QatarEnergy LNG - Onshore Operations & Support
South Laboratory

Intertek
Global LNG

CORRELATION TEST - COMPARISON OF RESULTS

Sample	: QatarEnergy LNG - CPC CORRELATION SAMPLE 2024
Sample Cylinder No.	: DA8102
Location	: QatarEnergy LNG - South Laboratory
Analysis Date	: 5-Nov-2024
Analyst	: MOHAMMED ABBAS
Analysis Method	: GC, GPA 2261

COMPONENT	Unit	GC System used			Max-Min	Conclusion	Correlation Limit [GPA 2261-64]
		AGILENT - SYSTEM-6	AGILENT - SYSTEM-7	AGILENT - SYSTEM-8			
CH4	% MOL	92.810	92.800	92.830	0.03	OK	0.30
C2H6	% MOL	6.590	6.590	6.560	0.03	OK	0.10
C3H8	% MOL	0.080	0.090	0.090	0.01	OK	0.05
I-C4H10	% MOL	0.000	0.000	0.000	0.00	OK	0.03
N-C4H10	% MOL	0.000	0.000	0.000	0.00	OK	0.03
I-C5H12	% MOL	0.000	0.000	0.000	0.00	OK	0.03
N-C5H12	% MOL	0.000	0.000	0.000	0.00	OK	0.03
C6H14	% MOL	0.000	0.000	0.000	0.00	OK	0.03
N2	% MOL	0.520	0.520	0.520	0.00	OK	0.03
CO2	% MOL	0.000	0.000	0.000	0.00	OK	0.03
O2	% MOL	0.000	0.000	0.000	0.00	OK	0.03
TOTAL	% MOL	100.000	100.000	100.000			

CORRELATION SHEET FOR LNG CERTIFICATION

SAMPLE	REFERENCE STANDARD GAS	CORRELATION TEST SAMPLE
CYLINDER No.	5710175	DA8102
SQC SAMPLE TYPE	NOT APPLICABLE	QatarEnergy LNG - CPC CORRELATION SAMPLE 2024
LOCATION	QatarEnergy LNG - SOUTH LAB. / AGILENT - SYSTEM-6	QatarEnergy LNG - SOUTH LAB. / AGILENT - SYSTEM-6
GC MODEL	AGILENT 7890B	AGILENT 7890B
GC SERIAL No.	US 13493032	US 13493032
DATE CERTIFIED	12-May-22	5-Nov-24
SAMPLED BY	SCOTT SPECIALTY GASES	QatarEnergy LNG - SOUTH LAB
ANALYSIS DATE	5-Nov-24	5-Nov-24
ANALYST	MOHAMMED ABBAS	MOHAMMED ABBAS
ANALYSIS METHOD	GC, GPA 2261	GC, GPA 2261

COMPONENT	CERTIFICATE MOL% A	COUNT 1			COUNT 2			DIFF RESPONSE FACTOR H=(D-G)*100/I	AVERAGE RESPONSE FACTOR I=(D+G)/2	COUNT 1			COUNT 2			DIFF MOL% P=(L-O)*100/Q	TEST RESULT (MOL%)	
		SAMPLE PRESSURE B(mmHg)	PEAK AREA C	RESPONSE FACTOR D=A*B/C	SAMPLE PRESSURE E(mmHg)	PEAK AREA F	RESPONSE FACTOR G=A*E/F			SAMPLE PRESSURE J	PEAK AREA K	MOL% L=I*K/J	SAMPLE PRESSURE M	PEAK AREA N	MOL% O=I*N/M		UNORMALIZED Q=(L+O)/2	REPORTED VALUE
O2	0.0501	760	61	0.6241967	760	60	0.6346000	1.65	0.629398361	760	0	**0.0000000**	760	0	**0.0000000**	-	**0.000**	0.000
N2	0.8000	760	959	0.6339937	760	959	0.6339937	0.00	0.633993743	760	620	**0.5172054**	760	620	**0.5172054**	0.00	**0.517**	0.520
CH4	92.3300	760	61790	1.1356336	760	61740	1.1365533	0.08	1.136093443	760	62087	**92.8113600**	760	62015	**92.7037301**	0.12	**92.758**	92.810
C3H8	0.1180	760	10233	0.0087638	760	10230	0.0087664	0.03	0.008765088	760	7308	**0.0842832**	760	7305	**0.0842486**	0.04	**0.084**	0.080
I-C4H10	0.0513	760	6237	0.0062511	760	6240	0.0062481	0.05	0.006249580	760	217	**0.0017844**	760	215	**0.0017680**	0.82	**0.002**	0.000
N-C4H10	0.0314	760	3787	0.0062955	760	3787	0.0062955	0.00	0.006295537	760	340	**0.0028164**	760	339	**0.0028081**	0.28	**0.003**	0.000
I-C5H12	0.0500	760	7878	0.0048236	760	7888	0.0048174	0.13	0.004820502	760	0	**0.0000000**	760	0	**0.0000000**	-	**0.000**	0.000
N-C5H12	0.0499	760	8034	0.0047204	760	8053	0.0047093	0.24	0.004714870	760	0	**0.0000000**	760	0	**0.0000000**	-	**0.000**	0.000
CO2	0.1480	760	172	0.6539535	760	173	0.6501734	0.58	0.652063449	760	0	**0.0000000**	760	0	**0.0000000**	-	**0.000**	0.000
C2H6	6.3700	760	7914	0.6117261	760	7936	0.6100302	0.28	0.610878149	760	8193	**6.5854272**	760	8185	**6.5789969**	0.10	**6.582**	6.590
C6H14+	0.0000	760	0	0.0000000	760	0	0.0000000	0.00	0.000000000	760	0	**0.0000000**	760	0	**0.0000000**	-	**0.000**	0.000
TOTAL	99.9987		**107065**			**107066**					**78765**	**100.0028767**		**78679**	**99.8887572**		**99.946**	100.000

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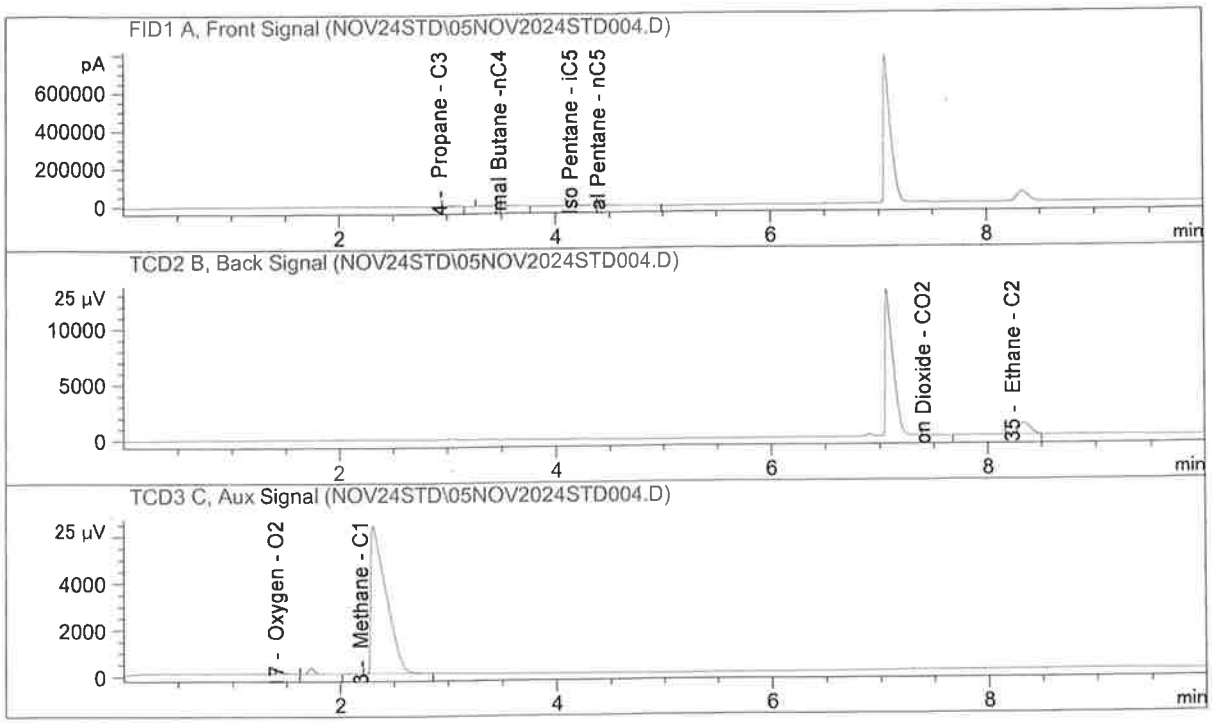
QatarEnergy LNG - South Laboratory

Method: C:\CHEM32\1\METHODS\NOV24_AGILENT6.M
File Name: C:\CHEM32\1\DATA\NOV24STD\05NOV2024STD004.D

Instrument: Agilent 6
Injection Date: Tue, 5. Nov. 2024 7:14:41 AM
Lab. Tech.: ABBAS

Sample Name: STANDARD
Sample Note: 760 mmHg



Name	Signal	RT(min)	Area	Amount
Oxygen - O2	TCD3 C,	1.52	61	0.0515
Nitrogen - N2	TCD3 C,	1.72	959	0.8046
Methane - C1	TCD3 C,	2.30	61790	92.2260
Propane - C3	FID1 A,	3.04	10233	0.1185
Iso Butane - iC4	FID1 A,	3.37	6237	0.0514
Normal Butane -nC4	FID1 A,	3.59	3787	0.0314
Iso Pentane - iC5	FID1 A,	4.24	7878	0.0500
Normal Pentane - nC5	FID1 A,	4.49	8034	0.0498
Carbon Dioxide - CO2	TCD2 B,	7.52	172	0.1458
Ethane - C2	TCD2 B,	8.35	7914	6.2700
		Total	107065	99.7990

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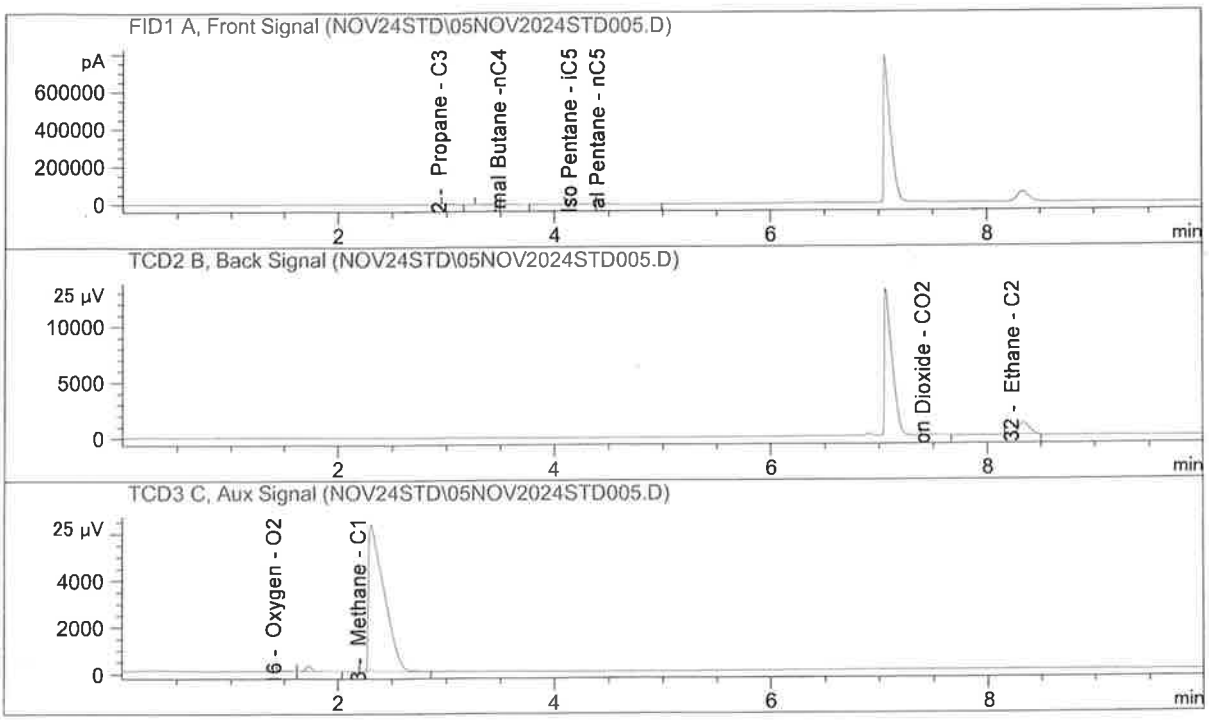
QatarEnergy LNG - South Laboratory

Method: C:\CHEM32\1\METHODS\NOV24_AGILENT6.M
File Name: C:\CHEM32\1\DATA\NOV24STD\05NOV2024STD005.D

Instrument: Agilent 6
Injection Date: Tue, 5. Nov. 2024 7:26:09 AM
Lab. Tech.: ABBAS

Sample Name: STANDARD
Sample Note: 760 mmHg



Name	Signal	RT(min)	Area	Amount
Oxygen - O2	TCD3 C,	1.52	60	0.0509
Nitrogen - N2	TCD3 C,	1.72	959	0.8048
Methane - C1	TCD3 C,	2.30	61740	92.1519
Propane - C3	FID1 A,	3.04	10230	0.1184
Iso Butane - iC4	FID1 A,	3.37	6240	0.0514
Normal Butane -nC4	FID1 A,	3.59	3787	0.0314
Iso Pentane - iC5	FID1 A,	4.24	7888	0.0501
Normal Pentane - nC5	FID1 A,	4.49	8053	0.0499
Carbon Dioxide - CO2	TCD2 B,	7.52	173	0.1461
Ethane - C2	TCD2 B,	8.35	7936	6.2877
		Total	107067	99.7427

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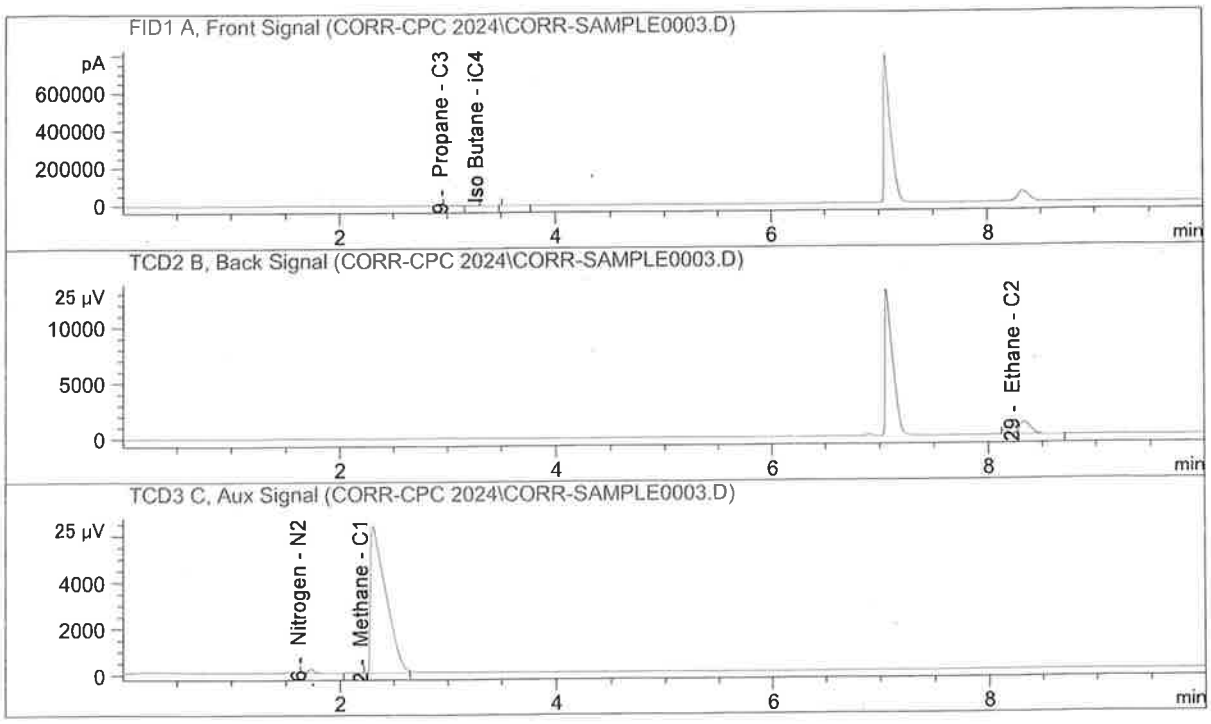
QatarEnergy LNG - South Laboratory

Method: C:\CHEM32\1\METHODS\NOV24_AGILENT6.M
File Name: C:\CHEM32\1\DATA\CORR-CPC 2024\CORR-SAMPLE0003.D

Instrument: Agilent 6
Injection Date: Tue, 5. Nov. 2024 9:49:39 AM
Lab. Tech.: ABBAS

Sample Name: CORRELATION SAMPLE
Sample Note: 760 mmHg



Name	Signal	RT(min)	Area	Amount
Oxygen - O2	TCD3 C,	1.52	0	0.0000
Nitrogen - N2	TCD3 C,	1.72	620	0.5202
Methane - C1	TCD3 C,	2.30	62087	92.6688
Propane - C3	FID1 A,	3.04	7308	0.0846
Iso Butane - iC4	FID1 A,	3.37	217	0.0018
Normal Butane -nC4	FID1 A,	3.59	340	0.0028
Iso Pentane - iC5	FID1 A,	4.24	0	0.0000
Normal Pentane - nC5	FID1 A,	4.49	0	0.0000
Carbon Dioxide - CO2	TCD2 B,	7.52	0	0.0000
Ethane - C2	TCD2 B,	8.35	8193	6.4909
		Total	78764	99.7691

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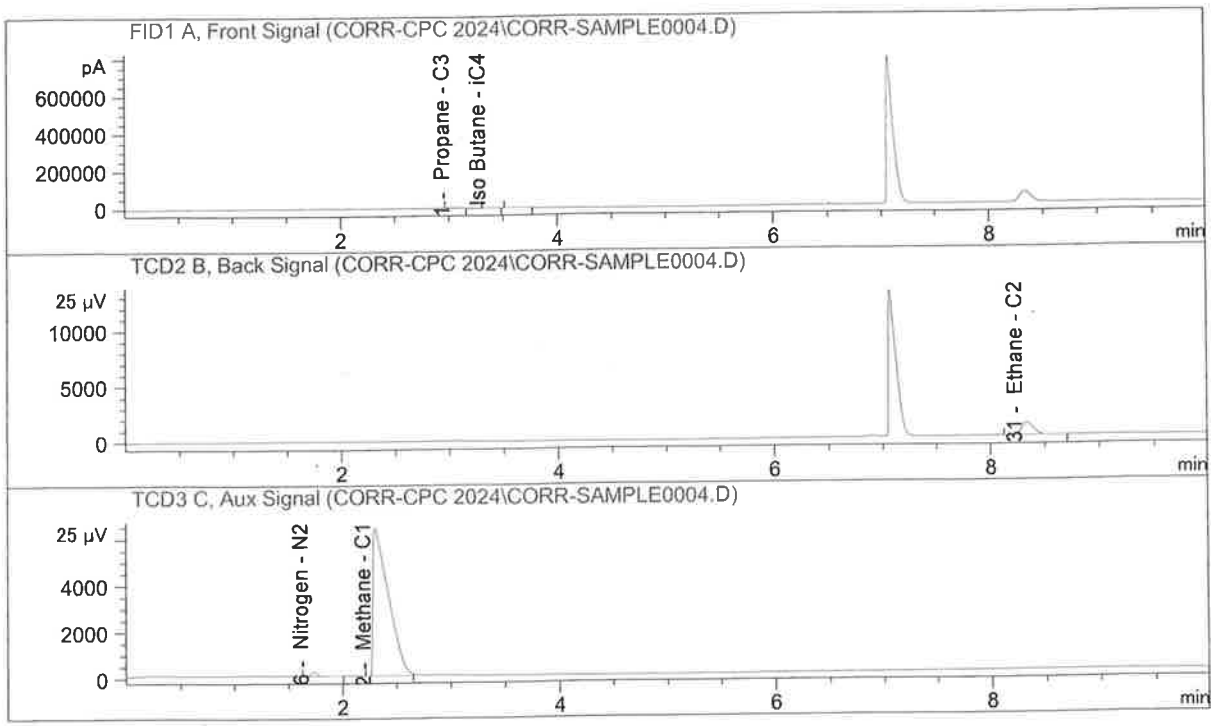
QatarEnergy LNG - South Laboratory

Method: C:\CHEM32\1\METHODS\NOV24_AGILENT6.M
File Name: C:\CHEM32\1\DATA\CORR-CPC 2024\CORR-SAMPLE0004.D

Instrument: Agilent 6
Injection Date: Tue, 5. Nov. 2024 10:00:59 AM
Lab. Tech.: ABBAS

Sample Name: CORRELATION SAMPLE
Sample Note: 760 mmHg



Name	Signal	RT(min)	Area	Amount
Oxygen - O2	TCD3 C,	1.52	0	0.0000
Nitrogen - N2	TCD3 C,	1.72	620	0.5202
Methane - C1	TCD3 C,	2.30	62015	92.5616
Propane - C3	FID1 A,	3.04	7305	0.0846
Iso Butane - iC4	FID1 A,	3.37	215	0.0018
Normal Butane -nC4	FID1 A,	3.59	339	0.0028
Iso Pentane - iC5	FID1 A,	4.24	0	0.0000
Normal Pentane - nC5	FID1 A,	4.49	0	0.0000
Carbon Dioxide - CO2	TCD2 B,	7.52	0	0.0000
Ethane - C2	TCD2 B,	8.35	8185	6.4851
		Total	78679	99.6561

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Global LNG

CORRELATION SHEET FOR LNG CERTIFICATION

SAMPLE	REFERENCE STANDARD GAS	CORRELATION TEST SAMPLE
CYLINDER No.	5710175	DA8102
SQC SAMPLE TYPE	NOT APPLICABLE	QatarEnergy LNG - CPC CORRELATION SAMPLE 2024
LOCATION	QatarEnergy LNG - SOUTH LAB. / AGILENT - SYSTEM-7	QatarEnergy LNG - SOUTH LAB. / AGILENT - SYSTEM-7
GC MODEL	AGILENT 7890B	AGILENT 7890B
GC SERIAL No.	US 13493020	US 13493020
DATE CERTIFIED	12-May-22	5-Nov-24
SAMPLED BY	SCOTT SPECIALTY GASES	QatarEnergy LNG - SOUTH LAB
ANALYSIS DATE	5-Nov-24	5-Nov-24
ANALYST	MOHAMMED ABBAS	MOHAMMED ABBAS
ANALYSIS METHOD	GC, GPA 2261	GC, GPA 2261

COMPONENT	CERTIFICATE	COUNT 1			COUNT 2			DIFF	AVERAGE	COUNT 1			COUNT 2			DIFF	TEST RESULT (MOL%)	
	MOL%	SAMPLE PRESSURE	PEAK AREA	RESPONSE FACTOR	SAMPLE PRESSURE	PEAK AREA	RESPONSE FACTOR	RESPONSE FACTOR	RESPONSE FACTOR	SAMPLE PRESSURE	PEAK AREA	MOL%	SAMPLE PRESSURE	PEAK AREA	MOL%	MOL%	UNORMALIZED	REPORTED VALUE
	A	B(mmHg)	C	D=A*B/C	E(mmHg)	F	G=A*E/F	H=(D-G)*100/I	I=(D+G)/2	J	K	L=I*K/J	M	N	O=I*N/M	P=(L-O)*100/Q	Q=(L+O)/2	
O2	0.0501	760	52	0.7322308	760	52	0.7322308	0.00	0.732230769	760	0	**0.0000000**	760	0	**0.0000000**	-	**0.000**	0.000
N2	0.8000	760	850	0.7152941	760	850	0.7152941	0.00	0.715294118	760	551	**0.5185882**	760	551	**0.5185882**	0.00	**0.519**	0.520
CH4	92.3300	760	71090	0.9870699	760	71090	0.9870699	0.00	0.987069911	760	71131	**92.3832498**	760	71105	**92.3494816**	0.04	**92.366**	92.800
C3H8	0.1180	760	12229	0.0073334	760	12208	0.0073460	0.17	0.007339695	760	8969	**0.0866181**	760	8970	**0.0866277**	0.01	**0.087**	0.090
I-C4H10	0.0513	760	6875	0.0056710	760	6866	0.0056784	0.13	0.005674699	760	258	**0.0019264**	760	260	**0.0019413**	0.75	**0.002**	0.000
N-C4H10	0.0314	760	4198	0.0056792	760	4192	0.0056873	0.14	0.005683245	760	376	**0.0028117**	760	377	**0.0028192**	0.25	**0.003**	0.000
I-C5H12	0.0500	760	8479	0.0044817	760	8471	0.0044859	0.09	0.004483777	760	0	**0.0000000**	760	0	**0.0000000**	-	**0.000**	0.000
N-C5H12	0.0499	760	8569	0.0044257	760	8561	0.0044299	0.09	0.004427788	760	0	**0.0000000**	760	0	**0.0000000**	-	**0.000**	0.000
CO2	0.1480	760	195	0.5768205	760	195	0.5768205	0.00	0.576820513	760	0	**0.0000000**	760	0	**0.0000000**	-	**0.000**	0.000
C2H6	6.3700	760	8613	0.5620806	760	8606	0.5625378	0.08	0.562309170	760	8862	**6.5568209**	760	8862	**6.5568209**	0.00	**6.557**	6.590
C6H14+	0.0000	760	0	0.0000000	760	0	0.0000000	0.00	0.000000000	760	0	**0.0000000**	760	0	**0.0000000**	-	**0.000**	0.000
TOTAL	99.9987		**121150**			**121091**					**90147**	**99.5500151**		**90125**	**99.5162790**		**99.534**	100.000

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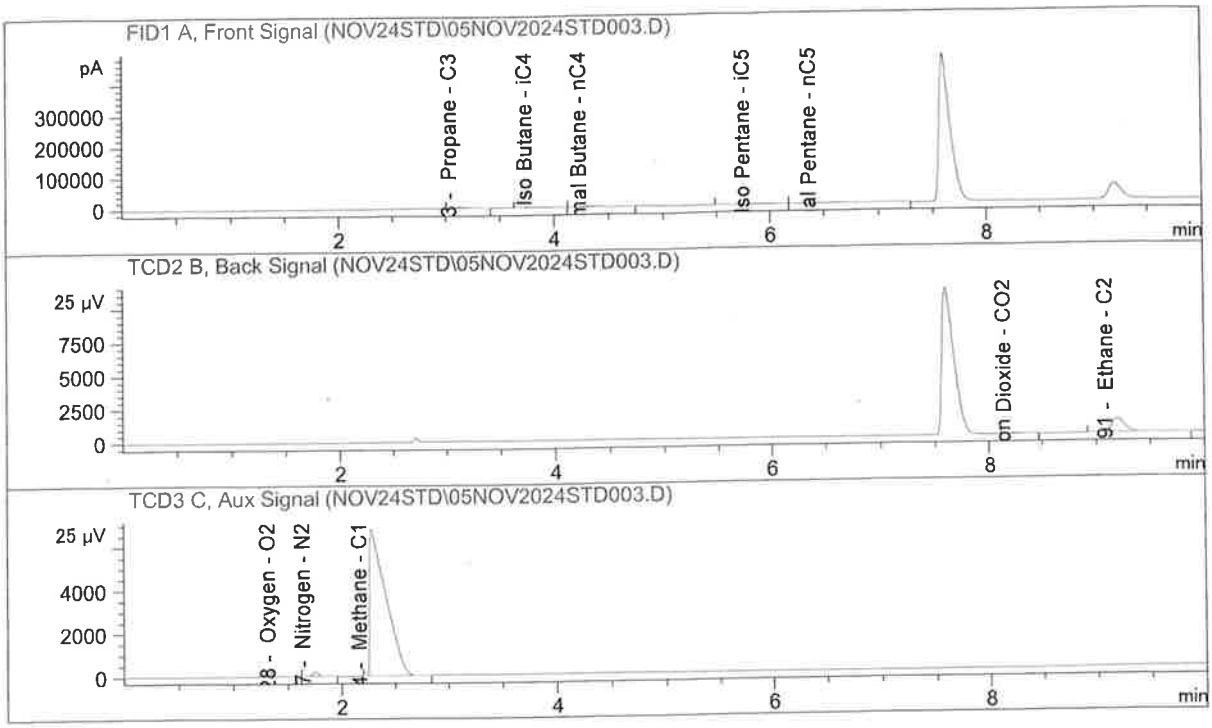
QatarEnergy LNG - South Laboratory

Method: C:\CHEM32\1\METHODS\NOV24_AGILENT7.M
File Name: C:\CHEM32\1\DATA\NOV24STD\05NOV2024STD003.D

Instrument: Agilent 7
Injection Date: Tue, 5. Nov. 2024 6:59:20 AM
Lab. Tech.: ABBAS

Sample Name: STANDARD
Sample Note: 760 mmHg



Name	Signal	RT(min)	Area	Amount
Oxygen - O2	TCD3 C,	1.43	52	0.0502
Nitrogen - N2	TCD3 C,	1.75	850	0.8000
Methane - C1	TCD3 C,	2.27	71090	92.3163
Propane - C3	FID1 A,	3.14	12229	0.1180
Iso Butane - iC4	FID1 A,	3.84	6875	0.0513
Normal Butane - nC4	FID1 A,	4.33	4198	0.0314
Iso Pentane - iC5	FID1 A,	5.85	8479	0.0500
Normal Pentane - nC5	FID1 A,	6.47	8569	0.0499
Carbon Dioxide - CO2	TCD2 B,	8.24	195	0.1482
Ethane - C2	TCD2 B,	9.19	8613	6.3700
		Total	121150	99.9852

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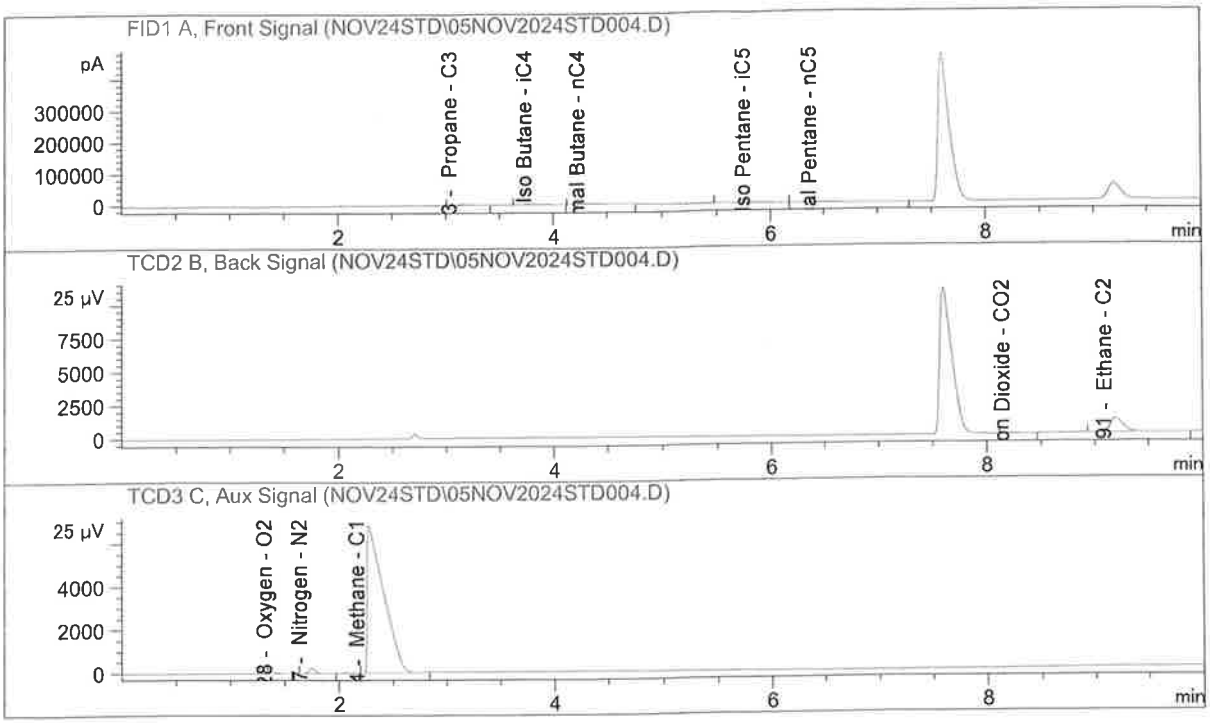
QatarEnergy LNG - South Laboratory

Method: C:\CHEM32\1\METHODS\NOV24_AGILENT7.M
File Name: C:\CHEM32\1\DATA\NOV24STD\05NOV2024STD004.D

Instrument: Agilent 7
Injection Date: Tue, 5. Nov. 2024 7:11:43 AM
Lab. Tech.: ABBAS

Sample Name: STANDARD
Sample Note: 760 mmHg



Name	Signal	RT(min)	Area	Amount
Oxygen - O2	TCD3 C,	1.43	52	0.0500
Nitrogen - N2	TCD3 C,	1.75	850	0.7996
Methane - C1	TCD3 C,	2.27	71090	92.3170
Propane - C3	FID1 A,	3.14	12208	0.1178
Iso Butane - iC4	FID1 A,	3.84	6866	0.0512
Normal Butane - nC4	FID1 A,	4.33	4192	0.0313
Iso Pentane - iC5	FID1 A,	5.85	8471	0.0500
Normal Pentane - nC5	FID1 A,	6.47	8561	0.0499
Carbon Dioxide - CO2	TCD2 B,	8.24	195	0.1480
Ethane - C2	TCD2 B,	9.19	8606	6.3648
		Total	121089	99.9795

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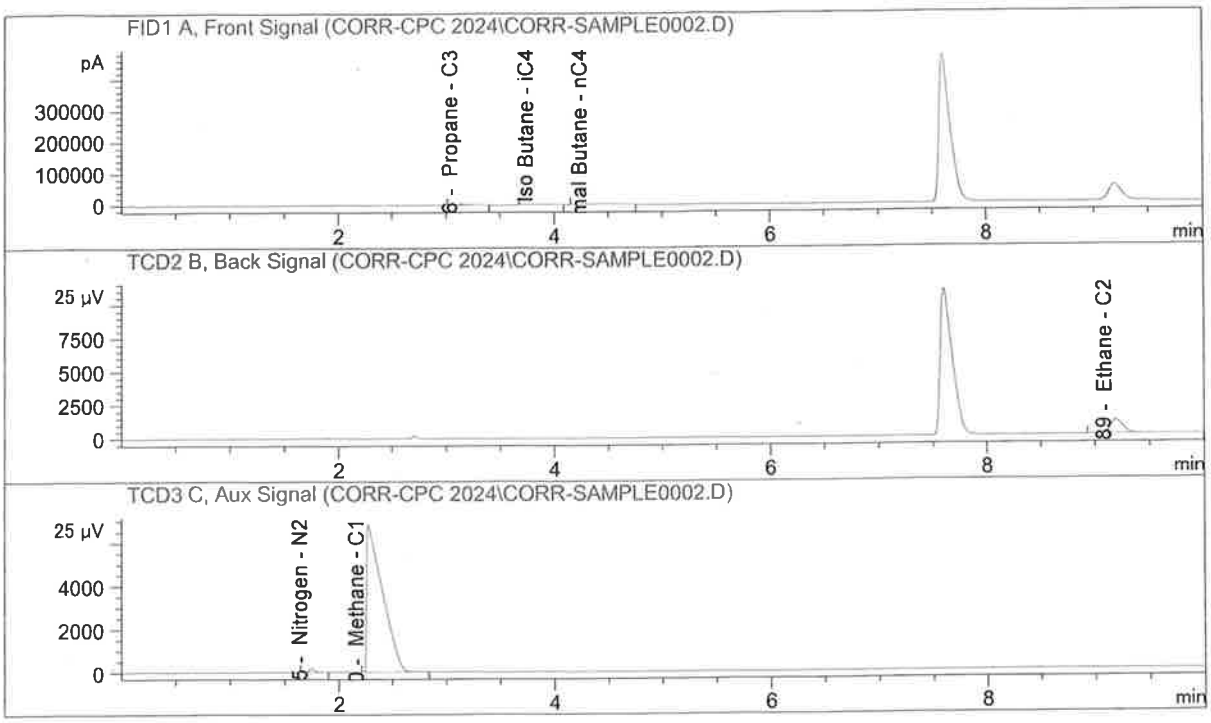
QatarEnergy LNG - South Laboratory

Method: C:\CHEM32\1\METHODS\NOV24_AGILENT7.M
File Name: C:\CHEM32\1\DATA\CORR-CPC 2024\CORR-SAMPLE0002.D

Instrument: Agilent 7
Injection Date: Tue, 5. Nov. 2024 9:34:52 AM
Lab. Tech.: ABBAS

Sample Name: CORRELATION SAMPLE
Sample Note: 760 mmHg



Name	Signal	RT(min)	Area	Amount
Oxygen - O2	TCD3 C,	1.43	0	0.0000
Nitrogen - N2	TCD3 C,	1.75	551	0.5181
Methane - C1	TCD3 C,	2.27	71131	92.3699
Propane - C3	FID1 A,	3.14	8969	0.0865
Iso Butane - iC4	FID1 A,	3.84	258	0.0019
Normal Butane - nC4	FID1 A,	4.33	376	0.0028
Iso Pentane - iC5	FID1 A,	5.85	0	0.0000
Normal Pentane - nC5	FID1 A,	6.47	0	0.0000
Carbon Dioxide - CO2	TCD2 B,	8.24	0	0.0000
Ethane - C2	TCD2 B,	9.19	8862	6.5543
		Total	90148	99.5337

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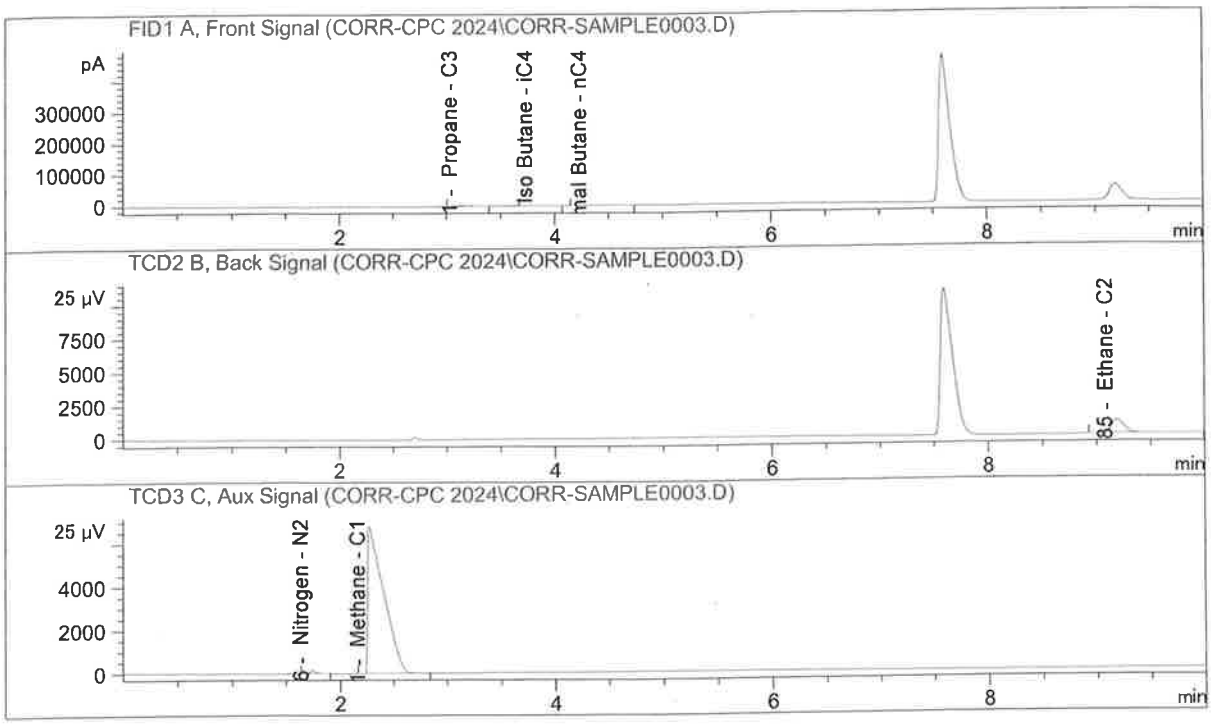
QatarEnergy LNG - South Laboratory

Method: C:\CHEM32\1\METHODS\NOV24_AGILENT7.M
File Name: C:\CHEM32\1\DATA\CORR-CPC 2024\CORR-SAMPLE0003.D

Instrument: Agilent 7
Injection Date: Tue, 5. Nov. 2024 9:46:02 AM
Lab. Tech.: ABBAS

Sample Name: CORRELATION SAMPLE
Sample Note: 760 mmHg



Name	Signal	RT(min)	Area	Amount
Oxygen - O2	TCD3 C,	1.43	0	0.0000
Nitrogen - N2	TCD3 C,	1.75	551	0.5181
Methane - C1	TCD3 C,	2.27	71105	92.3364
Propane - C3	FID1 A,	3.14	8970	0.0866
Iso Butane - iC4	FID1 A,	3.84	260	0.0019
Normal Butane - nC4	FID1 A,	4.33	377	0.0028
Iso Pentane - iC5	FID1 A,	5.85	0	0.0000
Normal Pentane - nC5	FID1 A,	6.47	0	0.0000
Carbon Dioxide - CO2	TCD2 B,	8.24	0	0.0000
Ethane - C2	TCD2 B,	9.19	8862	6.5545
		Total	90126	99.5004

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Global LNG

CORRELATION SHEET FOR LNG CERTIFICATION

SAMPLE	REFERENCE STANDARD GAS	CORRELATION TEST SAMPLE
CYLINDER No.	5710175	DA8102
SQC SAMPLE TYPE	NOT APPLICABLE	QatarEnergy LNG - CPC CORRELATION SAMPLE 2024
LOCATION	QatarEnergy LNG - SOUTH LAB. / AGILENT - SYSTEM-8	QatarEnergy LNG - SOUTH LAB. / AGILENT - SYSTEM-8
GC MODEL	AGILENT 7890B	AGILENT 7890B
GC SERIAL No.	US 13503014	US 13503014
DATE CERTIFIED	12-May-22	5-Nov-24
SAMPLED BY	SCOTT SPECIALTY GASES	QatarEnergy LNG - SOUTH LAB
ANALYSIS DATE	5-Nov-24	5-Nov-24
ANALYST	MOHAMMED ABBAS	MOHAMMED ABBAS
ANALYSIS METHOD	GC, GPA 2261	GC, GPA 2261

COMPONENT	CERTIFICATE	COUNT 1			COUNT 2			DIFF	AVERAGE	COUNT 1			COUNT 2			DIFF	TEST RESULT (MOL%)	
	MOL%	SAMPLE PRESSURE	PEAK AREA	RESPONSE FACTOR	SAMPLE PRESSURE	PEAK AREA	RESPONSE FACTOR	RESPONSE FACTOR	RESPONSE FACTOR	SAMPLE PRESSURE	PEAK AREA	MOL%	SAMPLE PRESSURE	PEAK AREA	MOL%	MOL%	UNORMALIZED	REPORTED VALUE
	A	B(mmHg)	C	D=A*B/C	E(mmHg)	F	G=A*E/F	H=(D-G)*100/I	I=(D+G)/2	J	K	L=I*K/J	M	N	O=I*N/M	P=(L-O)*100/Q	Q=(L+O)/2	
O2	0.0501	760	54	0.7051111	760	53	0.7184151	1.87	0.711763103	760	0	**0.0000000**	760	0	**0.0000000**	-	**0.000**	0.000
N2	0.8000	760	855	0.7111111	760	857	0.7094516	0.23	0.710281343	760	562	**0.5252344**	760	562	**0.5252344**	0.00	**0.525**	0.520
CH4	92.3300	760	71155	0.9861682	760	71186	0.9857388	0.04	0.985953497	760	71563	**92.8391975**	760	71611	**92.9014682**	0.07	**92.870**	92.830
C3H8	0.1180	760	10705	0.0083774	760	10726	0.0083610	0.20	0.008369193	760	7863	**0.0865881**	760	7873	**0.0866982**	0.13	**0.087**	0.090
I-C4H10	0.0513	760	6196	0.0062924	760	6203	0.0062853	0.11	0.006288896	760	230	**0.0019032**	760	230	**0.0019032**	0.00	**0.002**	0.000
N-C4H10	0.0314	760	3764	0.0063340	760	3771	0.0063222	0.19	0.006328128	760	337	**0.0028060**	760	338	**0.0028144**	0.28	**0.003**	0.000
I-C5H12	0.0500	760	7551	0.0050324	760	7557	0.0050285	0.08	0.005030448	760	0	**0.0000000**	760	0	**0.0000000**	-	**0.000**	0.000
N-C5H12	0.0499	760	7564	0.0050137	760	7573	0.0050078	0.12	0.005010770	760	0	**0.0000000**	760	0	**0.0000000**	-	**0.000**	0.000
CO2	0.1480	760	152	0.7400000	760	152	0.7400000	0.00	0.740000000	760	0	**0.0000000**	760	0	**0.0000000**	-	**0.000**	0.000
C2H6	6.3700	760	8384	0.5774332	760	8389	0.5770890	0.06	0.577261126	760	8641	**6.5633071**	760	8644	**6.5655858**	0.03	**6.564**	6.560
C6H14+	0.0000	760	0	0.0000000	760	0	0.0000000	0.00	0.000000000	760	0	**0.0000000**	760	0	**0.0000000**	-	**0.000**	0.000
TOTAL	99.9987		**116380**			**116467**					**89196**	**100.0190363**		**89258**	**100.0837041**		**100.051**	100.000

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QatarEnergy LNG - South Laboratory

Method: C:\CHEM32\1\METHODS\NOV24_AGILENT8.M
File Name: C:\CHEM32\1\DATA\NOV24STD\05NOV2024STD003.D

Instrument: Agilent 8
Injection Date: Tue, 5. Nov. 2024 6:56:27 AM
Lab. Tech.: ABBAS

Sample Name: STANDARD
Sample Note: 760 mmHg

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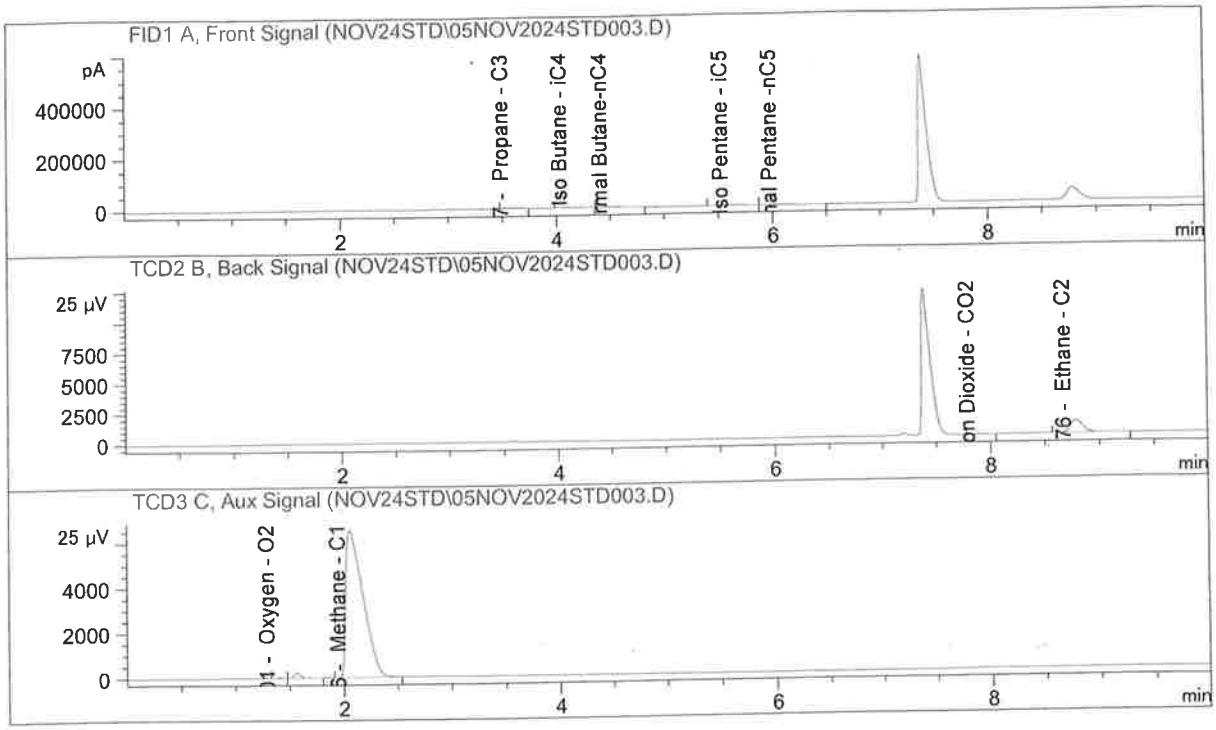

Name	Signal	RT(min)	Area	Amount
Oxygen - O2	TCD3 C,	1.41	54	0.0507
Nitrogen - N2	TCD3 C,	1.57	855	0.7963
Methane - C1	TCD3 C,	2.06	71155	91.9965
Propane - C3	FID1 A,	3.59	10705	0.1182
Iso Butane - iC4	FID1 A,	4.13	6196	0.0515
Normal Butane-nC4	FID1 A,	4.51	3764	0.0315
Iso Pentane - iC5	FID1 A,	5.63	7551	0.0503
Normal Pentane -nC5	FID1 A,	6.08	7564	0.0502
Carbon Dioxide - CO2	TCD2 B,	7.89	152	0.1481
Ethane - C2	TCD2 B,	8.76	8384	6.4271
		Total	116380	99.7204

Wen

Intertek
Global LNG

QatarEnergy LNG - South Laboratory

Method: C:\CHEM32\1\METHODS\NOV24_AGILENT8.M
File Name: C:\CHEM32\1\DATA\NOV24STD\05NOV2024STD004.D

Instrument: Agilent 8
Injection Date: Tue, 5. Nov. 2024 7:08:39 AM
Lab. Tech.: ABBAS

Sample Name: STANDARD
Sample Note: 760 mmHg

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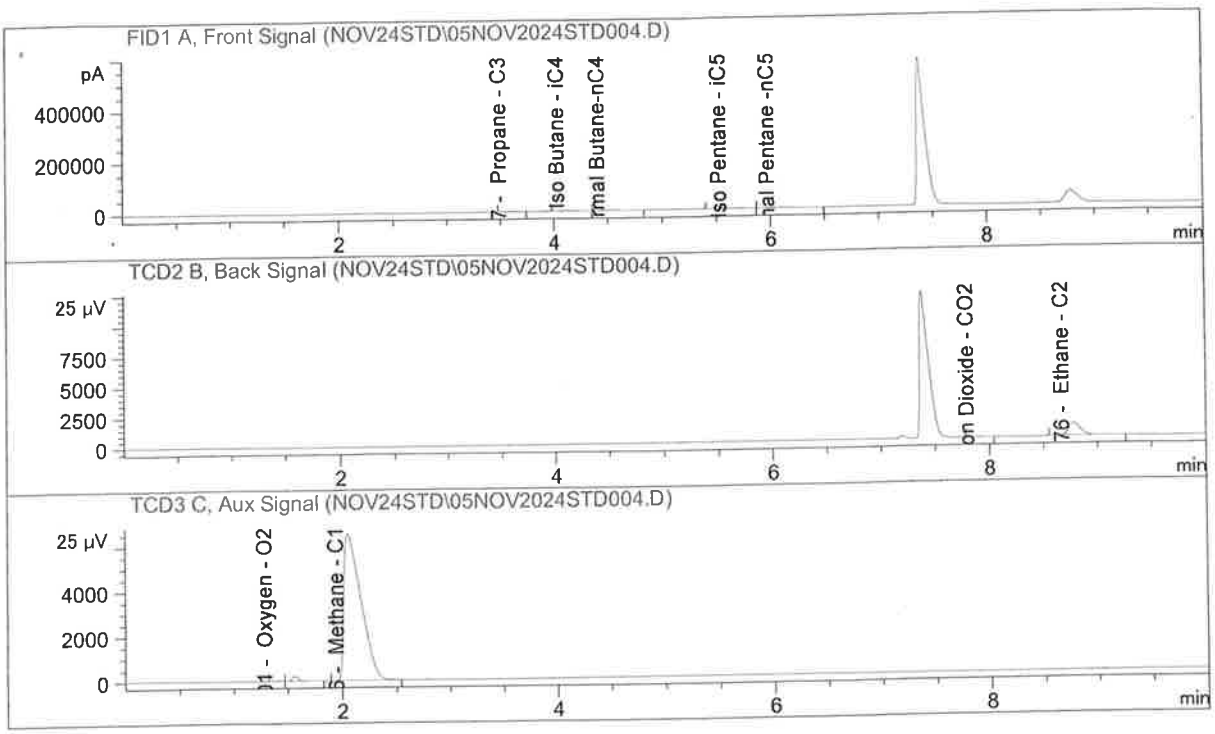

Name	Signal	RT(min)	Area	Amount
Oxygen - O2	TCD3 C,	1.41	53	0.0499
Nitrogen - N2	TCD3 C,	1.57	857	0.7983
Methane - C1	TCD3 C,	2.06	71186	92.0358
Propane - C3	FID1 A,	3.59	10726	0.1184
Iso Butane - iC4	FID1 A,	4.13	6203	0.0516
Normal Butane-nC4	FID1 A,	4.51	3771	0.0316
Iso Pentane - iC5	FID1 A,	5.63	7557	0.0503
Normal Pentane -nC5	FID1 A,	6.08	7573	0.0502
Carbon Dioxide - CO2	TCD2 B,	7.89	152	0.1484
Ethane - C2	TCD2 B,	8.76	8389	6.4310
		Total	116466	99.7656

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Global LNG

QatarEnergy LNG - South Laboratory

Method: C:\CHEM32\1\METHODS\NOV24_AGILENT8.M
File Name: C:\CHEM32\1\DATA\CORR-CPC 2024\CORR-SAMPLE0003.D

Instrument: Agilent 8
Injection Date: Tue, 5. Nov. 2024 9:42:20 AM
Lab. Tech.: ABBAS

Sample Name: CORRELATION SAMPLE
Sample Note: 760 mmHg

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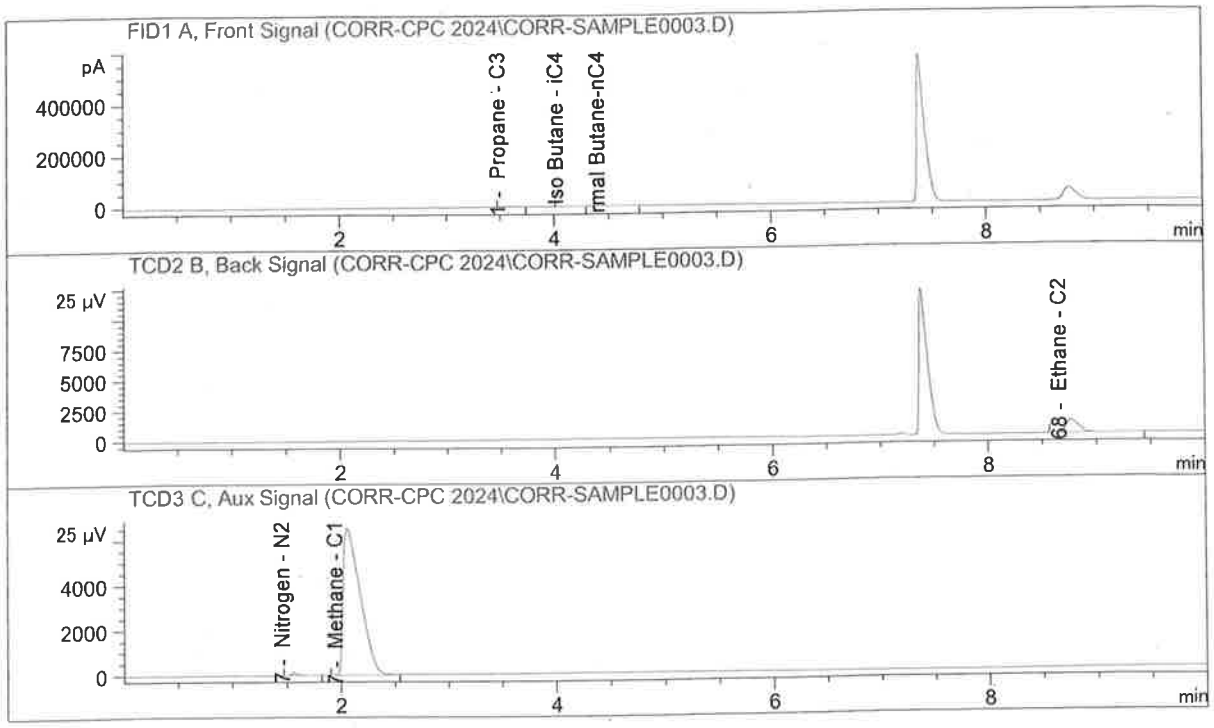

Name	Signal	RT(min)	Area	Amount
Oxygen - O2	TCD3 C,	1.41	0	0.0000
Nitrogen - N2	TCD3 C,	1.57	562	0.5232
Methane - C1	TCD3 C,	2.06	71563	92.5236
Propane - C3	FID1 A,	3.59	7863	0.0868
Iso Butane - iC4	FID1 A,	4.13	230	0.0019
Normal Butane-nC4	FID1 A,	4.51	337	0.0028
Iso Pentane - iC5	FID1 A,	5.63	0	0.0000
Normal Pentane -nC5	FID1 A,	6.08	0	0.0000
Carbon Dioxide - CO2	TCD2 B,	7.89	0	0.0000
Ethane - C2	TCD2 B,	8.76	8641	6.6240
		Total	89196	99.7624

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QatarEnergy LNG - South Laboratory

Method: C:\CHEM32\1\METHODS\NOV24_AGILENT8.M
File Name: C:\CHEM32\1\DATA\CORR-CPC 2024\CORR-SAMPLE0004.D

Instrument: Agilent 8
Injection Date: Tue, 5. Nov. 2024 9:53:22 AM
Lab. Tech.: ABBAS

Sample Name: CORRELATION SAMPLE
Sample Note: 760 mmHg

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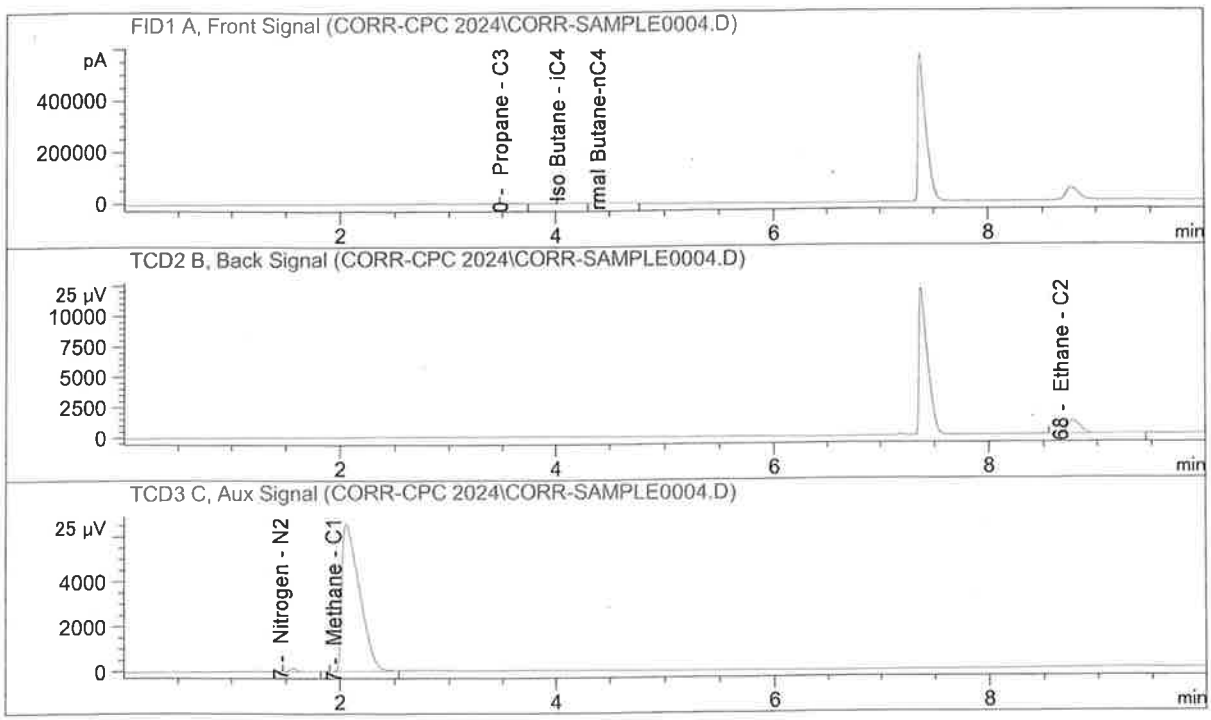

Name	Signal	RT(min)	Area	Amount
Oxygen - O2	TCD3 C,	1.41	0	0.0000
Nitrogen - N2	TCD3 C,	1.57	562	0.5230
Methane - C1	TCD3 C,	2.06	71611	92.5860
Propane - C3	FID1 A,	3.59	7873	0.0869
Iso Butane - iC4	FID1 A,	4.13	230	0.0019
Normal Butane-nC4	FID1 A,	4.51	338	0.0028
Iso Pentane - iC5	FID1 A,	5.63	0	0.0000
Normal Pentane -nC5	FID1 A,	6.08	0	0.0000
Carbon Dioxide - CO2	TCD2 B,	7.89	0	0.0000
Ethane - C2	TCD2 B,	8.76	8644	6.6264
		Total	89257	99.8271

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Scott
specialty gases

CALIBRATION
RvA K 064

ISO/IEC 17025 - Calibration Certificate
Calibrated gas mixture

Certificate Number: 20-31690-010-5710175 Rev-00

Customer:
Name: QATARGAS OPERATING COMPANY LTD.
ATTN: (FOR QATAR LIQ.GAS.CO.LTD
Adress: X32 SOUTH MAIN WARFHOUSE
RAS LAFFAN IND. CITY
STATE OF QATAR

Product: Calibrated gas mixture intended as calibration standard.

Cylinder number: 5710175
Cylinder pressure: 15 MPa
Cylinder size: 10 Liter
Valve connection: CGA-350

Calibration method: The composition is determined in accordance with ISO 6143.

Traceability: The measurements have been executed using standards for which the traceability to (inter)national standards has been demonstrated towards the RvA.

Calibration result:

Component	Mole fraction mol/mol	Expanded uncertainty (k=2) mol/mol	Calibration date
Methane	92,33 x 10^{-2}	0,09 x 10^{-2}	12 May 2022
Ethane	6,37 x 10^{-2}	0,07 x 10^{-2}	12 May 2022
Propane	0,1180 x 10^{-2}	0,0024 x 10^{-2}	12 May 2022
Isobutane	513 x 10^{-6}	5 x 10^{-6}	12 May 2022
Butane	313,7 x 10^{-6}	3,1 x 10^{-6}	12 May 2022
Isopentane	500 x 10^{-6}	5 x 10^{-6}	12 May 2022
Pentane	499 x 10^{-6}	5 x 10^{-6}	12 May 2022
Carbon Dioxide	0,1480 x 10^{-2}	0,0044 x 10^{-2}	12 May 2022
Nitrogen *	0,800 x 10^{-2}	0,008 x 10^{-2}	10 May 2022
Oxygen *	0,0501 x 10^{-2}	0,0010 x 10^{-2}	10 May 2022

* Outside scope of accreditation.

Uncertainty: The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k = 2, which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty of measurement has been determined in accordance with Publication EA-4/02.

Product handling: Consult ISO 16664 for product handling guidelines.
Minimum utilisation pressure is 0,5 MPa.
Use and store the gas cylinder between -10°C and 40°C.

Stability: Scott Specialty Gases Netherlands B.V. stability studies of similar products have demonstrated stability for 36 months.

Scott Specialty Gases Netherlands B.V.
Calibration Laboratory
Takkebijsters 48
4817 BL Breda, The Netherlands
ExpertiseCenter.North-West@airliquide.com
Chamber of Commerce Number: 20134663

Scott
specialty gases

CALIBRATION
RvA K 064

ISO/IEC 17025 - Calibration Certificate
Calibrated gas mixture

Certificate Number: 20-31690-010-5710175 Rev-00

Comments: THE NUMBER OF DIGITS USED TO REFLECT THE ACTUAL CONCENTRATION(S) IS INTENDED TO ACCOMMODATE THE CUSTOMER, AND MAY EXCEED THE ACTUAL AMOUNT OF SIGNIFICANT DIGITS.

THE FOLLOWING COMPONENTS ARE CERTIFIED ACCORDING TO ISO 9001: NITROGEN, OXYGEN

Customer information: QATARAGAS MATERIAL NO.: 1535496
QATARGAS PO NO: 00003
QATARGAS CONTRACT REF. 460001355 ITEM 00048
DESCRIPTION: GAS,NATURAL,LEAN LNG,CRM,W/CYLINDER

Issued: Breda, 24 May 2022

Name: H.A.D. Van Vliet
Function: Lab Analyst

Scott Specialty Gases Netherlands B.V.
Calibration Laboratory
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ExpertiseCenter.North-West@airliquide.com
Chamber of Commerce Number: 20134663