

# Ras Gas /CPC (Part-A) First Correlation Test / 2007

27<sup>th</sup>/28<sup>th</sup>. Nov. 2007

## Minutes of Meeting / Activities :

### RasGas – Ras Laffan

CPC Representative and RasGas Laboratory Team have agreed to the process of conducting part "A" of the correlation test.

Presents:

Mr. Chiang, Chien Chang	Manager/Technical Dep.	CPC
Ms. Chen, Hsiao Chi	Superintendent / Lab.	CPC
Mr. Chuck Chen	Advisor	ExxonMobile
Mr. Mohammad Eid	Chief Chemist	RasGas
Mr. Rajagopal	Lab. Chemist	RasGas
Mr. Ghanim A. Al-Shahwani	Contact Analyst C&S	RasGas
Capt. Narinder Bhalla	Manager ( Surveyor ),	SGS

Four Gas Chromatographs were used , Varian GCs system 9,10,12&13. The Calibration Gas Mixture and the test Sample were analyzed in the four GCs.

RasGas / CPC Correlation Test Part "A" was Completed Successfully on Nov 28th , 2007.

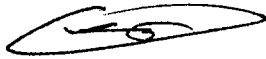
### Details of Gas Chromatographs:

	<u>Model</u>	<u>Serial No.</u>
1- Varian GC system-9	CP-3800	103807
2- Varian GC system-10	CP-3800	103806
3- Varian GC system-12	CP-3800	104448
4- Varian GC system-13	CP-3800	104447

RasGas Laboratory has enhanced a minor components integration at all GCs, to improve performance repeatability. During the meeting, the two teams have reviewed the quality measurements and performance in general for the comings, continuous cooperation and smooth communication channels are presenting a great deal of satisfaction.

On completion of analysis, all parties signed the gas chromatograms, the comparison sheet and the correlation report which shows the successive repeatability for the four GCs as per GPA 2261.

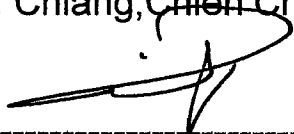
The first week of December, 2007 is planned for conducting part "B" of the Correlation Test for 2007 at CPC Laboratory in Taiwan.



28 (Nov/07)

Mr. Chiang, Chien Chang

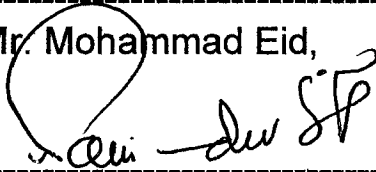
For CPC CORPORATION



28 (Nov/07)

Mr. Mohammad Eid,

For RasGas Co. Ltd.



Capt. Narinder Bhalla,

For SGS ( Surveyor)

# RasGas Company Limited

## Laboratory

RAS GAS LABORATORY

SAMPLE	Correlation Sample
CYLINDER NO.	AK 3046
SEAL NUMBERS	0
LOCATION	RAS GAS LAB
ANALYSIS DATE	27-Nov-07
ANALYST	R RAJAGOPAL
ANALYSIS METHOD	GPA 2261

COMPONENT	VAR/SYS_9	VAR/SYS_10	VAR/SYS_12	VAR/SYS_13
	(A)	(B)	(C)	(D)
CH4	92.76	92.76	92.77	92.77
C2H6	6.04	6.04	6.03	6.04
C3H8	0.45	0.45	0.45	0.44
I-C4H10	0.03	0.03	0.03	0.03
N-C4H10	0.04	0.03	0.03	0.03
I-C5H12	0.00	0.00	0.00	0.00
N-C5H12	0.00	0.00	0.00	0.00
N2	0.68	0.69	0.69	0.69
CO2	0.00	0.00	0.00	0.00
TOTAL	100.00	100.00	100.000	100.00

COMPONENT	(A)-(B)	(A)-(C)	(A)-(D)	(B)-(C)	(B)-(D)	(C)-(D)	CORRELATION LIMITS *
CH4	0.00	0.01	0.01	0.01	0.01	0.00	0.30
C2H6	0.00	0.01	0.00	0.01	0.00	0.01	0.10
C3H8	0.00	0.00	0.01	0.00	0.01	0.01	0.05
I-C4H10	0.00	0.00	0.00	0.00	0.00	0.00	0.03
N-C4H10	0.01	0.01	0.01	0.00	0.00	0.00	0.03
I-C5H12	0.00	0.00	0.00	0.00	0.00	0.00	0.03
N-C5H12	0.00	0.00	0.00	0.00	0.00	0.00	0.03
N2	0.01	0.01	0.01	0.00	0.00	0.00	0.03
CO2	0.00	0.00	0.00	0.00	0.00	0.00	0.03

MASTER CORRELATION

11/27/2007



# RasGas Company Limited

## Laboratory

### LOG SHEET FOR CORRELATION TEST

SAMPLE	REFERENCE STANDARD GAS		Correlation Test Sample	
CYLINDER No.	9702186	AK 3046		
CORRELATION DATE	Nov 07	Nov 07		
LOCATION	RAS GAS LAB / VAR. SYS-9	RAS GAS LAB / VAR. SYS-9		
GC-MODEL	VARIAN CP-3800	VARIAN CP-3800		
GC-SERIAL No.	103807	103807		
DATE CERTIFIED	11-May-07	NOT APPLICABLE		
SAMPLING DATE	NOT APPLICABLE	15-Oct-07		
SAMPLED BY	Scott Specialty Gases	RasGas Laboratory		
ANALYSIS DATE	27-Nov-07	27-Nov-07		
ANALYST	RRAJAGOPAL	RRAJAGOPAL		
ANALYSIS METHOD	GPA 2261	GPA 2261		

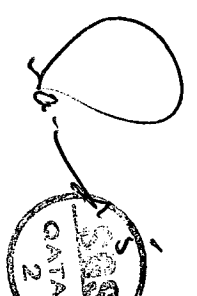
COMPONENT	CERTIFICATE	SAMPLE PRESSURE	COUNT 1			DIER RESPONSE FACTOR	AVERAGE RESPONSE FACTOR	SAMPLE PRESSURE	COUNT 2			DIER RESPONSE FACTOR	TEST RESULT
			PEAK AREA	RESPONSE FACTOR	Element				PEAK AREA	RESPONSE FACTOR	Element		
O2	0.0000	760	0	0	Element	#DIV/0!	0	760	0	Element	#DIV/0!	0.000	
N2	0.7000	760	390066	0.0176944	760	0.17	0.017718	760	29202	0.6807912	760	0.22	0.682
CH4	92.4698	760	3353169	0.0209584	760	0.15	0.020941	760	3359836	92.414177	760	0.16	92.490
CO2	0.1200	760	6015	0.0151621	760	0.02	0.0151508	760	0	0	760	0.24	6.022
C2H6	6.0000	760	412723	0.0110484	760	0.06	0.0110493	760	414722	6.0294624	760	0.11	0.000
C6H14	0.0000	760	0	0	Element	#DIV/0!	0	760	0	Element	#DIV/0!	0.451	0.029
C3H8	0.5000	760	5036104	7.546E-05	760	0.50	7.548E-05	760	4537597	0.4506376	760	0.19	0.035
I-C4H10	0.0151	760	187842	6.109E-05	760	0.09	6.094E-05	760	368747	0.0293963	760	9.45	0.004
N-C4H10	0.1500	760	2087268	5.462E-05	760	0.68	5.464E-05	760	439813	0.0351483	760	46.90	0.002
I-C3H12	0.0150	760	244208	4.668E-05	760	0.96	4.684E-05	760	62369	0.0042526	760	99.715	0.002
N-C5H12	0.0150	760	246512	4.639E-05	760		4.675E-05	760	17617	0.0020218	760		
TOTAL	99.9849		11602412						9285103	99.799333			

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28, Nov, 07

Stand for cpc.



Data File: c:\star\sys-9 results\cpc correlation 2007\standard gas001.run

Sample ID: Standard Gas

Operator (Inj): Raj

Injection Note: CPC Correlation 2007

Injection Date: 11/27/2007 09:33:54 AM

Instrument (Inj): SYS\_9

Run Mode:

Peak Measurement:

Peak Area

Injection Method:

Calculation Method:

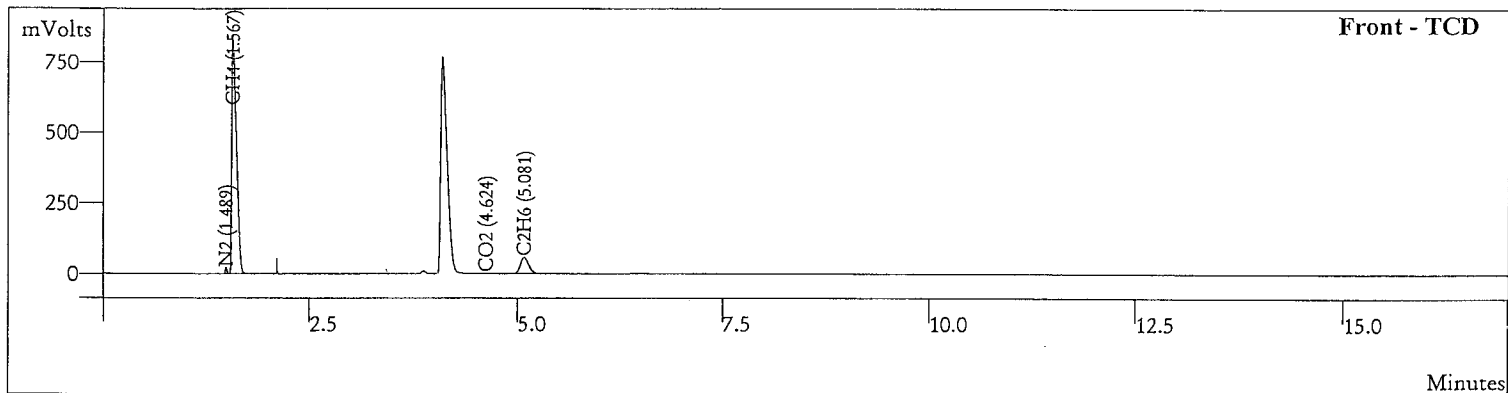
Analysis

Peak Area

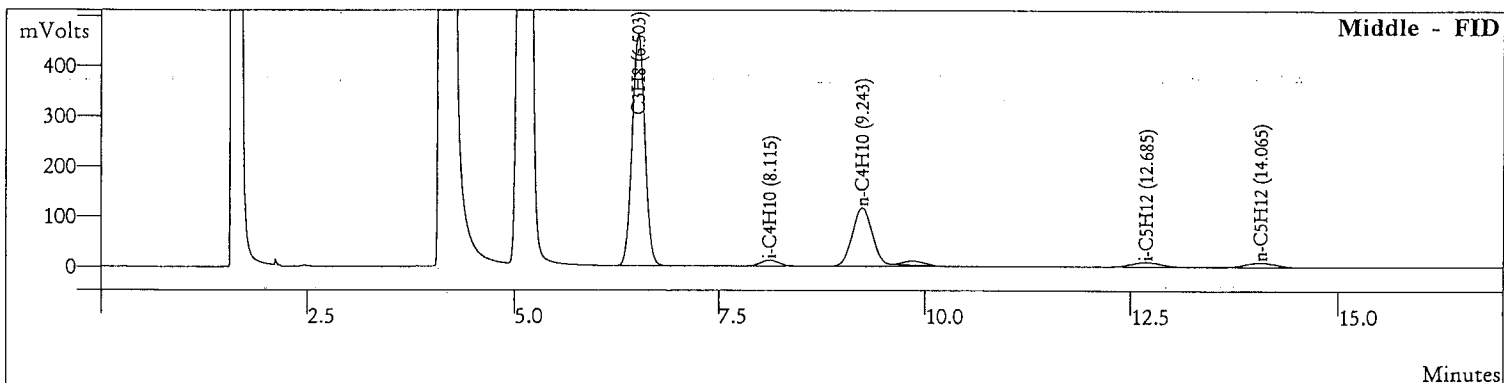
External Std.

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c:\star\sys-9 method\lean lng07.mth



Peak No	Peak Name	Ret. Time (min)	Area (counts)	Result (mole %)
1	N2	1.489	30066	0.7037
2	CH4	1.567	3353169	92.5999
3	CO2	4.624	6015	0.1206
4	C2H6	5.081	412728	6.0172
	<b>Totals</b>		<b>3801978</b>	<b>99.4414</b>



Peak No	Peak Name	Ret. Time (min)	Area (counts)	Result (mole %)
1	C3H8	6.503	5036104	0.5193
2	i-C4H10	8.115	187842	0.0156
3	n-C4H10	9.243	2087268	0.1552
4	i-C5H12	12.685	244208	0.0154
5	n-C5H12	14.065	245012	0.0155
	<b>Totals</b>		<b>7800434</b>	<b>0.7210</b>

CH<sub>2</sub>OH, CH<sub>2</sub>OH, CH<sub>2</sub>OH



Data File: c:\star\sys-9 results\cpc correlation 2007\standard gas002.run

Sample ID: Standard Gas

Operator (Inj): Raj

Injection Note: CPC Correlation 2007

Injection Date: 11/27/2007 09:51:44 AM

Instrument (Inj): SYS\_9

Run Mode:

Peak Measurement:

Peak Area

Injection Method:

Calculation Method:

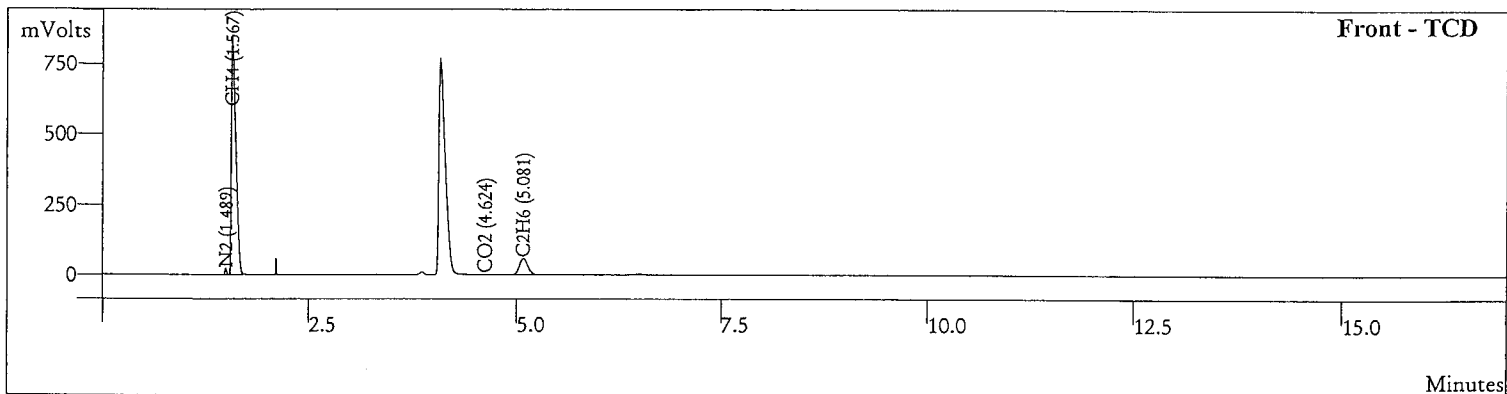
Analysis

Peak Area

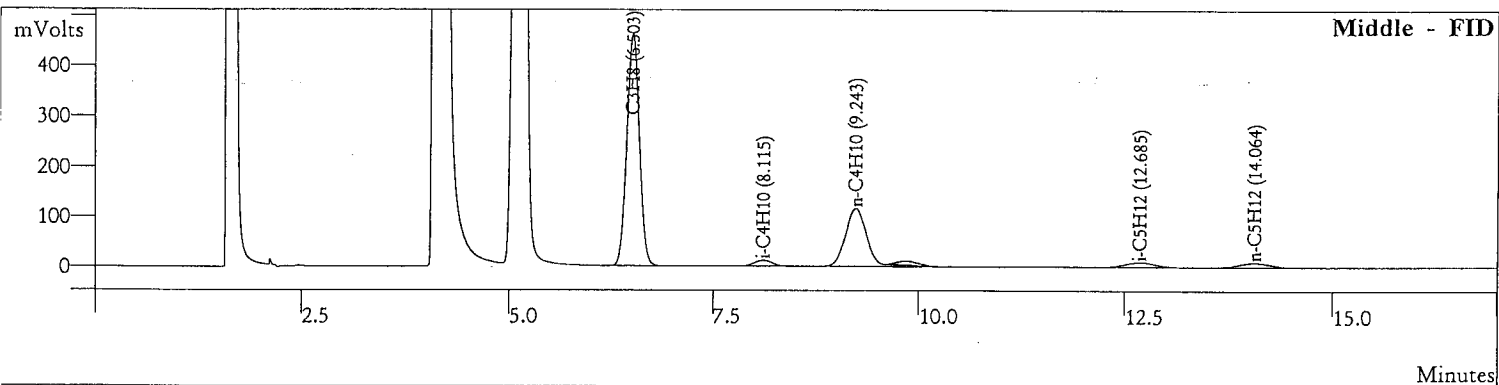
External Std.

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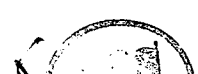


Peak No	Peak Name	Ret. Time (min)	Area (counts)	Result (mole %)
1	N2	1.489	29986	0.7019
2	CH4	1.567	3358745	92.7538
3	CO2	4.624	6024	0.1208
4	C2H6	5.081	412663	6.0163
Totals			3807418	99.5928



Peak No	Peak Name	Ret. Time (min)	Area (counts)	Result (mole %)
1	C3H8	6.503	5033178	0.5190
2	i-C4H10	8.115	188792	0.0156
3	n-C4H10	9.243	2085424	0.1550
4	i-C5H12	12.685	242556	0.0153
5	n-C5H12	14.064	242667	0.0153
Totals			7792617	0.7202

C172819 C172819 C172819



Data File: c:\star\sys-9 results\cpc correlation 2007\correlation sample.run

Sample ID: Correlation Sample

Operator (Inj): Raj

Injection Note: CPC Correlation 2007

Injection Date: 11/27/2007 12:11:02 PM

Instrument (Inj): SYS\_9

Run Mode:

Analysis

Peak Measurement:

Peak Area

Peak Area

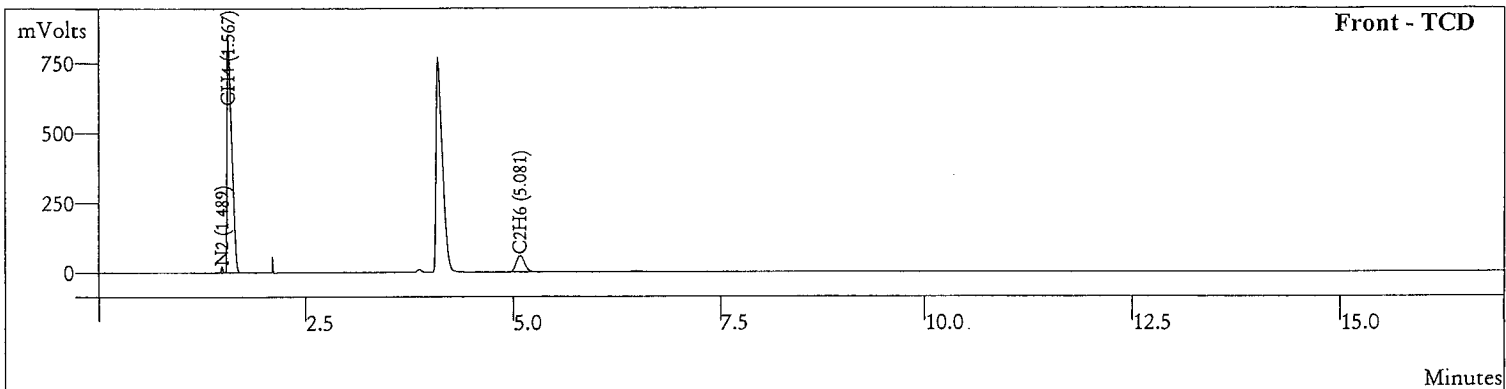
External Std.

Injection Method:

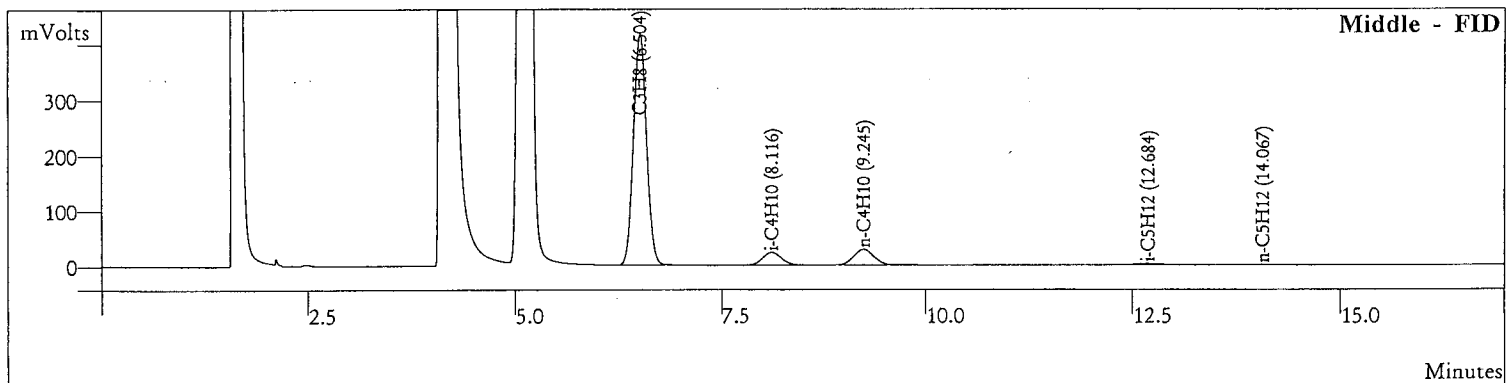
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Calculation Method:

c:\star\sys-9 method\lean lng07.mth



Peak No	Peak Name	Ret. Time (min)	Area (counts)	Result ( mole %)
1	N2	1.489	29267	0.6850
2	CH4	1.567	3359471	92.7739
3	C2H6	5.081	414722	6.0463
	Totals		3803460	99.5052



Peak No	Peak Name	Ret. Time (min)	Area (counts)	Result ( mole %)
1	C3H8	6.504	4542597	0.4685
2	i-C4H10	8.116	368747	0.0305
3	n-C4H10	9.245	489813	0.0364
4	i-C5H12	12.684	62869	0.0040
5	n-C5H12	14.067	17617	0.0011
	Totals		5481643	0.5405

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Data File: c:\star\sys-9 results\cpc correlation 2007\correlation sample001.run  
 Sample ID: Correlation Sample  
 Operator (Inj): Raj  
 Injection Note: CPC Correlation 2007  
 Injection Date: 11/27/2007 12:31:30 PM  
 Instrument (Inj): SYS\_9

Run Mode:

Analysis



Peak Measurement:

Peak Area

Peak Area

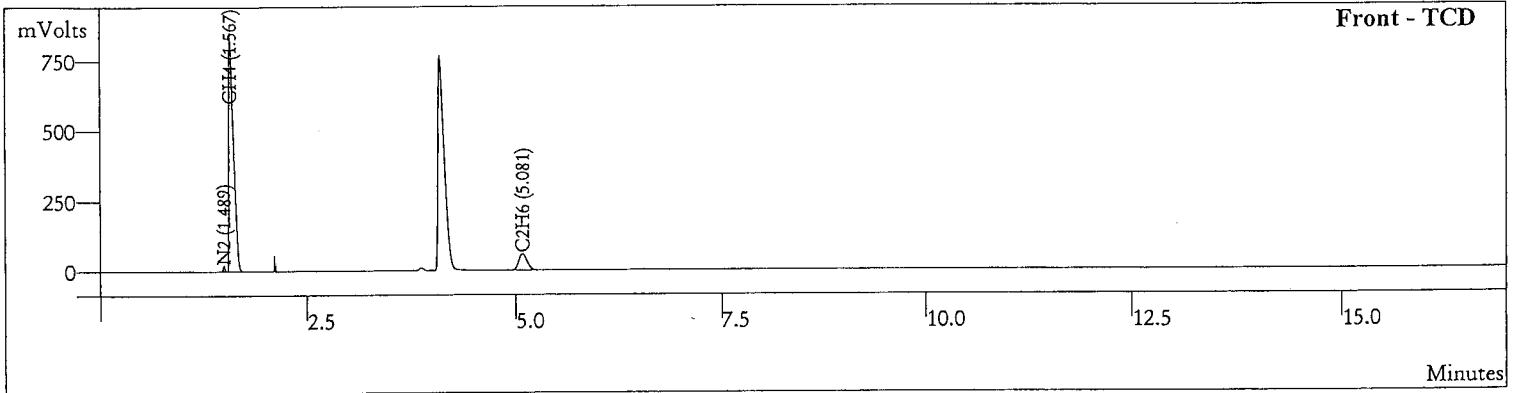
External Std.

Injection Method:

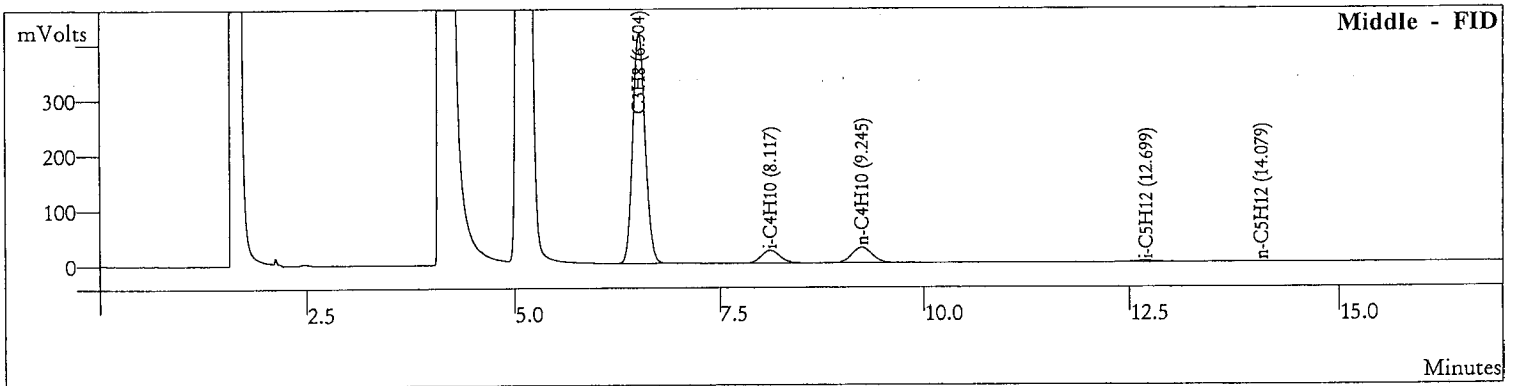
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Calculation Method:

c:\star\sys-9 method\lean lng07.mth



Peak No	Peak Name	Ret. Time (min)	Area (counts)	Result (mole %)
1	N2	1.489	29202	0.6835
2	CH4	1.567	3353936	92.6210
3	C2H6	5.081	413730	6.0318
Totals			3796868	99.3363



Peak No	Peak Name	Ret. Time (min)	Area (counts)	Result (mole %)
1	C3H8	6.504	4537597	0.4679
2	i-C4H10	8.117	366608	0.0304
3	n-C4H10	9.245	488877	0.0363
4	i-C5H12	12.699	68999	0.0044
5	n-C5H12	14.079	32865	0.0021
Totals			5494946	0.5411

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 for L.P.C. *[Handwritten signature]*  
 11/27/2007



# RasGas Company Limited

## Laboratory

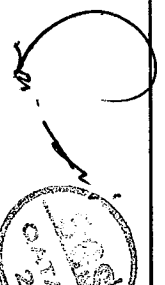
### LOG SHEET FOR CORRELATION TEST

SAMPLE	REFERENCE STANDARD GAS		Correlation Test Sample	
CYLINDER No.	9702186	AK 3046		
CORRELATION DATE	Nov 07	Nov 07		
LOCATION	RAS GAS LAB / VAR SYS-10	RAS GAS LAB / VAR SYS -10		
GC-MODEL	VARIAN CP 3800	VARIAN CP 3800		
GC-SERIAL No.	103806	103806		
DATE CERTIFIED	11-May-07	15-Oct-07	NOT APPLICABLE	
SAMPLING DATE	NOT APPLICABLE	15-Oct-07	NOT APPLICABLE	
SAMPLED BY	Scott Specialty Gases	RasGas Laboratory		
ANALYSIS DATE	27-Nov-07	27-Nov-07		
ANALYST	R RAJAGOPAL	R RAJAGOPAL		
ANALYSIS METHOD	GPA 2261	GPA 2261		

COMPONENT	CERTIFICATE MOI%	SAMPLE PRESSURE	COUNT 1			DIFF RESPONSE FACTOR	AVERAGE			DIFF RESPONSE FACTOR	COUNT 1			DIFF RESPONSE FACTOR	COUNT 2			TEST RESULT	
			PEAK AREA	RESPONSE FACTOR	SAMPLE PRESSURE		PEAK AREA	RESPONSE FACTOR	RESPONSE FACTOR		PEAK AREA	MOI%	SAMPLE PRESSURE		PEAK AREA	MOI%	DIFF RESPONSE FACTOR		PEAK AREA
O2	0.0000	760	0	0	760	0	0	0	0	760	0	0	0	0	760	0	0	0.000	
N2	0.7000	760	30785	0.01728114	760	0.34	0.01731072	0.34	0.01731072	760	30886	0.69210972	0.27	0.69210972	760	30805	0.69026477	0.27	0.691
CH4	92.4698	760	3550033	0.01979617	760	0.03	0.01979922	0.03	0.01979922	760	3548999	92.3692951	0.08	92.4410933	760	3548384	92.4410933	0.08	92.405
CO2	0.1200	760	5529	0.01649485	760	0.52	0.01640878	0.52	0.01645181	760	0	0	0	0	760	0	0	0.21	6.015
C2H6	6.0000	760	396571	0.01149857	760	0.03	0.01150249	0.03	0.01150053	760	397051	6.00828509	0.21	6.02116256	760	397902	6.02116256	0.21	6.015
C6H14	0.0000	760	0	0	760	0	0	0	0	760	0	0	0	0	760	0	0	0.000	0.000
C3H8	0.5000	760	5109038	7.4378E-05	760	0.11	7.4337E-05	0.11	7.4337E-05	760	4580420	0.44801748	0.11	0.44851417	760	4585498	0.44851417	0.11	0.448
I-C4H10	0.0151	760	199209	5.7608E-05	760	0.80	5.7839E-05	0.80	5.7839E-05	760	389211	0.02908754	0.18	0.02903519	760	381523	0.02903519	0.18	0.029
N-C4H10	0.1500	760	2168739	5.2655E-05	760	0.13	5.2495E-05	0.13	5.233E-05	760	495808	0.03426928	0.17	0.03421218	760	494982	0.03421218	0.17	0.034
I-C5H12	0.0150	760	254382	4.4779E-05	760	0.29	4.4844E-05	0.29	4.4844E-05	760	66152	0.00390332	2.10	0.00381941	760	64730	0.00381941	2.10	0.004
N-C5H12	0.0150	760	254710	4.4757E-05	760	0.71	4.4915E-05	0.71	4.4915E-05	760	22021	0.00136052	2.92	0.00133133	760	22527	0.00133133	2.92	0.001
TOTAL	99.9849		11969216	4.4757E-05			4.5074E-05		4.4915E-05		9520677	99.5863281		99.669433		9525851	99.669433		99.627

S

Change cases for C18. C  
- 9 Nov 07



Data File: c:\sys\_10 results\cpc correlation 2007\standard gas002.run



Sample ID: Standard Gas

Run Mode: Analysis

Operator (Inj): Raj

Peak Measurement: Peak Area

Injection Notes: CPC Correlation

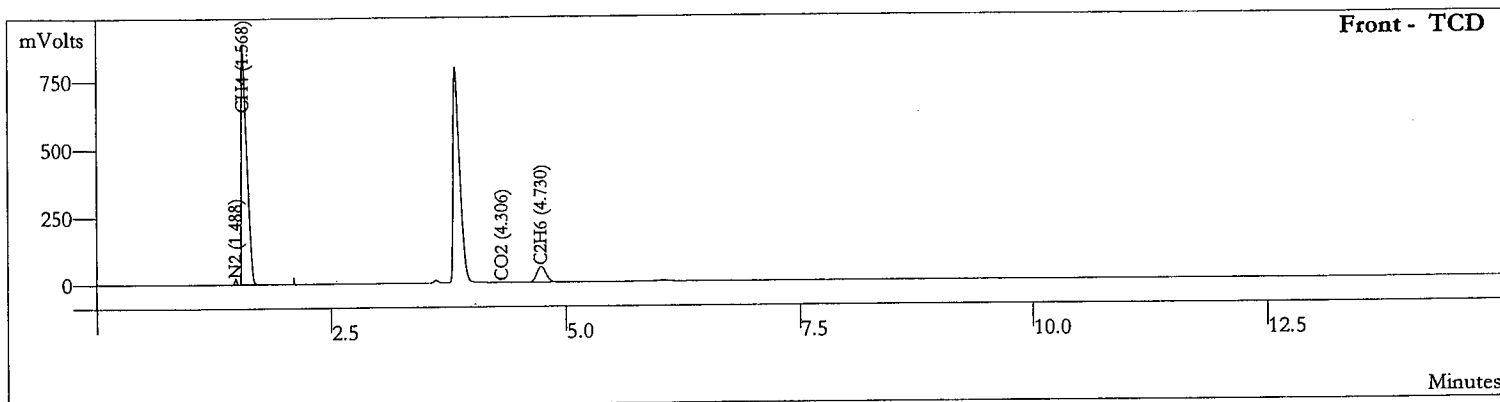
Peak Area External Std.

Injection Date: 11/27/2007 10:46:46 AM

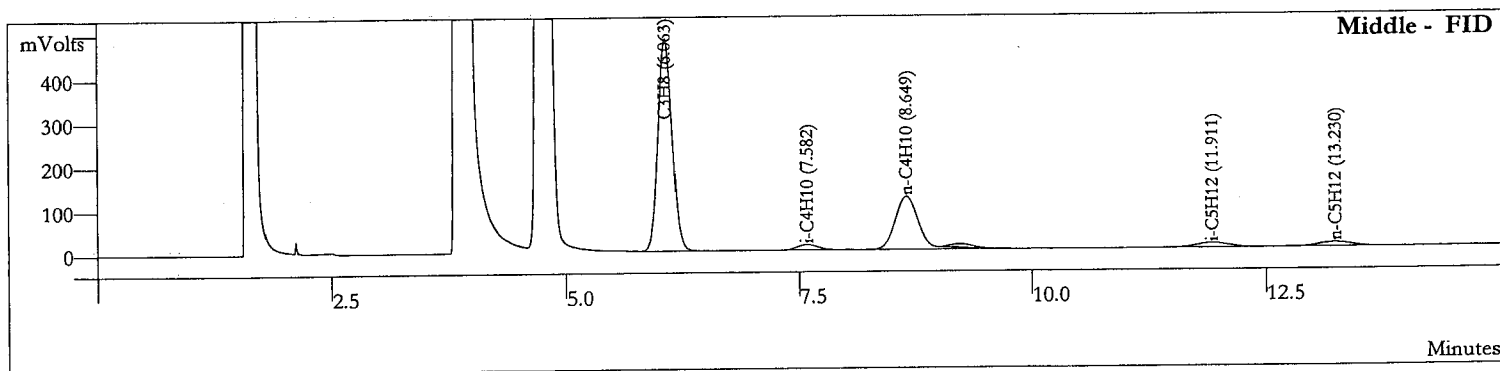
Injection Method: c:\star\sys-10 method\lean lng07.

Instrument (Inj): SYS\_10

Calculation Method: c:\star\sys-10 method\lean lng07.



Peak No	Peak Name	Ret. Time (min)	Area (counts)	Result (mole %)
1	N2	1.488	30680	0.7029
2	CH4	1.568	3548939	93.3044
3	CO2	4.306	5558	0.1211
4	C2H6	4.730	396436	6.0646
<b>Totals</b>			<b>3981613</b>	<b>100.1930</b>



Peak No	Peak Name	Ret. Time (min)	Area (counts)	Result (mole %)
1	C3H8	6.063	5114718	0.4856
2	i-C4H10	7.582	197626	0.0146
3	n-C4H10	8.649	2171644	0.1457
4	i-C5H12	11.911	253848	0.0146
5	n-C5H12	13.230	252918	0.0146
<b>Totals</b>			<b>7990754</b>	<b>0.6751</b>

CPC correlation  
for cpc



Data File: c:\sys\_10 results\cpc correlation 2007\standard gas001.run



Sample ID: Standard Gas

Run Mode: Analysis

Operator (Inj): Raj

Peak Measurement: Peak Area

Injection Notes: CPC Correlation

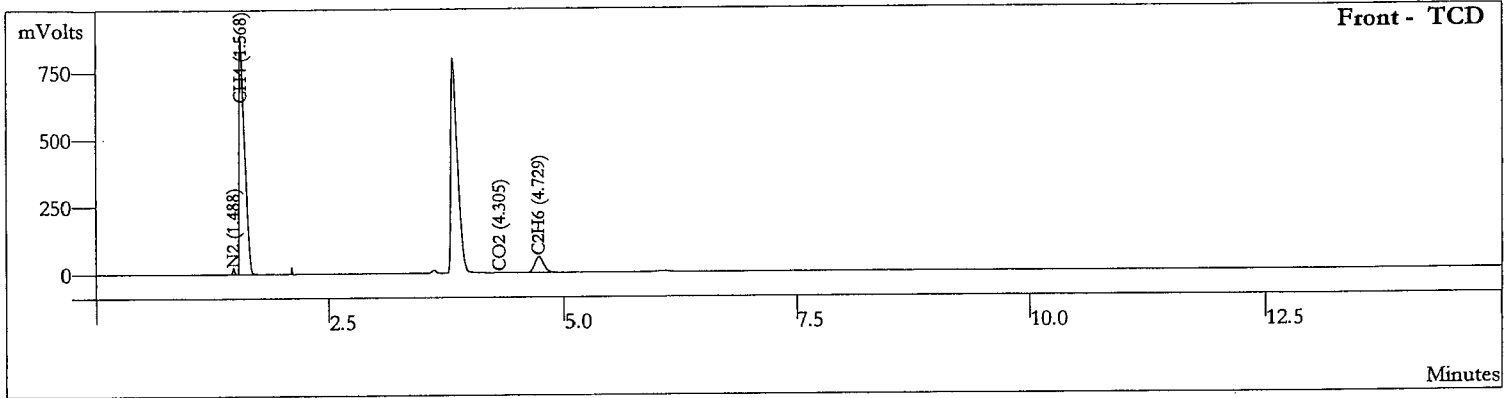
Peak Area External Std.

Injection Date: 11/27/2007 10:30:57 AM

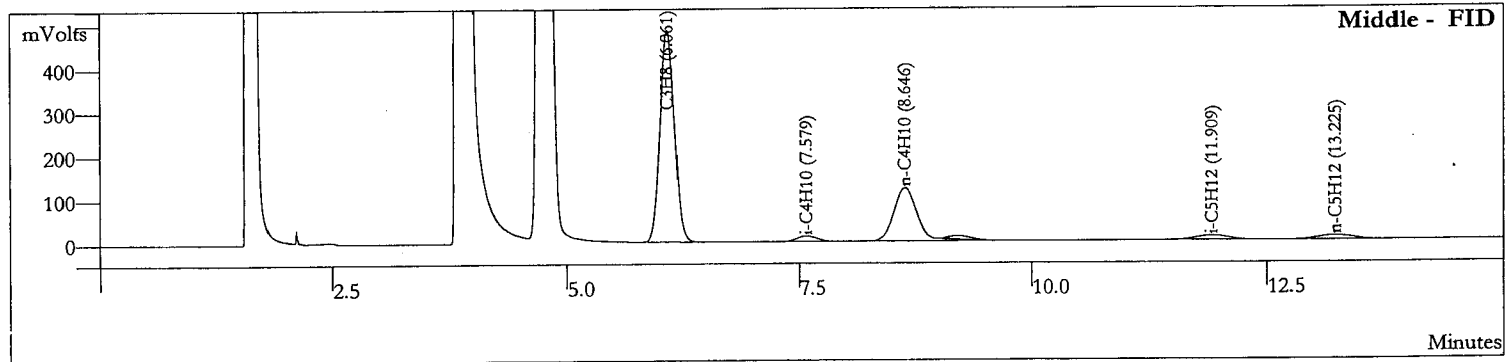
Injection Method: c:\star\sys-10 method\lean lng07.

Instrument (Inj): SYS\_10

Calculation Method: c:\star\sys-10 method\lean lng07.



Peak No	Peak Name	Ret. Time (min)	Area (counts)	Result (mole %)
1	N2	1.488	30785	0.7053
2	CH4	1.568	3550033	93.3331
3	CO2	4.305	5529	0.1204
4	C2H6	4.729	396571	6.0666
<b>Totals</b>			<b>3982918</b>	<b>100.2254</b>



Peak No	Peak Name	Ret. Time (min)	Area (counts)	Result (mole %)
1	C3H8	6.061	5109038	0.4850
2	i-C4H10	7.579	199209	0.0147
3	n-C4H10	8.646	2168759	0.1455
4	i-C5H12	11.909	254582	0.0147
5	n-C5H12	13.225	254710	0.0147
<b>Totals</b>			<b>7986298</b>	<b>0.6746</b>

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Data File: c:\sys\_10 results\cpc correlation 2007\correlation sample.run



Sample ID: Correlation Sample

Run Mode: Analysis

Operator (Inj): Raj

Peak Measurement: Peak Area

Injection Notes: CPC Correlation 2007

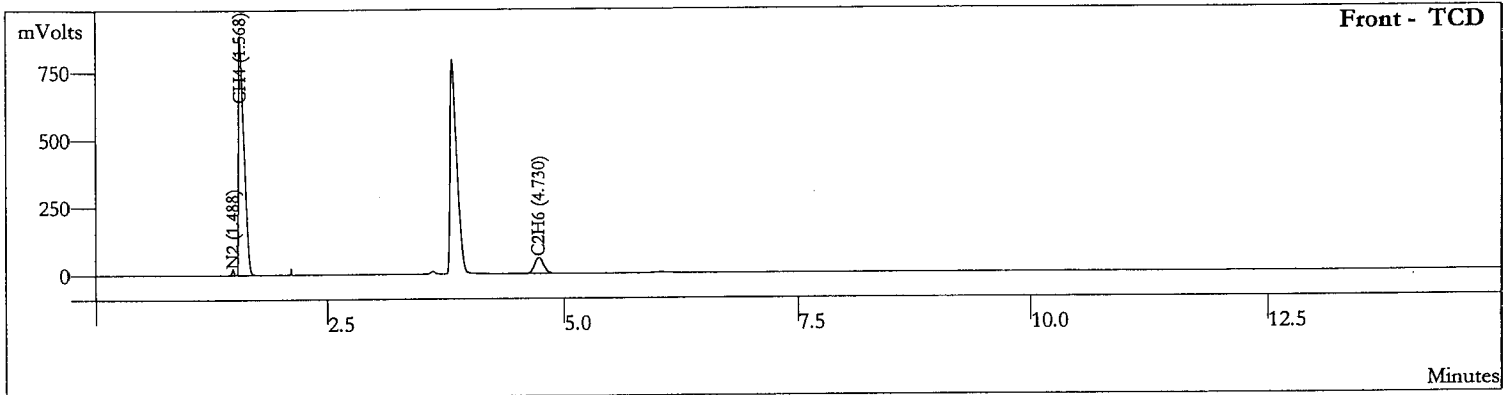
Peak Area External Std.

Injection Date: 11/27/2007 01:21:53 PM

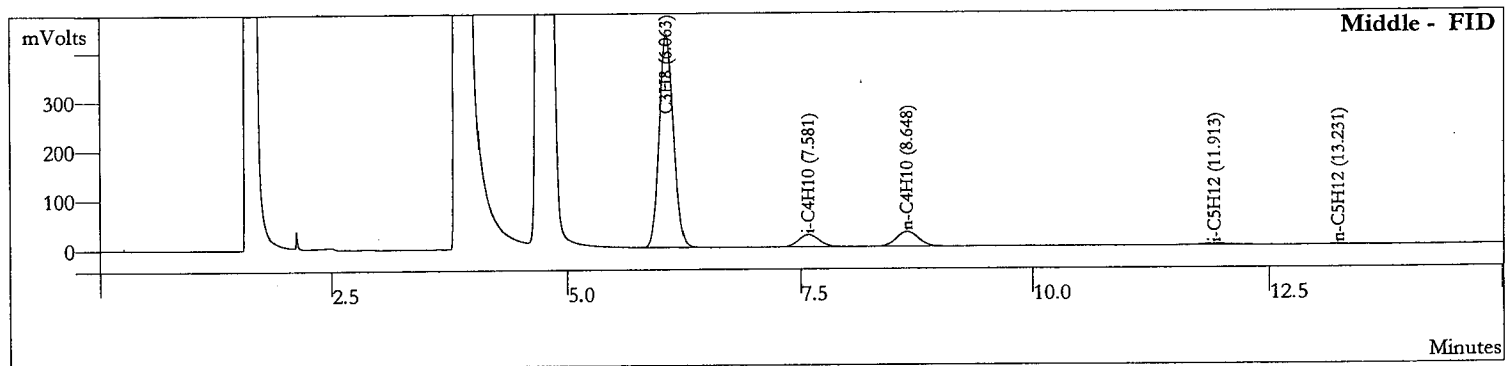
Injection Method: c:\star\sys-10 method\lean lng07.

Instrument (Inj): SYS\_10

Calculation Method: c:\star\sys-10 method\lean lng07.



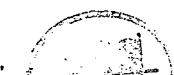
Peak No	Peak Name	Ret. Time (min)	Area (counts)	Result (mole %)
1	N2	1.488	30386	0.6961
2	CH4	1.568	3545628	93.2173
3	C2H6	4.730	397051	6.0740
Totals			3973065	99.9874



Peak No	Peak Name	Ret. Time (min)	Area (counts)	Result (mole %)
1	C3H8	6.063	4580420	0.4348
2	i-C4H10	7.581	382211	0.0282
3	n-C4H10	8.648	495808	0.0333
4	i-C5H12	11.913	66152	0.0038
5	n-C5H12	13.231	23021	0.0013
Totals			5547612	0.5014



*Handwritten notes:* C3H8, C4H10, C5H12



Data File: c:\sys\_10 results\cpc correlation 2007\correlation sample001.run



Sample ID: Correlation Sample

Run Mode: Analysis

Operator (Inj): Raj

Peak Measurement: Peak Area

Injection Notes: CPC Correlation 2007

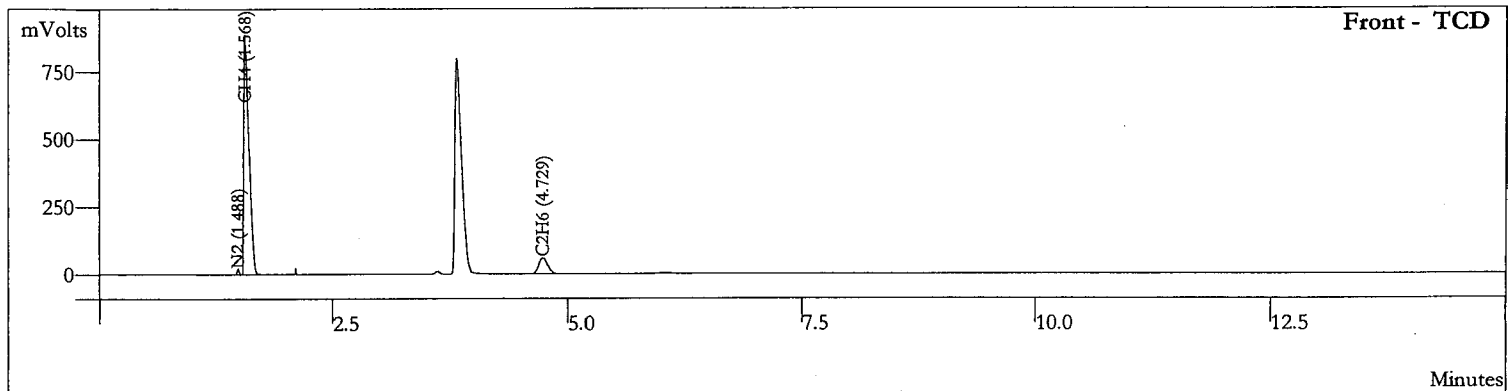
Peak Area External Std.

Injection Date: 11/27/2007 01:51:00 PM

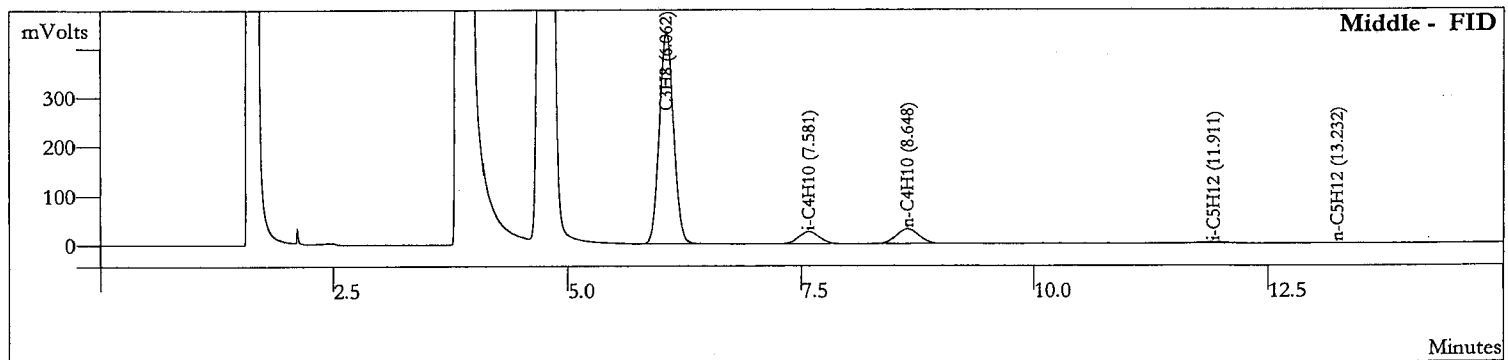
Injection Method: c:\star\sys-10 method\lean lng07.

Instrument (Inj): SYS\_10

Calculation Method: c:\star\sys-10 method\lean lng07.



Peak No	Peak Name	Ret. Time (min)	Area (counts)	Result (mole %)
1	N2	1.488	30305	0.6943
2	CH4	1.568	3548384	93.2898
3	C2H6	4.729	397902	6.0870
<b>Totals</b>			<b>3976591</b>	<b>100.0711</b>



Peak No	Peak Name	Ret. Time (min)	Area (counts)	Result (mole %)
1	C3H8	6.062	4585498	0.4353
2	i-C4H10	7.581	381523	0.0281
3	n-C4H10	8.648	494982	0.0332
4	i-C5H12	11.911	64730	0.0037
5	n-C5H12	13.232	22527	0.0013
<b>Totals</b>			<b>5549260</b>	<b>0.5016</b>

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# RasGas Company Limited Laboratory

## LOG SHEET FOR CORRELATION TEST

SAMPLE	REFERENCE STANDARD GAS		Correlation Test Sample	
CYLINDER No.	9702186		9702186	
CORRELATION DATE	Nov 07		Nov 07	
LOCATION	RAS GAS LAB / VAR. SYS-12		RAS GAS LAB / VAR / SYS-12	
GC- MODEL	VARIAN CP-3800		VARIAN CP-3800	
GC-SERIAL No.	104448		104448	
DATE CERTIFIED	11-May-07		NOT APPLICABLE	
SAMPLING DATE	NOT APPLICABLE		15-Oct-07	
SAMPLED BY	Scott Speciality Gases		RasGas Laboratory	
ANALYSIS DATE	27-Nov-07		27-Nov-07	
ANALYST	R RAJAGOPAL		R RAJAGOPAL	
ANALYSIS METHOD	GPA 2261		GPA 2261	

COMPONENT	CERTIFICATE MOL%	SAMPLE PRESSURE B (mmHg)	COUNT1 PEAK AREA C	RESPONSE FACTOR D-A*B/C	SAMPLE PRESSURE E (mmHg)	COUNT2 PEAK AREA F	RESPONSE FACTOR G-A*E/F	DIFF RESPONSE FACTOR H-(D-G)*100/F	AVERAGE RESPONSE FACTOR I-(D+G)/2	SAMPLE PRESSURE J	COUNT1 PEAK AREA K	MOL% L-F*J	SAMPLE PRESSURE M	COUNT2 PEAK AREA N	MOL% O-F*J*100/M	DIFF MOL% P-(L-O)/2	TEST RESULT (MOL%)	
																	UNORMALIZED	REPORTED VALUE
O2	0.0000	760	0	0	760	0	0	#DIV/0!	0	760	0	0	760	0	0.000	0.000	0.00	0.00
N2	0.7000	760	31148	0.01707975	760	31139	0.01708468	0.03	0.01708222	760	30553	0.68672758	760	30731	0.69072842	0.58	0.689	0.69
CH4	92.4698	760	3508589	0.02003	760	3510494	0.02001913	0.05	0.02002457	760	3507097	92.4053988	760	3509114	92.458543	0.06	92.432	92.77
CO2	0.1200	760	5145	0.01772595	760	5188	0.01757903	0.83	0.01765249	760	0	0	760	0	0	#DIV/0!	0.000	0.00
C2H6	6.0000	760	334882	0.01361674	760	334942	0.0136143	0.02	0.01361552	760	335197	6.00510587	760	335589	6.01212861	0.12	6.009	6.03
C6H14*	0.0000	760	0	0	760	0	0	#DIV/0!	0	760	0	0	760	0	0	#DIV/0!	0.000	0.00
C3H8	0.5000	760	4410311	8.6162E-05	760	4417817	8.6015E-05	0.17	8.6089E-05	760	3929598	0.44512278	760	3925788	0.4446912	0.10	0.445	0.45
I-C4H10	0.0151	760	160832	7.1354E-05	760	160227	7.1623E-05	0.38	7.1489E-05	760	311994	0.02934742	760	313158	0.02945691	0.38	0.029	0.03
N-C4H10	0.1500	760	1822738	6.2543E-05	760	1837308	6.2047E-05	0.80	6.2295E-05	760	417618	0.0342311	760	409649	0.03357779	1.92	0.034	0.03
I-C5H12	0.0150	760	208446	5.469E-05	760	207251	5.5006E-05	0.57	5.4848E-05	760	52722	0.00380487	760	48611	0.00350819	7.42	0.004	0.00
N-C5H12	0.0150	760	204954	5.5622E-05	760	203029	5.615E-05	0.94	5.5886E-05	760	19074	0.00140259	760	18500	0.00136038	4.22	0.001	0.00
TOTAL	99.9849		10687045			10707395					8603853	99.611141		8591140	99.6739946		99.643	100.00

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CH20009, 1-CYAN CARBON  
for L.P.C  
28, NOV. 07

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Data File: c:\star\sys\_12 data\cpc correlation\standard gas005.run



Sample ID: Standard Gas

Run Mode: Analysis

Operator (Inj): Raj

Peak Measurement: Peak Area

Injection Notes: CPC Correlation 2007

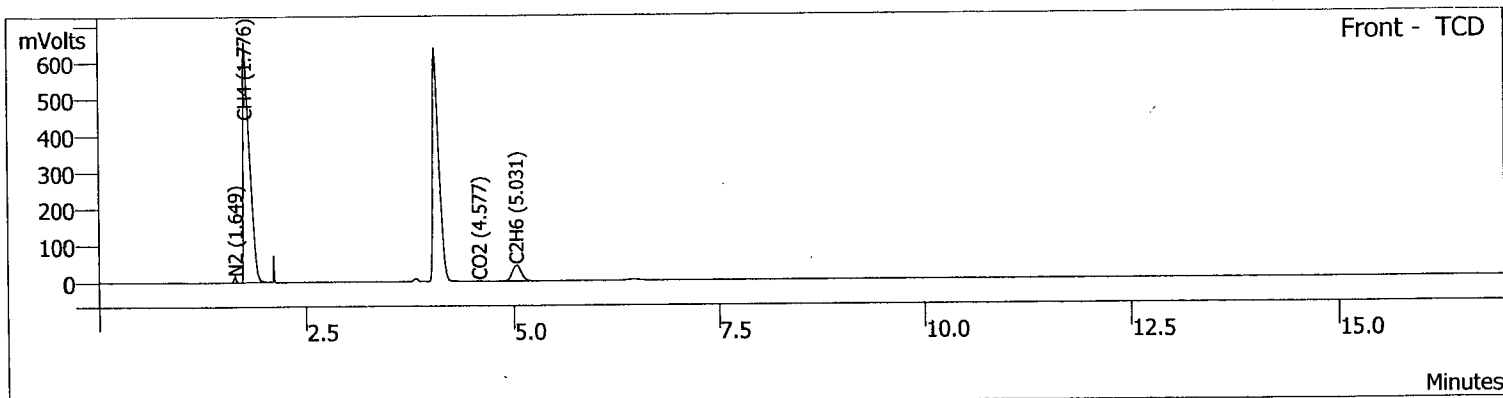
Peak Area External Std.

Injection Date: 11/27/2007 11:22:03 AM

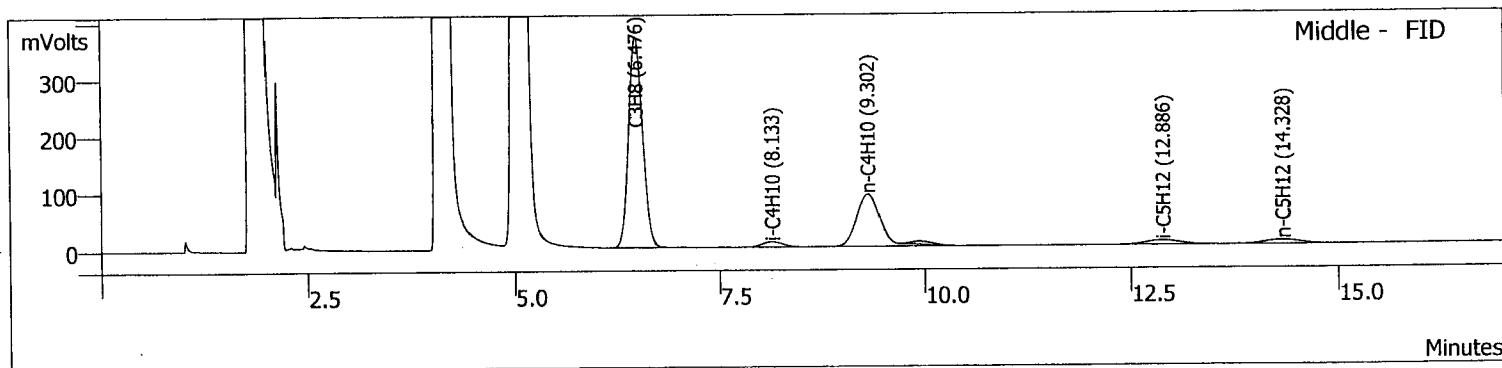
Injection Method: c:\star\sys\_12\lean lng07\_sys 12.mth

Instrument (Inj): SYS\_12

Calculation Method: c:\star\sys\_12\lean lng07\_sys 12.mth



Peak No	Peak Name	Ret. Time (min)	Area (counts)	Result ( mole %)
1	N2	1.649	31148	0.6770
2	CH4	1.776	3508589	92.4289
3	CO2	4.577	5145	0.1217
4	C2H6	5.031	334882	6.0054
<b>Totals</b>			<b>3879764</b>	<b>99.2330</b>



Peak No	Peak Name	Ret. Time (min)	Area (counts)	Result ( mole %)
1	C3H8	6.476	4410311	0.5048
2	i-C4H10	8.133	160832	0.0153
3	n-C4H10	9.302	1822738	0.1517
4	i-C5H12	12.886	208446	0.0155
5	n-C5H12	14.328	204954	0.0154
<b>Totals</b>			<b>6807281</b>	<b>0.7027</b>

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Data File: c:\star\sys\_12 data\cpc correlation\standard gas006.run



Sample ID: Standard Gas

Run Mode: Analysis

Operator (Inj): Raj

Peak Measurement: Peak Area

Injection Notes: CPC Correlation 2007

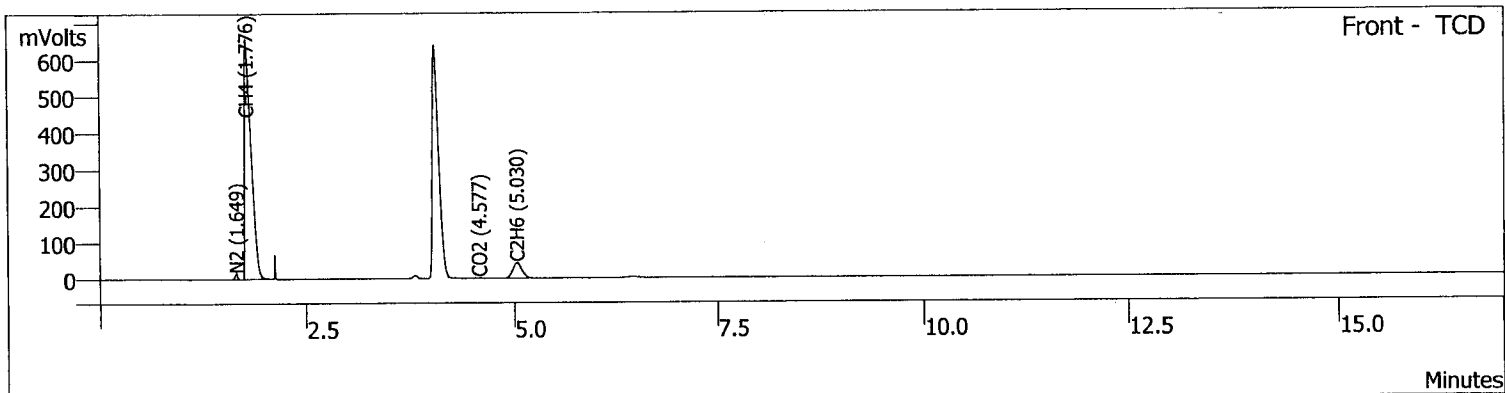
Peak Area External Std.

Injection Date: 11/27/2007 11:39:56 AM

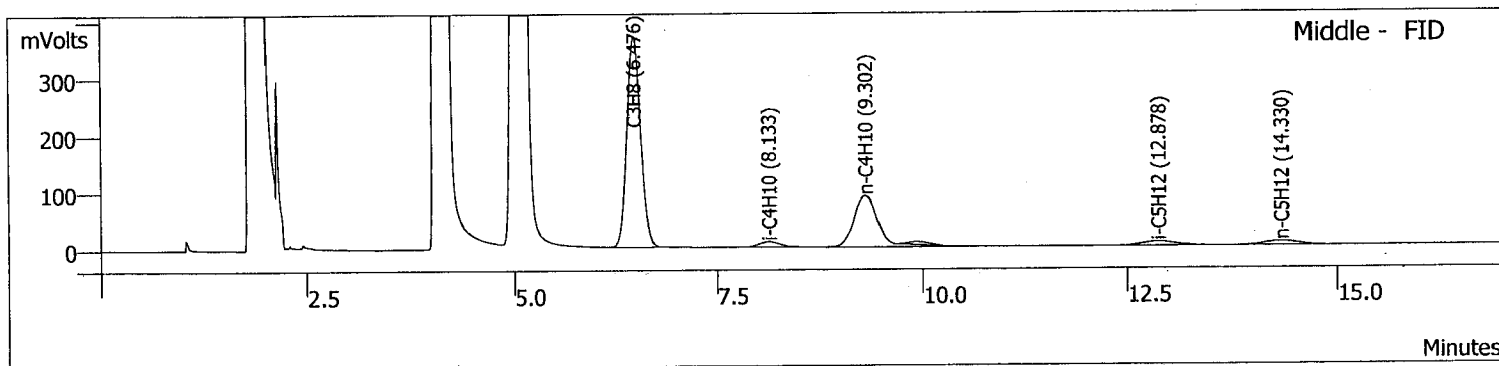
Injection Method: c:\star\sys\_12\lean lng07\_sys 12.mth

Instrument (Inj): SYS\_12

Calculation Method: c:\star\sys\_12\lean lng07\_sys 12.mth



Peak No	Peak Name	Ret. Time (min)	Area (counts)	Result ( mole %)
1	N2	1.649	31139	0.6769
2	CH4	1.776	3510494	92.4791
3	CO2	4.577	5188	0.1227
4	C2H6	5.030	334942	6.0064
<b>Totals</b>			<b>3881763</b>	<b>99.2851</b>



Peak No	Peak Name	Ret. Time (min)	Area (counts)	Result ( mole %)
1	C3H8	6.476	4417817	0.5057
2	i-C4H10	8.133	160227	0.0153
3	n-C4H10	9.302	1837308	0.1530
4	i-C5H12	12.878	207251	0.0154
5	n-C5H12	14.330	203029	0.0153
<b>Totals</b>			<b>6825632</b>	<b>0.7047</b>

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Data File: c:\star\sys\_12 data\cpc correlation\correlation sample001.run



Sample ID: Correlation Sample

Run Mode: Analysis

Operator (Inj): Raj

Peak Measurement: Peak Area

Injection Notes: CPC Correlation 2007

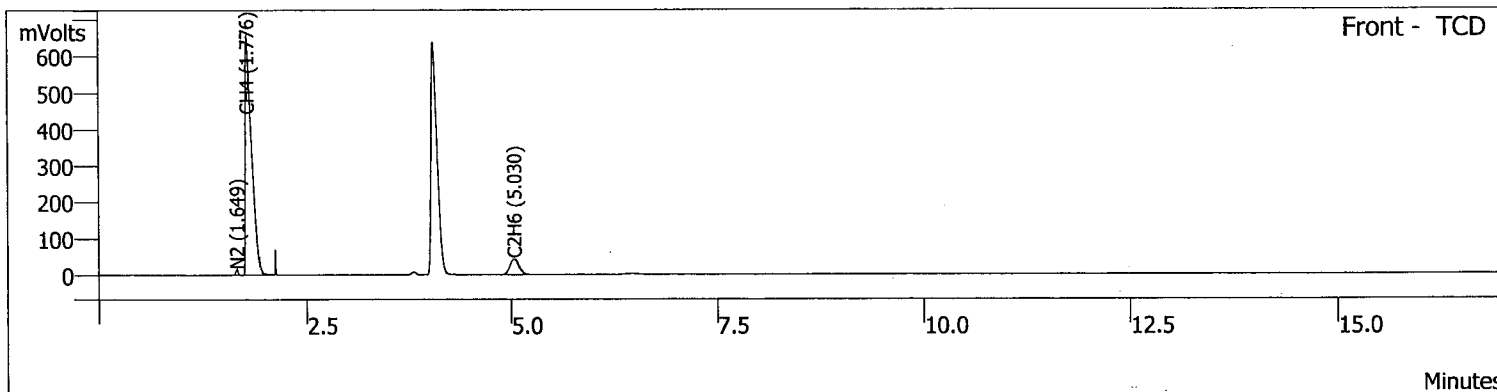
Peak Area External Std.

Injection Date: 11/27/2007 02:54:39 PM

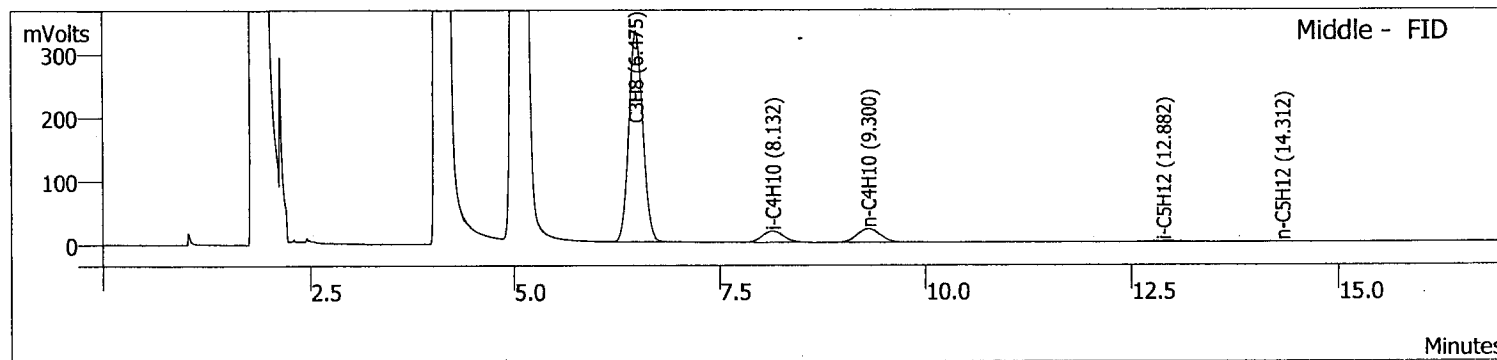
Injection Method: c:\star\sys\_12\lean lng07\_sys 12.mth

Instrument (Inj): SYS\_12

Calculation Method: c:\star\sys\_12\lean lng07\_sys 12.mth



Peak No	Peak Name	Ret. Time (min)	Area (counts)	Result ( mole %)
1	N2	1.649	30553	0.6641
2	CH4	1.776	3507097	92.3896
3	C2H6	5.030	335197	6.0110
<b>Totals</b>			<b>3872847</b>	<b>99.0647</b>



Peak No	Peak Name	Ret. Time (min)	Area (counts)	Result ( mole %)
1	C3H8	6.475	3929598	0.4498
2	i-C4H10	8.132	311994	0.0297
3	n-C4H10	9.300	417618	0.0348
4	i-C5H12	12.882	52722	0.0039
5	n-C5H12	14.312	19074	0.0014
<b>Totals</b>			<b>4731006</b>	<b>0.5196</b>

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Data File: c:\star\sys\_12 data\cpc correlation\correlation sample002.run



Sample ID: Correlation Sample

Run Mode: Analysis

Operator (Inj): Raj

Peak Measurement: Peak Area

Injection Notes: CPC Correlation 2007

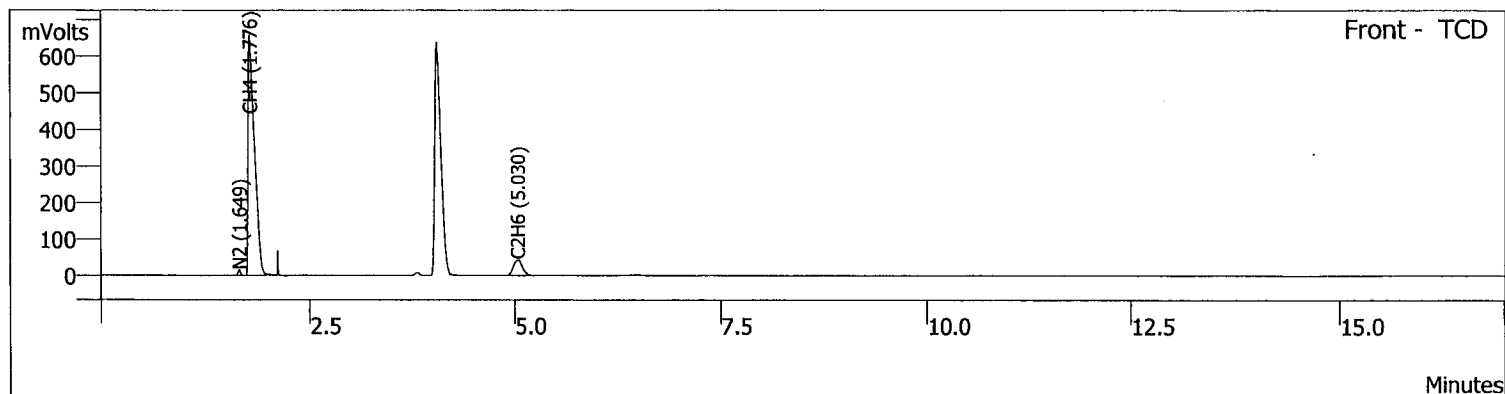
Peak Area External Std.

Injection Date: 11/27/2007 03:13:34 PM

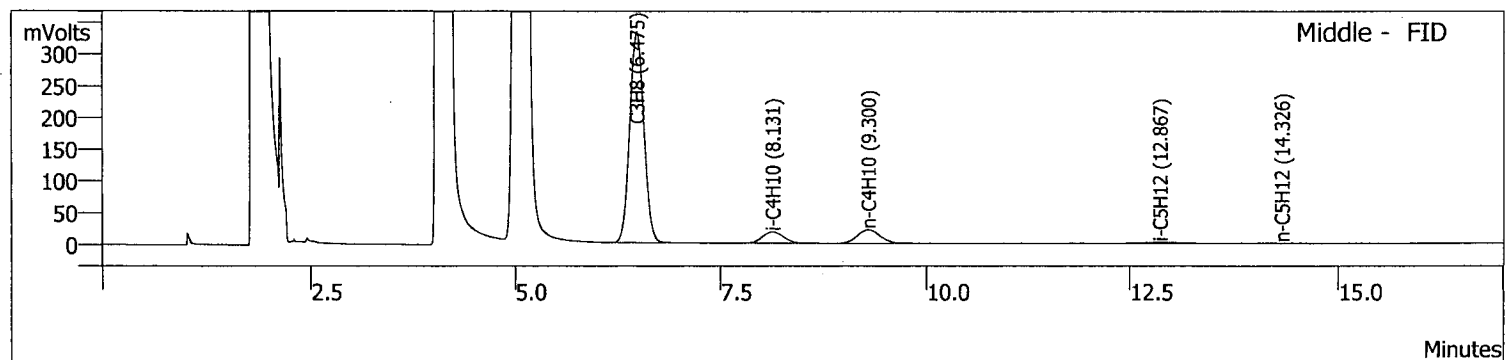
Injection Method: c:\star\sys\_12\lean lng07\_sys 12.mth

Instrument (Inj): SYS\_12

Calculation Method: c:\star\sys\_12\lean lng07\_sys 12.mth



Peak No	Peak Name	Ret. Time (min)	Area (counts)	Result ( mole %)
1	N2	1.649	30731	0.6680
2	CH4	1.776	3509114	92.4427
3	C2H6	5.030	335589	6.0180
<b>Totals</b>			<b>3875434</b>	<b>99.1287</b>



Peak No	Peak Name	Ret. Time (min)	Area (counts)	Result ( mole %)
1	C3H8	6.475	3925788	0.4494
2	i-C4H10	8.131	313158	0.0298
3	n-C4H10	9.300	409649	0.0341
4	i-C5H12	12.867	48611	0.0036
5	n-C5H12	14.326	18500	0.0014
<b>Totals</b>			<b>4715706</b>	<b>0.5183</b>

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CH2009 .C122007 CD876



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# RasGas Company Limited

## Laboratory

LOG SHEET FOR CORRELATION TEST

REFERENCE STANDARD GAS		CORRELATION TEST SAMPLE	
CYLINDER No.	9702186	CYLINDER No.	AK 3046
CORRELATION DATE	Nov 07	CORRELATION DATE	Nov 07
LOCATION	RAS GAS LAB / VAR. SYS-13	LOCATION	RAS GAS LAB / VAR. SYS - 13
GC-MODEL	VARIAN CP-3800	GC-MODEL	VARIAN CP-3800
GC-SERIAL No.	104447	GC-SERIAL No.	104447
DATE CERTIFIED	11-May-07	DATE CERTIFIED	15-Oct-07
SAMPLING DATE	NOT APPLICABLE	SAMPLING DATE	NOT APPLICABLE
SAMPLED BY	NOT APPLICABLE	SAMPLED BY	RasGas Laboratory
ANALYSIS DATE	27-Nov-07	ANALYSIS DATE	27-Nov-07
ANALYST	R.KAJAGOPAL	ANALYST	R.KAJAGOPAL
ANALYSIS METHOD	GPA 2261	ANALYSIS METHOD	GPA 2261

COMPONENT	CERTIFICATE MOLE%	SAMPLE PRESSURE	PEAK AREA	RESPONSE FACTOR	SAMPLE PRESSURE	PEAK AREA	RESPONSE FACTOR	DIF. RESPONSE FACTOR	AVERAGE RESPONSE FACTOR	SAMPLE PRESSURE	PEAK AREA	MOLE%	SAMPLE PRESSURE	PEAK AREA	MOLE%	DIF. MOLE%	TEST RESULT
O2	0.0000	760	0	0	760	0	0	0	0	760	0	0	760	0	0	0	0.000
N2	0.7000	760	34684	0.01533848	760	34883	0.01525098	0.57	0.01529473	760	34330	0.6908792	760	34233	0.6892711	0.28	0.690
CH4	92.4698	760	3894900	0.01804335	760	3898952	0.0180246	0.10	0.01803398	760	3899685	92.5333948	760	3901746	92.5841984	0.05	92.559
CO2	0.1200	760	5025	0.01814925	760	5031	0.01812761	0.12	0.01813843	760	0	0	760	0	0	0	0.000
C2H6	6.0000	760	334897	0.01361613	760	335368	0.013597	0.14	0.01360657	760	336499	6.02446793	760	336845	6.03066249	0.10	6.028
C6H14*	0.0000	760	0	0	760	0	0	0	0	760	0	0	760	0	0	0	0.000
C3H8	0.5000	760	3498475	0.00010862	760	3477488	0.00010928	0.60	0.00010895	760	3088582	0.44275225	760	3087553	0.44260474	0.03	0.443
I-C4H10	0.0151	760	133788	8.5777E-05	760	132820	8.6403E-05	0.73	8.6099E-05	760	254999	0.028888537	760	255172	0.028990497	0.07	0.029
N-C4H10	0.1500	760	1482373	7.6904E-05	760	1481191	7.6965E-05	0.08	7.6934E-05	760	331775	0.03358541	760	335795	0.03399235	1.20	0.034
I-C5H12	0.0150	760	175111	6.5102E-05	760	170422	6.6833E-05	2.71	6.5997E-05	760	44699	0.00387638	760	43536	0.0037806	2.39	0.004
N-C5H12	0.0150	760	172545	6.607E-05	760	169576	6.7226E-05	1.74	6.6648E-05	760	17782	0.00103322	760	14573	0.00127798	24.48	0.001
TOTAL	99.9849		9731798			9705701					8002211	99.7588745		8009453	99.8143486		99.788

*[Handwritten signature]*

*Checked, core correct*

*for CR*

*28, Nov. 07*

*[Handwritten signature]*



Data File: c:\star\sys\_13 data\cpc correlation\standard gas005.run



Sample ID: Standard Gas

Run Mode: Analysis

Operator (Inj): Raj

Peak Measurement: Peak Area

Injection Notes: CPC Correlation 2007

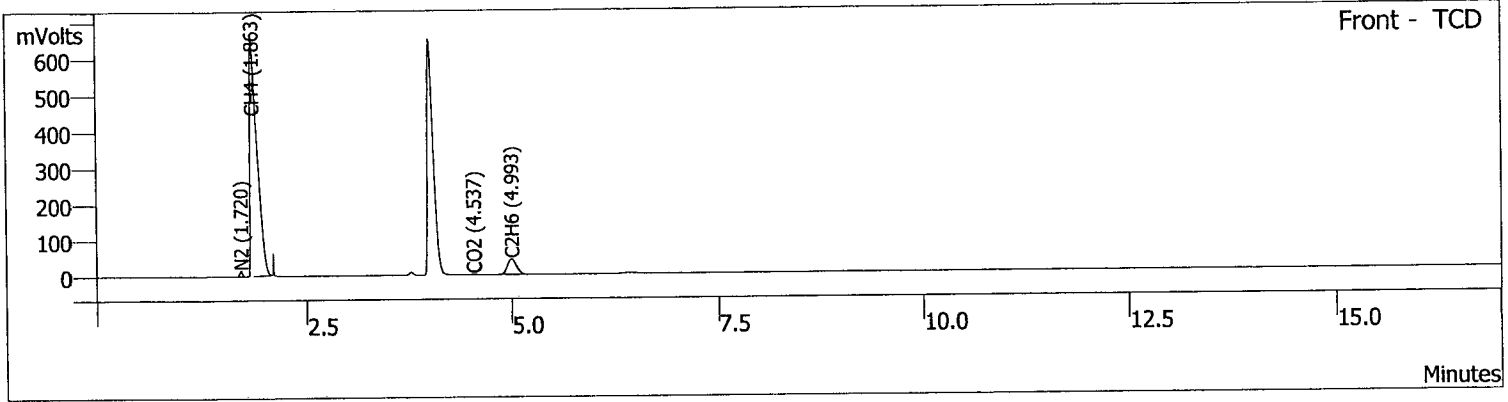
Peak Area External Std.

Injection Date: 11/27/2007 12:23:01 PM

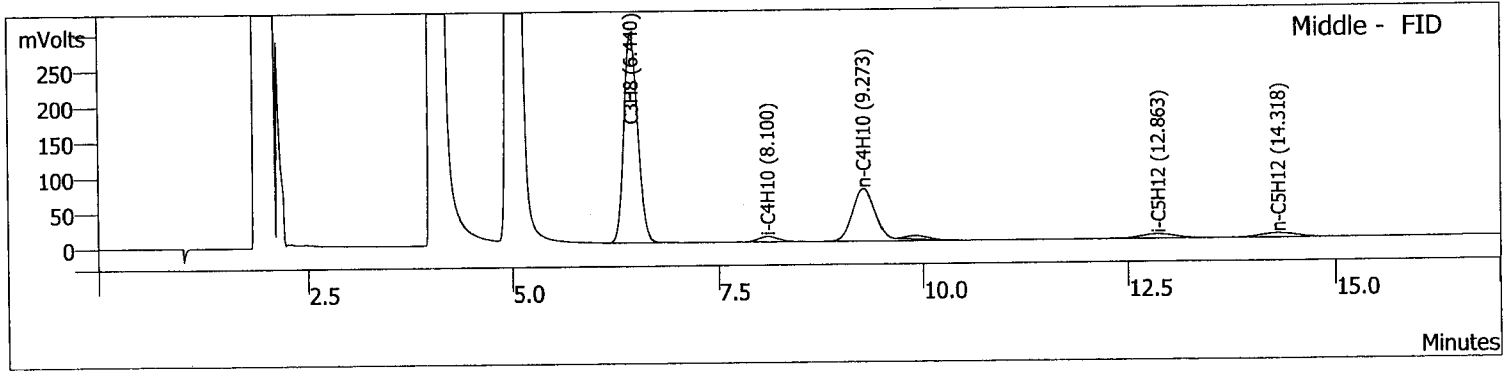
Injection Method: c:\star\sys\_13\lean lng07\_sys 13.mth

Instrument (Inj): SYS\_13

Calculation Method: c:\star\sys\_13\lean lng07\_sys 13.mth



Peak No	Peak Name	Ret. Time (min)	Area (counts)	Result ( mole %)
1	N2	1.720	34684	0.6855
2	CH4	1.863	3894900	92.2683
3	CO2	4.537	5025	0.1196
4	C2H6	4.993	334897	5.9771
<b>Totals</b>			<b>4269506</b>	<b>99.0505</b>



Peak No	Peak Name	Ret. Time (min)	Area (counts)	Result ( mole %)
1	C3H8	6.440	3498475	0.5047
2	i-C4H10	8.100	133788	0.0154
3	n-C4H10	9.273	1482373	0.1510
4	i-C5H12	12.863	175111	0.0147
5	n-C5H12	14.318	172545	0.0151
<b>Totals</b>			<b>5462292</b>	<b>0.7009</b>

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Data File: c:\star\sys\_13 data\cpc correlation\standard gas006.run



Sample ID: Standard Gas

Run Mode: Analysis

Operator (Inj): Raj

Peak Measurement: Peak Area

Injection Notes: CPC Correlation 2007

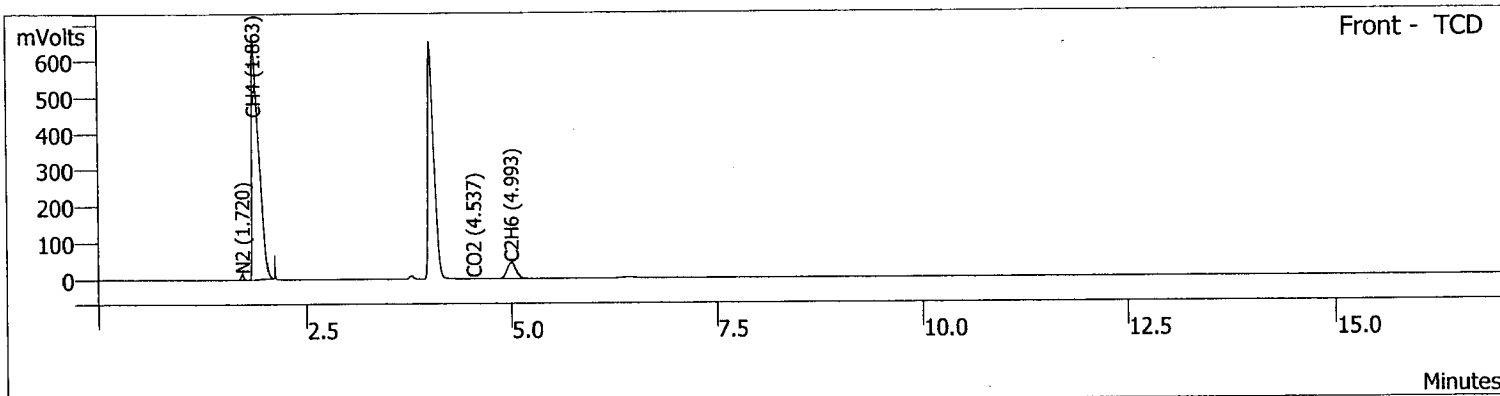
Peak Area External Std.

Injection Date: 11/27/2007 12:40:56 PM

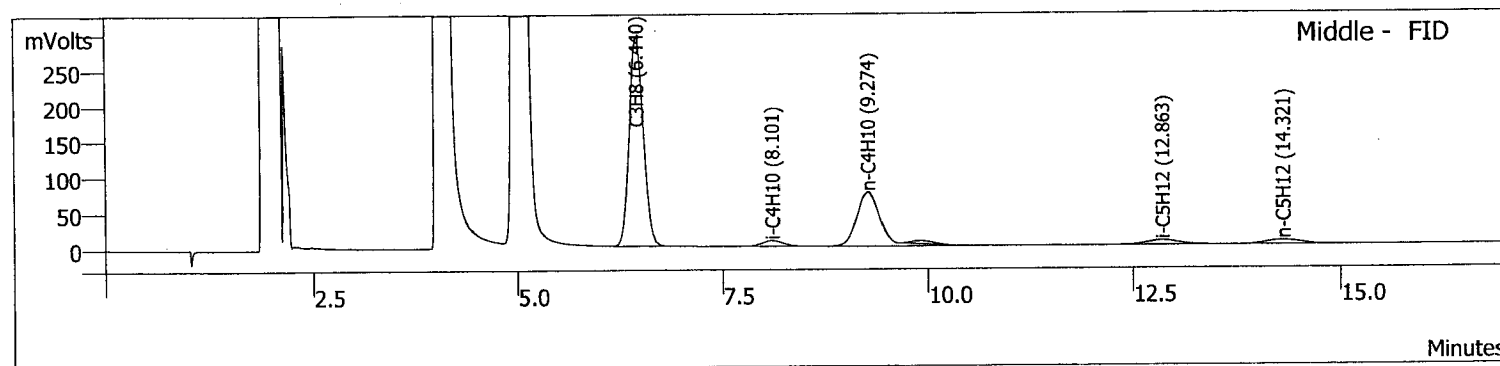
Injection Method: c:\star\sys\_13\lean lng07\_sys 13.mth

Instrument (Inj): SYS\_13

Calculation Method: c:\star\sys\_13\lean lng07\_sys 13.mth



Peak No	Peak Name	Ret. Time (min)	Area (counts)	Result ( mole %)
1	N2	1.720	34883	0.6895
2	CH4	1.863	3898952	92.3643
3	CO2	4.537	5031	0.1197
4	C2H6	4.993	335368	5.9855
<b>Totals</b>			<b>4274234</b>	<b>99.1590</b>



Peak No	Peak Name	Ret. Time (min)	Area (counts)	Result ( mole %)
1	C3H8	6.440	3477458	0.5017
2	i-C4H10	8.101	132820	0.0153
3	n-C4H10	9.274	1481191	0.1508
4	i-C5H12	12.863	170422	0.0143
5	n-C5H12	14.321	169576	0.0148
<b>Totals</b>			<b>5431467</b>	<b>0.6969</b>

*[Handwritten signature]*

*Carbon Dioxide Check*



Data File: c:\star\sys\_13 data\cpc correlation\correlation sample001.run



Sample ID: Correlation Sample

Run Mode: Analysis

Operator (Inj): Raj

Peak Measurement: Peak Area

Injection Notes: CPC Correlation 2007

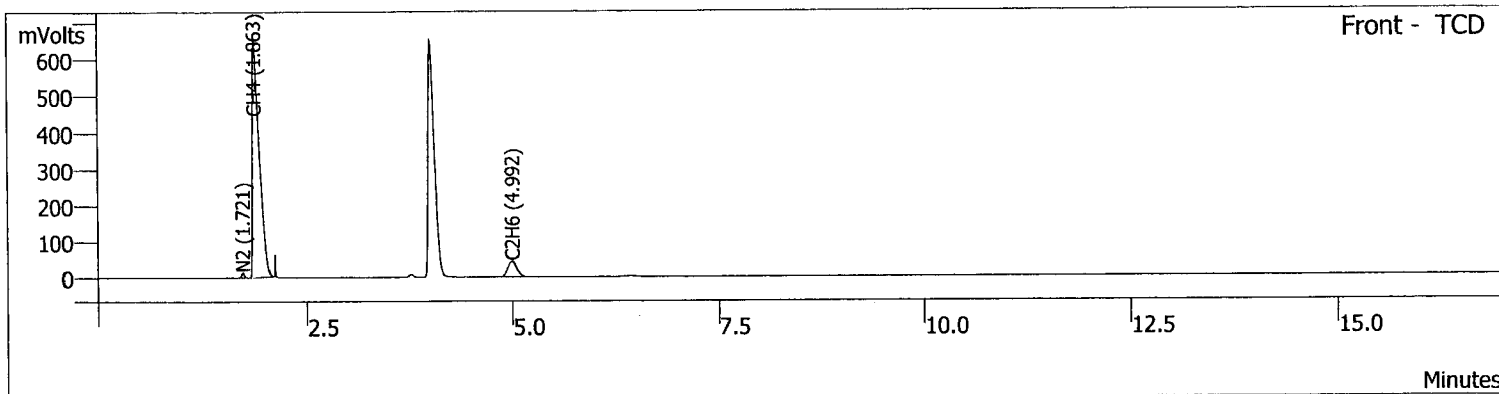
Peak Area External Std.

Injection Date: 11/27/2007 03:58:48 PM

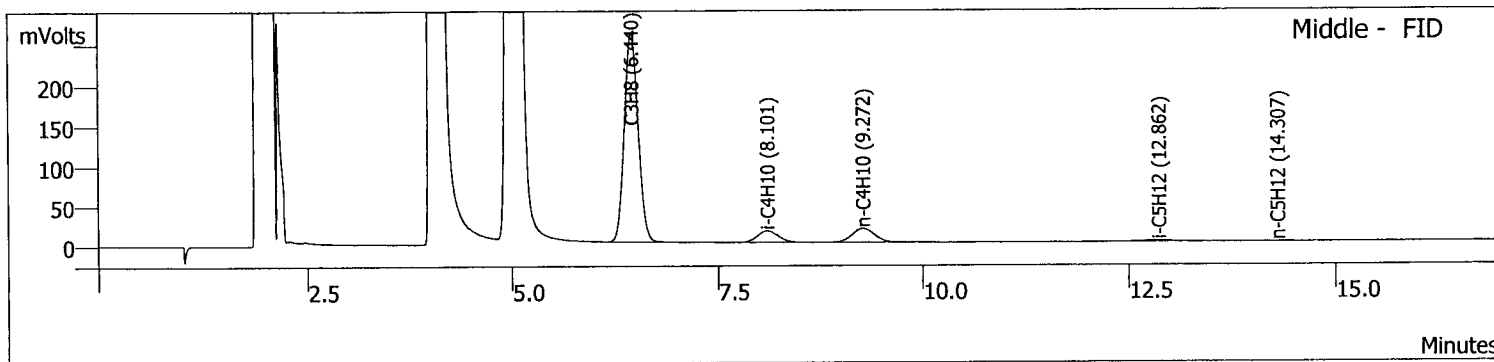
Injection Method: c:\star\sys\_13\lean lng07\_sys 13.mth

Instrument (Inj): SYS\_13

Calculation Method: c:\star\sys\_13\lean lng07\_sys 13.mth



Peak No	Peak Name	Ret. Time (min)	Area (counts)	Result ( mole %)
1	N2	1.721	34330	0.6785
2	CH4	1.863	3899605	92.3798
3	C2H6	4.992	336499	6.0057
<b>Totals</b>			<b>4270434</b>	<b>99.0640</b>



Peak No	Peak Name	Ret. Time (min)	Area (counts)	Result ( mole %)
1	C3H8	6.440	3088582	0.4456
2	i-C4H10	8.101	254999	0.0293
3	n-C4H10	9.272	331775	0.0338
4	i-C5H12	12.862	44639	0.0037
5	n-C5H12	14.307	11782	0.0010
<b>Totals</b>			<b>3731777</b>	<b>0.5134</b>

*Handwritten notes and signatures at the bottom of the page.*

Data File: c:\star\sys\_13 data\cpc correlation\correlation sample002.run



Sample ID: Correlation Sample

Run Mode: Analysis

Operator (Inj): Raj

Peak Measurement: Peak Area

Injection Notes: CPC Correlation 2007

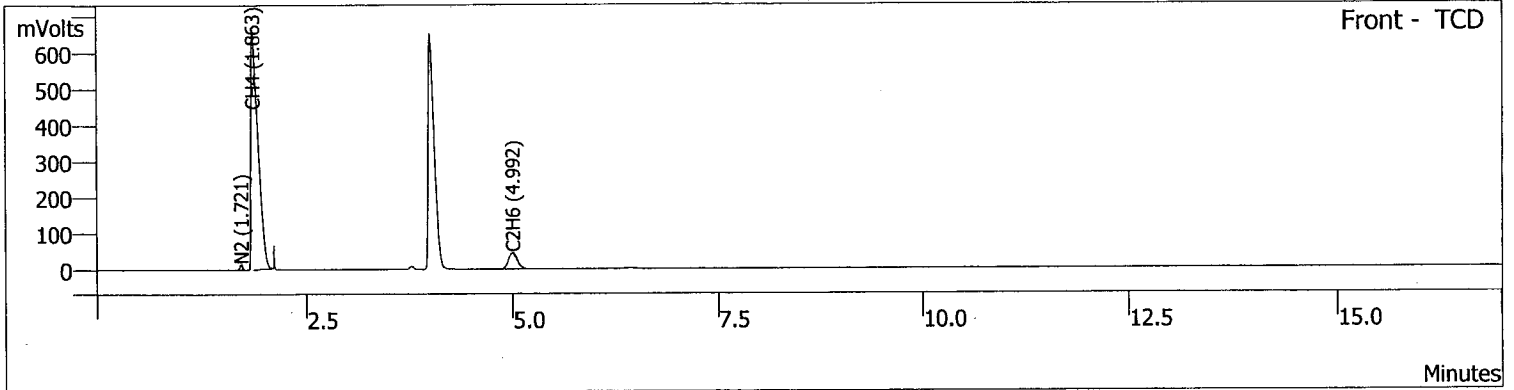
Peak Area External Std.

Injection Date: 11/27/2007 04:17:47 PM

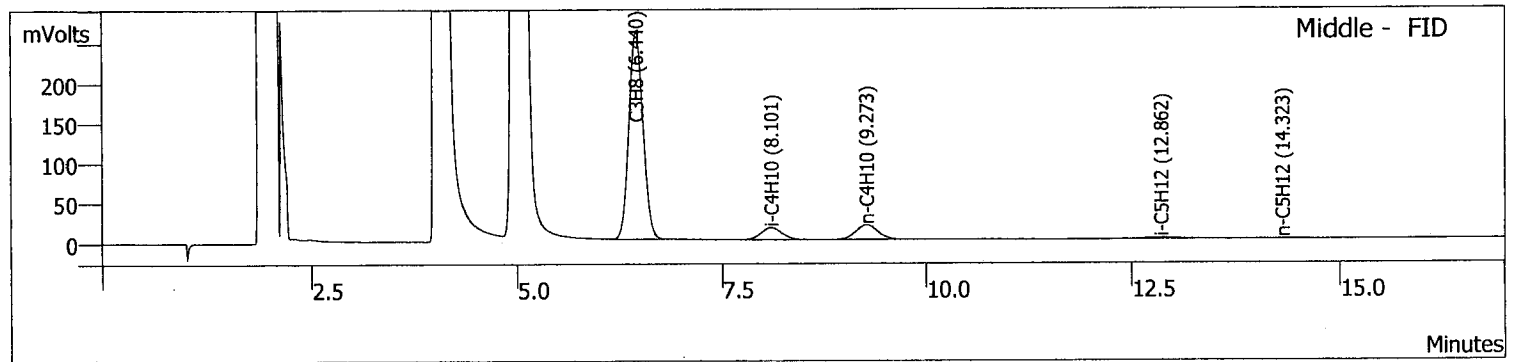
Injection Method: c:\star\sys\_13\lean lng07\_sys 13.mth

Instrument (Inj): SYS\_13

Calculation Method: c:\star\sys\_13\lean lng07\_sys 13.mth



Peak No	Peak Name	Ret. Time (min)	Area (counts)	Result ( mole %)
1	N2	1.721	34233	0.6766
2	CH4	1.863	3901746	92.4305
3	C2H6	4.992	336845	6.0118
<b>Totals</b>			<b>4272824</b>	<b>99.1189</b>



Peak No	Peak Name	Ret. Time (min)	Area (counts)	Result ( mole %)
1	C3H8	6.440	3087553	0.4454
2	i-C4H10	8.101	255172	0.0294
3	n-C4H10	9.273	335795	0.0342
4	i-C5H12	12.862	43536	0.0037
5	n-C5H12	14.323	14573	0.0013
<b>Totals</b>			<b>3736629</b>	<b>0.5140</b>

C. D. ...





Scott Specialty Gases

Certificate of Accuracy

RAS LAFFAN LNG COMPANY LIMITED

PD No. 4500041182

CAS Reg. Component No.	Component	Certified Analysis
106-97-8	N-BUTANE	0,150 PCT/
124-38-9	CARBON DIOXIDE	0,120 PCT/
74-84-0	ETHANE	6,0 PCT/
75-28-5	ISOBUTANE	151, PPM/
78-78-4	ISOPENTANE	150, PPM/
463-82-1	NEOPENTANE	151, PPM/
7727-37-9	NITROGEN	0,70 PCT/
109-66-0	N-PENTANE	150, PPM/
74-98-6	PROPANE	0,50 PCT/
74-82-8	METHANE	92.4698 BAL

CONTINUED FROM OTHER SIDE

CERTIFIED ANALYSIS LABEL

RASGAS MATERIAL NUMBER 1535496

Analysis Date 11 May 2007

Project No 2064069

Analyst R. M. VAN DER LINDEN Cylinder # 9702186

Expiration Date 10 May 2010

Item No. 2002N000262P10

Grade CERTIFIED MASTER CLASS

Reorder/Service Contact

076-5711820

THE NETHERLANDS