane, ethyl-	94	301
Cyclopentane, 1,2,4-trimethyl-, (1.alpha	78	282
1-trans-2-cis-3-trans-trimethylcyclopent	95	332
1-Hexanol, 3-methyl-	47	139
Cyclohexane, 1,3-dimethyl-, cis-	95	654
Cyclopentane, 1-methyl-3-(2-methylpropyl	83	220
Cyclopentane, 1-ethyl-2-methyl-	97	269
Cyclohexane, 1,2-dimethyl- (cis/trans)	94	305
Cyclohexane, 1,4-dimethyl-	94	92.9
Decane	59	110
Cyclopentane, propyl-	81	265
Cyclohexane, ethyl-	97	230
Cyclohexane, 1,1,3-trimethyl-	97	356
Octane, 4,5-diethyl-	64	181
Cyclopentane, 1-methyl-2-propyl-	74	252
1-Ethyl-4-methylcyclohexane	91	129
Cyclohexane, 1-ethyl-4-methyl-, trans-	90	149
Cyclohexane, 1,4-dimethyl-, cis-	59	224
Octane, 2,5-dimethyl-	47	124
Cyclohexane, propyl-	43	270
Benzene, 1-ethyl-3-methyl-	47	309
Benzene, 1-ethyl-2-methyl-	50	182
Benzene, 1,2,3-trimethyl-	76	109
1-Butene	T	0
trans-2-Butene	T	0
cis-2-Butene	T	0
3-Methyl-1-butene	T	0
Isopentane	T	2270
1-Pentene	T	0
Pentane	T	1900
trans-2-Pentene	T	0
Isoprene	T	0
cis-2-Pentene	T	0
2-Methyl-2-butene	T	0
2,2-Dimethylbutane	T	220
Cyclopentene	T	0
4-Methyl-1-pentene	T	0
2,3-Dimethylbutane	T	717
Cyclopentane	T	794

Pennwest 16_24_84		
NAME	**Type**	**Conc (ppb)**
2-Methylpentane	T	2320
3-Methylpentane	T	1620
2-Methyl-1-pentene	T	0
Hexane	T	1230
cis-2-Hexene	T	0
trans-2-Hexene	T	0
2,4-Dimethylpentane	T	0
Methylcyclopentane	T	2090
Cyclohexane	T	2320
Benzene	T	171
2-Methylhexane	T	364
2,3-Dimethylpentane	T	442
3-Methylhexane	T	821
2,2,4-Trimethylpentane	T	0
Heptane	T	115
Methylcyclohexane	T	2420
2,3,4-Trimethylpentane	T	0
2-Methylheptane	T	0
Toluene	T	568
3-Methylheptane	T	79
Octane	T	0
Ethyl benzene	T	177
m,p-Xylene	T	219
Nonane	T	0
Styrene	T	0
o-Xylene	T	161
Isopropylbenzene	T	31.4
alpha Pinene	T	0
n-Propylbenzene	T	43.8
1,3,5-Trimethylbenzene	T	43.2
beta Pinene	T	0
1,2,4-Trimethylbenzene	T	91.2

Shell Plant Sample		
NAME	**Type**	**Conc (ppb)**
Methane	T	1840000
Ethane	T	33800
Ethylene	T	0
Propane	T	225000
Propylene	T	0
Isobutane	T	241000
Acetylene	T	0
Butane	T	2180000
trans-2-Butene	T	0
1-Butene	T	0
Isobutylene	T	0
cis-2-Butene	T	0
Propyne	T	13600000
1,3-Butadiene	T	0
Ethylacetylene	T	0
Unknown Sulphurs (MW=32)	0	1140
Hydrogen sulphide	T	0
Carbonyl sulphide	T	0
Methyl mercaptan	T	0
Ethyl mercaptan	T	0
Dimethyl sulphide	T	161
Carbon disulphide	T	8.4
Isopropyl mercaptan	T	0
tert-Butyl mercaptan	T	0
Propyl mercaptan	T	88.8
Ethyl methyl sulphide	T	0
Thiophene	T	0
sec-Butyl mercaptan	T	0
Isobutyl mercaptan	T	0
Ethyl sulphide	T	0
Butyl mercaptan	T	0
tert-Pentyl mercaptan	T	0
Dimethyl disulphide	T	0
2-methyl Thiophene	T	0
3-methyl Thiophene	T	0
Pentyl mercaptan	T	0
2-ethyl Thiophene	T	0
Allyl sulphide	T	0
2,5-dimethyl Thiophene	T	0
Hexyl mercaptan	T	0
Dimethyl trisulphide	T	0
Heptyl mercaptan	T	0
Butyl sulphide	T	0
Octyl mercaptan	T	0
Propane, 2,2-dimethyl-	78	20100

Shell Plant Sample		
NAME	**Type**	**Conc (ppb)**
Pentane, 2,2-dimethyl-	78	31900
Pentane, 3,3-dimethyl-	90	14900
Hexane, 3-methyl-	81	224000
Cyclopentane, 1,3-dimethyl-	93	107000
Cyclopentane, 1,2-dimethyl-	90	81400
Cyclopentane, 1,2-dimethyl-, trans-	91	120000
Hexane, 2,5-dimethyl-	90	19900
Hexane, 2,4-dimethyl-	91	28400
Cyclopentane, ethyl-	96	29900
Cyclopentane, 1,2,4-trimethyl-	87	41200
1-trans-2-cis-3-trans-trimethylcyclopent	95	40400
Hexane, 2,3-dimethyl-	91	15700
1-Butanol, 2-ethyl-	72	29400
Cyclohexane, 1,3-dimethyl-, cis-	97	105000
Cyclohexane, 1,1-dimethyl-	50	25300
Cyclopentane, 1-ethyl-2-methyl-, cis-	96	26200
Cyclohexane, 1,2-dimethyl- (cis/trans)	94	37700
Cyclohexane, 1,3-dimethyl-, trans-	96	14400
Octane, 2-methyl-	87	15300
Cyclooctane, methyl-	60	23700
Cyclohexane, ethyl-	97	25000
Cyclohexane, 1,1,3-trimethyl-	97	26200
Heptane, 2,3-dimethyl-	68	14900
Heptane, 2,4-dimethyl-	80	9500
Octane, 3-methyl-	76	9680
Cyclopentane, 1-methyl-2-propyl-	93	12400
Cyclohexane, 1-ethyl-2-methyl-, trans- $	68	8870
Cyclohexane, (1-methylethyl)-	81	9530
Cyclohexane, 1,2,3-trimethyl-, (1.alpha.	70	10100
1-Butene	T	0
trans-2-Butene	T	0
cis-2-Butene	T	0
3-Methyl-1-butene	T	0
Isopentane	T	2900000
1-Pentene	T	0
Pentane	T	2170000
trans-2-Pentene	T	0
Isoprene	T	0
cis-2-Pentene	T	0
2-Methyl-2-butene	T	0
2,2-Dimethylbutane	T	146000
Cyclopentene	T	0
4-Methyl-1-pentene	T	0
2,3-Dimethylbutane	T	283000
Cyclopentane	T	396000

Shell Plant Sample		
NAME	**Type**	**Conc (ppb)**
2-Methylpentane	T	883000
3-Methylpentane	T	711000
2-Methyl-1-pentene	T	0
Hexane	T	1080000
cis-2-Hexene	T	0
trans-2-Hexene	T	0
2,4-Dimethylpentane	T	0
Methylcyclopentane	T	458000
Cyclohexane	T	567000
Benzene	T	237000
2-Methylhexane	T	246000
2,3-Dimethylpentane	T	118000
3-Methylhexane	T	0
2,2,4-Trimethylpentane	T	0
Heptane	T	407000
Methylcyclohexane	T	532000
2,3,4-Trimethylpentane	T	0
2-Methylheptane	T	67700
Toluene	T	171000
3-Methylheptane	T	41000
Octane	T	75400
Ethyl benzene	T	5280
m,p-Xylene	T	15900
Nonane	T	13900
Styrene	T	0
o-Xylene	T	5620
Isopropylbenzene	T	796
alpha Pinene	T	0
n-Propylbenzene	T	656
1,3,5-Trimethylbenzene	T	1900
beta Pinene	T	0
1,2,4-Trimethylbenzene	T	2950

Shell Tank 1010 Inlet		
NAME	**Type**	**Conc (ppb)**
Methane	T	578000
Ethane	T	5200
Ethylene	T	0
Propane	T	12600
Propylene	T	0
Isobutane	T	55800
Acetylene	T	0
Butane	T	82600
trans-2-Butene	T	0
1-Butene	T	0
Isobutylene	T	0
cis-2-Butene	T	0
Propyne	T	188000
1,3-Butadiene	T	0
Ethylacetylene	T	0
Unknown Sulphurs (MW=32)	0	7060
Hydrogen sulphide	T	0
Carbonyl sulphide	T	0
Methyl mercaptan	T	0
Ethyl mercaptan	T	0
Dimethyl sulphide	T	0
Carbon disulphide	T	0
Isopropyl mercaptan	T	0
tert-Butyl mercaptan	T	0
Propyl mercaptan	T	0
Ethyl methyl sulphide	T	0
Thiophene	T	26.6
sec-Butyl mercaptan	T	0
Isobutyl mercaptan	T	0
Ethyl sulphide	T	0
Butyl mercaptan	T	0
tert-Pentyl mercaptan	T	0
Dimethyl disulphide	T	0
2-methyl Thiophene	T	14.9
3-methyl Thiophene	T	54.2
Pentyl mercaptan	T	0
2-ethyl Thiophene	T	0
Allyl sulphide	T	0
2,5-dimethyl Thiophene	T	0
Hexyl mercaptan	T	0
Dimethyl trisulphide	T	0
Heptyl mercaptan	T	0
Butyl sulphide	T	0
Octyl mercaptan	T	0

Shell Tank 1010 Inlet		
NAME	**Type**	**Conc (ppb)**
Cyclopentane, 1,3-dimethyl-, cis-	91	44100
Cyclopentane, 1,3-dimethyl-	95	33400
Cyclopentane, 1,2-dimethyl-, trans-	91	45700
Hexane, 2,5-dimethyl-	94	8390
Hexane, 2,4-dimethyl-	90	16000
Cyclopentane, ethyl-	91	24200
Cyclopentane, 1,2,4-trimethyl-	87	29900
1-trans-2-cis-3-trans-trimethylcyclopent	95	35400
Hexane, 2,3-dimethyl-	91	13000
Heptane, 4-methyl-	52	15400
Cyclohexane, 1,3-dimethyl-, cis-	95	90300
Cycloheptane, methyl-	78	29300
Cyclopentane, 1-ethyl-2-methyl-, cis-	96	34900
Cyclohexane, 1,2-dimethyl-, trans-	90	43100
Cyclohexane, 1,4-dimethyl-	97	14500
Cyclopentane, pentyl-	72	9200
Heptane, 2,4-dimethyl-	91	9710
Octane, 1,1'-oxybis-	80	15300
Cyclooctane, methyl-	89	33900
Cyclohexane, ethyl-	97	36400
Cyclohexane, 1,1,3-trimethyl-	97	46900
Heptane, 2,3-dimethyl-	76	31800
Octane, 3-methyl-	49	12200
Cyclopentane, 1-methyl-2-propyl-	64	31000
1-Ethyl-4-methylcyclohexane	95	17000
Cyclohexane, 1-ethyl-2-methyl-, trans- $	76	27400
Octane, 3,5-dimethyl-	58	13100
Cyclohexane, propyl-	80	28300
3-Octene, 2,6-dimethyl-	91	25700
Cyclohexane, 1,3-dimethyl-, trans-	70	10900
1-Butene	T	0
trans-2-Butene	T	0
cis-2-Butene	T	0
3-Methyl-1-butene	T	0
Isopentane	T	185000
1-Pentene	T	0
Pentane	T	79100
trans-2-Pentene	T	0
Isoprene	T	0
cis-2-Pentene	T	0
2-Methyl-2-butene	T	0
2,2-Dimethylbutane	T	12900
Cyclopentene	T	0
4-Methyl-1-pentene	T	0
2,3-Dimethylbutane	T	57900

Shell Tank 1010 Inlet		
NAME	**Type**	**Conc (ppb)**
Cyclopentane	T	45200
2-Methylpentane	T	125000
3-Methylpentane	T	128000
2-Methyl-1-pentene	T	0
Hexane	T	65800
cis-2-Hexene	T	0
trans-2-Hexene	T	0
2,4-Dimethylpentane	T	0
Methylcyclopentane	T	153000
Cyclohexane	T	254000
Benzene	T	7560
2-Methylhexane	T	48800
2,3-Dimethylpentane	T	86200
3-Methylhexane	T	117000
2,2,4-Trimethylpentane	T	0
Heptane	T	26000
Methylcyclohexane	T	417000
2,3,4-Trimethylpentane	T	0
2-Methylheptane	T	21900
Toluene	T	11900
3-Methylheptane	T	24600
Octane	T	6910
Ethyl benzene	T	4450
m,p-Xylene	T	27300
Nonane	T	7000
Styrene	T	0
o-Xylene	T	12400
Isopropylbenzene	T	3670
alpha Pinene	T	0
n-Propylbenzene	T	1960
1,3,5-Trimethylbenzene	T	8890
beta Pinene	T	0
1,2,4-Trimethylbenzene	T	14100

Shell Tank 17W5		
NAME	**Type**	**Conc (ppb)**
Methane	T	277000000
Ethane	T	790000
Ethylene	T	0
Propane	T	1050000
Propylene	T	0
Isobutane	T	1510000
Acetylene	T	0
Butane	T	2130000
trans-2-Butene	T	0
1-Butene	T	0
Isobutylene	T	0
cis-2-Butene	T	0
Propyne	T	8910000
1,3-Butadiene	T	0
Ethylacetylene	T	0
Unknown Sulphurs (MW=32)	0	2110
Hydrogen sulphide	T	0
Carbonyl sulphide	T	0
Methyl mercaptan	T	0
Ethyl mercaptan	T	31.7
Dimethyl sulphide	T	51.2
Carbon disulphide	T	0
Isopropyl mercaptan	T	518
tert-Butyl mercaptan	T	48.4
Propyl mercaptan	T	0
Ethyl methyl sulphide	T	0
Thiophene	T	697
sec-Butyl mercaptan	T	0
Isobutyl mercaptan	T	0
Ethyl sulphide	T	0
Butyl mercaptan	T	0
tert-Pentyl mercaptan	T	49.6
Dimethyl disulphide	T	0
2-methyl Thiophene	T	78.3
3-methyl Thiophene	T	228
Pentyl mercaptan	T	0
2-ethyl Thiophene	T	0
Allyl sulphide	T	0
2,5-dimethyl Thiophene	T	0
Hexyl mercaptan	T	0
Dimethyl trisulphide	T	0
Heptyl mercaptan	T	0
Butyl sulphide	T	0
Octyl mercaptan	T	0

Shell Tank 17W5		
NAME	**Type**	**Conc (ppb)**
Pentane, 2,2-dimethyl-	78	24400
Pentane, 2,3-dimethyl-	58	177000
Cyclopentane, 1,3-dimethyl-, cis-	91	197000
Cyclopentane, 1,3-dimethyl-	95	150000
Isopropylcyclobutane	94	204000
Hexane, 2,5-dimethyl-	91	26100
Hexane, 2,4-dimethyl-	95	58900
Cyclopentane, ethyl-	94	87700
1,2,4-TRIMETHYL-CYCLOPENTANE	87	103000
1-trans-2-cis-3-trans-trimethylcyclopent	95	115000
Hexane, 2,3-dimethyl-	94	39300
Pentane, 3-ethyl-2-methyl-	91	22000
Cyclopentane, 1,2,3-trimethyl-	58	41100
Hexane, 3-ethyl-	94	23300
Cyclohexane, 1,3-dimethyl-, cis-	95	242000
Cycloheptane, methyl-	78	76500
Cyclopentane, 1-ethyl-2-methyl-, cis-	96	95600
Cyclohexane, 1,2-dimethyl- (cis/trans)	94	106000
Cyclohexane, 1,3-dimethyl-, trans-	96	35600
Cyclooctane, methyl-	89	65000
Cyclohexane, ethyl-	97	77900
Cyclohexane, 1,1,3-trimethyl-	97	89000
Heptane, 2,3-dimethyl-	68	51500
Cyclopentane, 1-methyl-2-propyl-	68	44200
1-Ethyl-4-methylcyclohexane	95	25000
Cyclohexane, 1-ethyl-4-methyl-, trans-	91	26400
Cyclohexane, 1-ethyl-4-methyl-, cis- (CA	70	36100
Cyclohexane, propyl-	87	37800
Cyclohexane, 1,1,2,3-tetramethyl-	81	28300
1-Butene	T	0
trans-2-Butene	T	0
cis-2-Butene	T	0
3-Methyl-1-butene	T	0
Isopentane	T	1280000
1-Pentene	T	0
Pentane	T	615000
trans-2-Pentene	T	0
Isoprene	T	0
cis-2-Pentene	T	0
2-Methyl-2-butene	T	0
2,2-Dimethylbutane	T	97300
Cyclopentene	T	0
4-Methyl-1-pentene	T	0
2,3-Dimethylbutane	T	358000
Cyclopentane	T	320000

Shell Tank 17W5		
NAME	**Type**	**Conc (ppb)**
2-Methylpentane	T	601000
3-Methylpentane	T	655000
2-Methyl-1-pentene	T	0
Hexane	T	353000
cis-2-Hexene	T	0
trans-2-Hexene	T	0
2,4-Dimethylpentane	T	0
Methylcyclopentane	T	649000
Cyclohexane	T	944000
Benzene	T	0
2-Methylhexane	T	162000
2,3-Dimethylpentane	T	357000
3-Methylhexane	T	0
2,2,4-Trimethylpentane	T	0
Heptane	T	77600
Methylcyclohexane	T	1090000
2,3,4-Trimethylpentane	T	0
2-Methylheptane	T	0
Toluene	T	6760
3-Methylheptane	T	37400
Octane	T	0
Ethyl benzene	T	2170
m,p-Xylene	T	26000
Nonane	T	0
Styrene	T	0
o-Xylene	T	5330
Isopropylbenzene	T	3540
alpha Pinene	T	0
n-Propylbenzene	T	1050
1,3,5-Trimethylbenzene	T	8260
beta Pinene	T	0
1,2,4-Trimethylbenzene	T	13700

Shell Casing Gas 13		
NAME	**Type**	**Conc (ppb)**
Methane	T	753000000
Ethane	T	1630000
Ethylene	T	0
Propane	T	1410000
Propylene	T	0
Isobutane	T	1270000
Acetylene	T	0
Butane	T	1280000
trans-2-Butene	T	0
1-Butene	T	0
Isobutylene	T	0
cis-2-Butene	T	0
Propyne	T	2230000
1,3-Butadiene	T	0
Ethylacetylene	T	0
Unknown Sulphurs (MW=32)	0	1060
Hydrogen sulphide	T	0
Carbonyl sulphide	T	0
Methyl mercaptan	T	0
Ethyl mercaptan	T	0
Dimethyl sulphide	T	0
Carbon disulphide	T	0
Isopropyl mercaptan	T	0
tert-Butyl mercaptan	T	0
Propyl mercaptan	T	0
Ethyl methyl sulphide	T	0
Thiophene	T	18.4
sec-Butyl mercaptan	T	0
Isobutyl mercaptan	T	0
Ethyl sulphide	T	0
Butyl mercaptan	T	0
tert-Pentyl mercaptan	T	0
Dimethyl disulphide	T	8.26
2-methyl Thiophene	T	0
3-methyl Thiophene	T	0
Pentyl mercaptan	T	0
2-ethyl Thiophene	T	0
Allyl sulphide	T	0
2,5-dimethyl Thiophene	T	0
Hexyl mercaptan	T	0
Dimethyl trisulphide	T	0
Heptyl mercaptan	T	0
Butyl sulphide	T	0
Octyl mercaptan	T	0

Shell Casing Gas 13		
NAME	**Type**	**Conc (ppb)**
Propane, 2,2-dimethyl-	72	5640
Pentane, 2,4-dimethyl-	64	6520
Pentane, 2,3-dimethyl-	58	43700
Cyclopentane, 1,3-dimethyl-, cis-	91	47500
Cyclopentane, 1,3-dimethyl-	97	33600
Cyclopentane, 1,2-dimethyl-	95	48200
Hexane, 2,5-dimethyl-	91	5060
Hexane, 2,4-dimethyl-	94	11700
Cyclopentane, ethyl-	91	16600
1,2,4-TRIMETHYL-CYCLOPENTANE	90	20200
1-trans-2-cis-3-trans-trimethylcyclopent	95	23200
Hexane, 2,3-dimethyl-	94	7870
1-Heptene, 4-methyl-	46	7840
Hexane, 3-ethyl-	91	5980
Cyclohexane, 1,3-dimethyl-, cis-	94	48900
Cyclohexane, 1,2-dimethyl-, cis-	90	15300
Cyclopentane, 1-ethyl-2-methyl-, cis-	96	17700
Cyclohexane, 1,2-dimethyl- (cis/trans)	90	21100
Cyclohexane, 1,4-dimethyl-	95	6710
Hexane, 3-ethyl-	50	4800
Cyclopentane, propyl-	93	13000
Cyclohexane, ethyl-	97	16100
Cyclohexane, 1,1,3-trimethyl-	97	18700
Heptane, 2,3-dimethyl-	47	8790
Cyclopentane, 1-methyl-2-propyl-	58	8690
Cyclohexane, 1-ethyl-2-methyl-	91	5680
1-Ethyl-4-methylcyclohexane	64	4900
Cyclohexane, propyl-	72	7930
Cyclohexane, 1,1,2,3-tetramethyl-	83	5400
1-Butene	T	0
trans-2-Butene	T	0
cis-2-Butene	T	0
3-Methyl-1-butene	T	0
Isopentane	T	563000
1-Pentene	T	0
Pentane	T	190000
trans-2-Pentene	T	0
Isoprene	T	0
cis-2-Pentene	T	0
2-Methyl-2-butene	T	0
2,2-Dimethylbutane	T	21200
Cyclopentene	T	0
4-Methyl-1-pentene	T	0
2,3-Dimethylbutane	T	68800
Cyclopentane	T	47200

Shell Casing Gas 13		
NAME	**Type**	**Conc (ppb)**
2-Methylpentane	T	123000
3-Methylpentane	T	119000
2-Methyl-1-pentene	T	0
Hexane	T	53200
cis-2-Hexene	T	0
trans-2-Hexene	T	0
2,4-Dimethylpentane	T	0
Methylcyclopentane	T	105000
Cyclohexane	T	138000
Benzene	T	0
2-Methylhexane	T	18000
2,3-Dimethylpentane	T	41300
3-Methylhexane	T	0
2,2,4-Trimethylpentane	T	0
Heptane	T	7430
Methylcyclohexane	T	160000
2,3,4-Trimethylpentane	T	0
2-Methylheptane	T	0
Toluene	T	966
3-Methylheptane	T	3510
Octane	T	0
Ethyl benzene	T	0
m,p-Xylene	T	2260
Nonane	T	0
Styrene	T	0
o-Xylene	T	0
Isopropylbenzene	T	0
alpha Pinene	T	0
n-Propylbenzene	T	0
1,3,5-Trimethylbenzene	T	828
beta Pinene	T	0
1,2,4-Trimethylbenzene	T	1240

Shell New Site 100		
NAME	**Type**	**Conc (ppb)**
Methane	T	177000000
Ethane	T	1240000
Ethylene	T	0
Propane	T	1400000
Propylene	T	0
Isobutane	T	3150000
Acetylene	T	0
Butane	T	2650000
trans-2-Butene	T	0
1-Butene	T	0
Isobutylene	T	0
cis-2-Butene	T	0
Propyne	T	5450000
1,3-Butadiene	T	0
Ethylacetylene	T	0
Unknown Sulphurs (MW=32)	0	10600
Hydrogen sulphide	T	0
Carbonyl sulphide	T	32.2
Methyl mercaptan	T	0
Ethyl mercaptan	T	0
Dimethyl sulphide	T	14.2
Carbon disulphide	T	0
Isopropyl mercaptan	T	0
tert-Butyl mercaptan	T	0
Propyl mercaptan	T	0
Ethyl methyl sulphide	T	0
Thiophene	T	10.8
sec-Butyl mercaptan	T	0
Isobutyl mercaptan	T	0
Ethyl sulphide	T	0
Butyl mercaptan	T	0
tert-Pentyl mercaptan	T	0
Dimethyl disulphide	T	0
2-methyl Thiophene	T	0
3-methyl Thiophene	T	0
Pentyl mercaptan	T	0
2-ethyl Thiophene	T	0
Allyl sulphide	T	0
2,5-dimethyl Thiophene	T	0
Hexyl mercaptan	T	0
Dimethyl trisulphide	T	0
Heptyl mercaptan	T	0
Butyl sulphide	T	0
Octyl mercaptan	T	0

Shell New Site 100		
NAME	**Type**	**Conc (ppb)**
Pentane, 2,2-dimethyl-	72	16400
Cyclopentane, 1,1-dimethyl-	58	66600
Cyclopentane, 1,3-dimethyl-	93	106000
Isopropylcyclobutane	90	76600
Cyclopentane, 1,2-dimethyl-, trans-	91	105000
Hexane, 2,4-dimethyl-	95	29400
Cyclopentane, ethyl-	91	35200
Cyclopentane, 1,2,4-trimethyl-	87	58500
1-trans-2-cis-3-trans-trimethylcyclopent	95	68300
Hexane, 2,3-dimethyl-	94	24200
Pentane, 3-ethyl-2-methyl-	86	17400
Cyclopentane, 1,1,2-trimethyl-	83	20300
Hexane, 3-ethyl-	91	21400
Cyclohexane, 1,4-dimethyl-	94	141000
Cycloheptane, methyl-	78	43100
Cyclopentane, 1-ethyl-2-methyl-	96	53800
Cyclohexane, 1,2-dimethyl-, trans-	87	65000
Cyclohexane, 1,4-dimethyl-	97	20100
Cyclooctane, methyl-	90	40300
Cyclohexane, ethyl-	97	41500
Cyclohexane, 1,1,3-trimethyl-	97	71000
Heptane, 2,3-dimethyl-	68	35200
Cyclopentane, 1-methyl-2-propyl-	87	37900
1-Ethyl-4-methylcyclohexane	93	21200
Cyclohexane, 1-ethyl-4-methyl-, trans-	95	21800
1-methoxyhept-1-yne	72	21500
Cyclohexane, propyl-	87	34000
1,1,2,3-TETRAMETHYLCYCLOHEXANE	81	20700
Cyclohexane, 1,4-dimethyl-, cis-	43	15100
1-Butene	T	0
trans-2-Butene	T	0
cis-2-Butene	T	0
3-Methyl-1-butene	T	0
Isopentane	T	1420000
1-Pentene	T	0
Pentane	T	321000
trans-2-Pentene	T	0
Isoprene	T	0
cis-2-Pentene	T	0
2-Methyl-2-butene	T	0
2,2-Dimethylbutane	T	67300
Cyclopentene	T	0
4-Methyl-1-pentene	T	0
2,3-Dimethylbutane	T	206000
Cyclopentane	T	104000

Shell New Site 100		
NAME	**Type**	**Conc (ppb)**
2-Methylpentane	T	206000
3-Methylpentane	T	270000
2-Methyl-1-pentene	T	0
Hexane	T	39100
cis-2-Hexene	T	0
trans-2-Hexene	T	0
2,4-Dimethylpentane	T	0
Methylcyclopentane	T	228000
Cyclohexane	T	336000
Benzene	T	0
2-Methylhexane	T	26500
2,3-Dimethylpentane	T	128000
3-Methylhexane	T	0
2,2,4-Trimethylpentane	T	0
Heptane	T	3330
Methylcyclohexane	T	431000
2,3,4-Trimethylpentane	T	0
2-Methylheptane	T	0
Toluene	T	869
3-Methylheptane	T	12000
Octane	T	0
Ethyl benzene	T	0
m,p-Xylene	T	5970
Nonane	T	0
Styrene	T	0
o-Xylene	T	1170
Isopropylbenzene	T	0
alpha Pinene	T	0
n-Propylbenzene	T	0
1,3,5-Trimethylbenzene	T	4490
beta Pinene	T	0
1,2,4-Trimethylbenzene	T	6560

Shell B Pad 10-35		
NAME	**Type**	**Conc (ppb)**
Methane	T	711000000
Ethane	T	1330000
Ethylene	T	0
Propane	T	726000
Propylene	T	0
Isobutane	T	1260000
Acetylene	T	0
Butane	T	843000
trans-2-Butene	T	0
1-Butene	T	0
Isobutylene	T	0
cis-2-Butene	T	0
Propyne	T	1330000
1,3-Butadiene	T	0
Ethylacetylene	T	0
Unknown Sulphurs (MW=32)	0	713
Hydrogen sulphide	T	4560
Carbonyl sulphide	T	0
Methyl mercaptan	T	31.5
Ethyl mercaptan	T	85.8
Dimethyl sulphide	T	0
Carbon disulphide	T	0
Isopropyl mercaptan	T	127
tert-Butyl mercaptan	T	0
Propyl mercaptan	T	0
Ethyl methyl sulphide	T	0
Thiophene	T	16.7
sec-Butyl mercaptan	T	0
Isobutyl mercaptan	T	0
Ethyl sulphide	T	0
Butyl mercaptan	T	0
tert-Pentyl mercaptan	T	0
Dimethyl disulphide	T	0
2-methyl Thiophene	T	0
3-methyl Thiophene	T	0
Pentyl mercaptan	T	0
2-ethyl Thiophene	T	0
Allyl sulphide	T	0
2,5-dimethyl Thiophene	T	0
Hexyl mercaptan	T	0
Dimethyl trisulphide	T	0
Heptyl mercaptan	T	0
Butyl sulphide	T	0
Octyl mercaptan	T	0

Shell B Pad 10-35		
NAME	**Type**	**Conc (ppb)**
Propane, 2,2-dimethyl-	56	6050
Pentane, 2,2-dimethyl-	72	6500
Pentane, 3,3-dimethyl-	90	3280
Pentane, 2,3-dimethyl-	43	20600
Cyclopentane, 1,3-dimethyl-	93	31900
Cyclopentane, 1,3-dimethyl-, cis-	91	22200
Cyclopentane, 1,2-dimethyl-	95	29600
Hexane, 2,4-dimethyl-	94	7090
Cyclopentane, ethyl-	97	8610
Cyclopentane, 1,2,4-trimethyl-	87	14100
1-trans-2-cis-3-trans-trimethylcyclopent	95	15900
Hexane, 2,3-dimethyl-	91	5140
Pentane, 3-ethyl-2-methyl-	94	3950
Cyclopentane, 1,1,2-trimethyl-	80	4750
Hexane, 3-ethyl-	94	4260
Cyclohexane, 1,3-dimethyl-, cis-	97	29500
Cyclohexane, 1,2-dimethyl-, cis-	80	9390
Cyclopentane, 1-ethyl-2-methyl-	97	10500
Cyclohexane, 1,2-dimethyl-, trans-	74	12900
Cyclohexane, 1,4-dimethyl-	96	3960
Cyclopentane, (1-methylethyl)-	50	2810
Cyclooctane, methyl-	76	6930
Cyclohexane, ethyl-	97	7370
Cyclohexane, 1,1,3-trimethyl-	97	12700
Decane, 5,6-dimethyl-	42	5550
1-Methyl-2-(4-methylpentyl)cyclopentane	72	5220
1-Ethyl-4-methylcyclohexane	87	2700
Cyclohexane, propyl-	87	4880
1,1,2,3-TETRAMETHYLCYCLOHEXANE	94	3450
1-Butene	T	0
trans-2-Butene	T	0
cis-2-Butene	T	0
3-Methyl-1-butene	T	0
Isopentane	T	505000
1-Pentene	T	0
Pentane	T	100000
trans-2-Pentene	T	0
Isoprene	T	0
cis-2-Pentene	T	0
2-Methyl-2-butene	T	0
2,2-Dimethylbutane	T	23100
Cyclopentene	T	0
4-Methyl-1-pentene	T	0
2,3-Dimethylbutane	T	65900

Shell B Pad 10-35		
NAME	**Type**	**Conc (ppb)**
Cyclopentane	T	28400
2-Methylpentane	T	65800
3-Methylpentane	T	82700
2-Methyl-1-pentene	T	0
Hexane	T	11600
cis-2-Hexene	T	0
trans-2-Hexene	T	0
2,4-Dimethylpentane	T	0
Methylcyclopentane	T	64800
Cyclohexane	T	93000
Benzene	T	0
2-Methylhexane	T	7070
2,3-Dimethylpentane	T	33100
3-Methylhexane	T	0
2,2,4-Trimethylpentane	T	0
Heptane	T	840
Methylcyclohexane	T	98800
2,3,4-Trimethylpentane	T	0
2-Methylheptane	T	0
Toluene	T	368
3-Methylheptane	T	2180
Octane	T	0
Ethyl benzene	T	0
m,p-Xylene	T	949
Nonane	T	0
Styrene	T	0
o-Xylene	T	0
Isopropylbenzene	T	0
alpha Pinene	T	0
n-Propylbenzene	T	0
1,3,5-Trimethylbenzene	T	462
beta Pinene	T	0
1,2,4-Trimethylbenzene	T	708

Shell Prisp 1935		
NAME	**Type**	**Conc (ppb)**
Methane	T	139000
Ethane	T	20500
Ethylene	T	2400
Propane	T	13500
Propylene	T	6300
Isobutane	T	1400
Acetylene	T	0
Butane	T	8100
trans-2-Butene	T	2200
1-Butene	T	2100
Isobutylene	T	1200
cis-2-Butene	T	1000
Propyne	T	18500
1,3-Butadiene	T	0
Ethylacetylene	T	0
Hydrogen sulphide	T	140000
Carbonyl sulphide	T	18400
Methyl mercaptan	T	1360
Ethyl mercaptan	T	1470
Dimethyl sulphide	T	0
Carbon disulphide	T	311
Isopropyl mercaptan	T	1910
tert-Butyl mercaptan	T	42.3
Propyl mercaptan	T	415
Ethyl methyl sulphide	T	0
Thiophene	T	682
sec-Butyl mercaptan	T	0
Isobutyl mercaptan	T	158
Ethyl sulphide	T	0
Butyl mercaptan	T	187
tert-Pentyl mercaptan	T	0
Dimethyl disulphide	T	3.75
2-methyl Thiophene	T	312
3-methyl Thiophene	T	132
Pentyl mercaptan	T	85.9
2-ethyl Thiophene	T	0
Allyl sulphide	T	331
2,5-dimethyl Thiophene	T	231
Hexyl mercaptan	T	0
Dimethyl trisulphide	T	0
Heptyl mercaptan	T	0
Butyl sulphide	T	0
Octyl mercaptan	T	0
Cyclopentane, 1,2-dimethyl-	94	3230

Shell Prisp 1935		
NAME	**Type**	**Conc (ppb)**
Cyclopentane, 1,2,4-trimethyl-	87	2430
Cyclohexane, 1,3-dimethyl-, cis-	97	7610
Cyclohexane, 1,1-dimethyl-	70	2540
Cyclohexane, 1,2-dimethyl-, trans-	93	4630
Heptane, 2,6-dimethyl-	80	2820
Cyclooctane, methyl-	93	3380
Cyclohexane, ethyl-	97	3900
Cyclohexane, 1,1,3-trimethyl-	97	5540
1.alpha.,2.beta.,3.alpha.,4.beta.-Tetram	64	3990
Octane, 4-methyl-	64	2600
Cyclopentane, 1-methyl-2-propyl-	53	5290
Cyclohexane, 1-ethyl-2-methyl-, trans- $	93	2600
3-Dodecene, (E)-	70	2540
1,2,3,5-tetramethylcyclohexane (1r,2t,3c	80	2050
1-methoxyhept-1-yne	78	3570
Cyclohexanone, 2,3-dimethyl-	58	6230
Undecane, 5,6-dimethyl-	59	2200
Cyclohexane, 1,1,2-trimethyl-	60	11500
Cyclohexane, 1-methyl-2-propyl-	27	3220
Cycloheptane, methyl-	46	6940
Decane	90	11200
Nonane, 4-methyl-5-propyl-	50	5810
Benzene, 1,2-diethyl-	84	2740
Benzene, 1-methyl-2-(1-methylethyl)-(CA	90	2280
1-Eicosanol	58	2560
Cyclopentane, 1,1,3-trimethyl-	56	3850
Naphthalene, decahydro-2-methyl-	96	3000
Unresolved Hydrocarbons (C9+)		380000
1-Butene	T	3430
trans-2-Butene	T	1920
cis-2-Butene	T	1610
3-Methyl-1-butene	T	492
Isopentane	T	5600
1-Pentene	T	1080
Pentane	T	9050
trans-2-Pentene	T	1930
Isoprene	T	0
cis-2-Pentene	T	903
2-Methyl-2-butene	T	1120
2,2-Dimethylbutane	T	191
Cyclopentene	T	1320
4-Methyl-1-pentene	T	608
2,3-Dimethylbutane	T	584
Cyclopentane	T	1340
2-Methylpentane	T	4290

Shell Prisp 1935		
NAME	**Type**	**Conc (ppb)**
3-Methylpentane	T	2760
2-Methyl-1-pentene	T	643
Hexane	T	10000
cis-2-Hexene	T	1230
trans-2-Hexene	T	526
2,4-Dimethylpentane	T	0
Methylcyclopentane	T	3390
Cyclohexane	T	9110
Benzene	T	5370
2-Methylhexane	T	4270
2,3-Dimethylpentane	T	1420
3-Methylhexane	T	5130
2,2,4-Trimethylpentane	T	0
Heptane	T	10600
Methylcyclohexane	T	17400
2,3,4-Trimethylpentane	T	0
2-Methylheptane	T	4610
Toluene	T	13600
3-Methylheptane	T	2800
Octane	T	9280
Ethyl benzene	T	1200
m,p-Xylene	T	3930
Nonane	T	6980
Styrene	T	0
o-Xylene	T	2120
Isopropylbenzene	T	293
alpha Pinene	T	0
n-Propylbenzene	T	435
1,3,5-Trimethylbenzene	T	1590
beta Pinene	T	0
1,2,4-Trimethylbenzene	T	3270

Shell Prisp 1935_2		
NAME	**Type**	**Conc (ppb)**
Methane	T	291000
Ethane	T	43300
Ethylene	T	5300
Propane	T	28300
Propylene	T	13600
Isobutane	T	2800
Acetylene	T	0
Butane	T	16500
trans-2-Butene	T	4400
1-Butene	T	4200
Isobutylene	T	2500
cis-2-Butene	T	2200
Propyne	T	38200
1,3-Butadiene	T	0
Ethylacetylene	T	0
Hydrogen sulphide	T	285000
Carbonyl sulphide	T	37300
Methyl mercaptan	T	2360
Ethyl mercaptan	T	2590
Dimethyl sulphide	T	0
Carbon disulphide	T	691
Isopropyl mercaptan	T	3270
tert-Butyl mercaptan	T	105
Propyl mercaptan	T	662
Ethyl methyl sulphide	T	0
Thiophene	T	1060
sec-Butyl mercaptan	T	0
Isobutyl mercaptan	T	227
Ethyl sulphide	T	0
Butyl mercaptan	T	211
tert-Pentyl mercaptan	T	0
Dimethyl disulphide	T	0
2-methyl Thiophene	T	591
3-methyl Thiophene	T	253
Pentyl mercaptan	T	134
2-ethyl Thiophene	T	0
Allyl sulphide	T	686
2,5-dimethyl Thiophene	T	538
Hexyl mercaptan	T	0
Dimethyl trisulphide	T	0
Heptyl mercaptan	T	0
Butyl sulphide	T	0
Octyl mercaptan	T	0
Acetone	80	7050

Shell Prisp 1935_2		
NAME	**Type**	**Conc (ppb)**
2-Butanone	80	4830
Isopropylcyclobutane	96	7110
Cyclopentane, 1,2,4-trimethyl-	90	4560
Cyclopentane, 1,2,3-trimethyl-, (1.alpha	93	3030
Cyclohexane, 1,3-dimethyl-, cis-	97	12400
Cyclohexane, 1,1-dimethyl-	83	4300
Cyclohexane, 1,2-dimethyl- (cis/trans)	91	3740
Heptane, 2,6-dimethyl-	91	5960
Cyclohexane, 1,2,3-trimethyl-, (1.alpha.	93	4200
Cyclohexane, ethyl-	97	5910
Cyclohexane, 1,1,3-trimethyl-	97	6420
Cyclohexane, 1,2,4-trimethyl-	78	6040
Octane, 4-methyl-	64	8210
Octane, 3-methyl-	90	6030
Cyclohexane, 1,2,4-trimethyl-	60	8070
Cyclohexane, 1-ethyl-4-methyl-, trans-	87	5000
Cyclopropane, 1-methyl-2-pentyl-	60	4020
Cyclohexane, 1,1,4,4-tetramethyl-	58	4160
Cyclohexane, propyl-	52	7430
Cyclohexane, 1,2,3-trimethyl-, (1.alpha.	50	19600
5-methylene-6-hepten-3-ol	59	5420
Cyclohexane, 1-ethyl-4-methyl-, cis-	43	11700
Decane	91	23600
Decane, 4-methyl-	58	9060
Benzene, 1,2,3-trimethyl-	89	4040
Ethylpropylcyclopentane	49	4730
9-Eicosyne	53	3650
Undecane	64	6580
Unresolved Hydrocarbons (C9+)		560000
1-Butene	T	7850
trans-2-Butene	T	4570
cis-2-Butene	T	3390
3-Methyl-1-butene	T	1160
Isopentane	T	12600
1-Pentene	T	2510
Pentane	T	20300
trans-2-Pentene	T	4650
Isoprene	T	0
cis-2-Pentene	T	2040
2-Methyl-2-butene	T	2560
2,2-Dimethylbutane	T	420
Cyclopentene	T	3020
4-Methyl-1-pentene	T	1380
2,3-Dimethylbutane	T	1460
Cyclopentane	T	3180

Shell Prisp 1935_2		
NAME	**Type**	**Conc (ppb)**
2-Methylpentane	T	9680
3-Methylpentane	T	6500
2-Methyl-1-pentene	T	1450
Hexane	T	21500
cis-2-Hexene	T	2760
trans-2-Hexene	T	1270
2,4-Dimethylpentane	T	0
Methylcyclopentane	T	7750
Cyclohexane	T	21200
Benzene	T	11800
2-Methylhexane	T	8440
2,3-Dimethylpentane	T	3630
3-Methylhexane	T	11000
2,2,4-Trimethylpentane	T	0
Heptane	T	23600
Methylcyclohexane	T	36300
2,3,4-Trimethylpentane	T	0
2-Methylheptane	T	10300
Toluene	T	29700
3-Methylheptane	T	5900
Octane	T	21300
Ethyl benzene	T	3110
m,p-Xylene	T	9550
Nonane	T	18300
Styrene	T	0
o-Xylene	T	5560
Isopropylbenzene	T	592
alpha Pinene	T	0
n-Propylbenzene	T	1040
1,3,5-Trimethylbenzene	T	2620
beta Pinene	T	0
1,2,4-Trimethylbenzene	T	5510