6.4 Mud report

36" hole section

This section was drilled to 206m utiizing seawater as the primary drilling fluid. High viscous bentonite pills, each $8m^3$ was pumped as required for additional hole cleaning. At TD the hole was displaced with $65m^3$ betonite mud prior to making a wiper trip. A further $60m^3$ were left in the hole prior the running casing.

26" hole section

This section was drilled with a prehydrated bentonite/seawater system. A drilling break occurred at 492m and the well flowed as a result of a shallow, very limited gas pocket. When starting circulating after the kick, lost returns were experienced. Losses were reduced with LCM and efficiently cured by an Econolite pill. Cement plug was set and dressed off to 480m. The hole was opened up to 26" and casing run.

22" hole section

As a consequence of the shallow gas problems, a decision was taken to set a 16" liner at the orginal 20" csg. shoe. A KCL/polymer was utilized for this part. 10 bbls/hr loss was experienced just after displacement but was efficiently cured by a LCM-pill. Through the section, the mud weight was maintained at 1.16 rd and the K+ concentration at 35-42 ppb. One extra wiper trip had to be made due to logs being held up inside casing. Then the hole was opened up to 22" and the liner was set from 273-625 without problems.

17 1/2" hole section

In this section the same KCL-mud as in the previous section was used. However as the depth increased the mudweight was increased to 1,25 rd to combat the tight zones. The 14 3/4" hole was logged, opened up to 17 1/2" hole and casing was run.

12 1/4" hole section

This section was drilled with a NaCl/polymer fluid with the chlorides controlled in the 60 000 ppm range in order to provide an environment suitable for log interpretation. The drilling was reasonably troublefree with a few minor mudproblems down to 2906 with a intermediate log run at 2268. At 2906 the hole was logged and then plugged and abondoned.

(((
(ooo)
Norsk
Hydro

Daily mud properties

System : Boredata Sandnes
Well: 16/4-1
Mud Contractor: ANCHOR

..Date..
19850625

3

Date	Mid depth (m)	Mud dens. (r.d)	PV cps	YP mPa	GEL 0 mPa	GEL 10 mPa	Ph	100 psi (cc)	HP/HT (cc)	Cl- inn/out mg/l	Alkalinity Pf	Alkalinity Pm	Alkalinity Mf	Ca++ inn/out mg/l	Oil %	Sol %	H2O %	V.G. meter at 115AF 600 rpm	300 rpm	200 rpm	100 rpm	6 rpm	3 rpm	Mud type
840905	121	1.04															100							SPUD
840906	121	1.04															100							SPUD
840907	121	1.04															100							SPUD
840908	206	1.04	5	2	1	2	7.5									.2	99.8							SPUD
840909	280	1.09															100							SPUD
840910	494	1.03															100							SEAWATER
840911	494	1.03															100							SEAWATER
840912	494	1.10															100							SEAWATER
840913	494	1.10															100							SEAWATER
840914	494																100							
840915	494																100							
840916	494																100							
840917	494																100							
840918	494																100							
840919	494																100							
840920	494																100							
840921	494	1.15	15	8	1	3	8.7	14.5			0.2		0.3		7		93							KCL/POLYMER
840922	494	1.15	17	10	1	2	9.8	14.5			0.2				7		93							KCL/POLYMER
840923	494	1.15	17	10	1	2	9.8	14.5			0.1				7		93							KCL/POLYMER
840924	497	1.15	17	10	1	2	9.6	14.5		60000	0.1				7		93							KCL/POLYMER
840925	626	1.16	16	9	1	2	9.1	15.4		52000	0.1		0.4		8		92							KCL/POLYMER
840926	626	1.15	14	9	1	2	10.1	15.2		52000	0.3		0.5		8		92							KCL/POLYMER
840927	626	1.16	14	10	1	2	8.7	15.8		62000	0.1		0.4		7		93							KCL/POLYMER
840928	626	1.16	14	11	1	2	8.2	15.6		65000			0.2		8		92							KCL/POLYMER
840929	650	1.15	15	8	1	1	10.2	17.4		62000	2.6		5.0		8		92							KCL/POLYMER
840930	712	1.16	18	10	1	1	10.2	16.8		63000	1.5		3.1		8		92							KCL/POLYMER
841001	1112	1.17	19	12	2	4	9.3	16.9		68000	0.5		1.3		9		91							KCL/POLYMER
841002	1507	1.18	18	10	1	6	8.3	18.3		65000			1.0		10		90							KCL/POLYMER
841003	1507	1.25	15	9	1	3	8.1	19.4		67000			1.0		12		88							KCL/POLYMER
841004	1602	1.30	17	10	1	6	7.9	18.9		67000			2.0		14		86							KCL/POLYMER
841005	1813	1.30	18	10	2	10	8.0	18.3		64000			2.0		15		85							KCL/POLYMER
841006	1957	1.30	19	9	1	8	8.4	19.4		70000	0.1		1.8		18		82							KCL/POLYMER
841007	2052	1.30	18	12	1	7	8.5	18.2		65000	0.1		1.4		15		85							KCL/POLYMER
841008	2052	1.30	18	9	1	4	8.2	18		64000			1.1		15		85							KCL/POLYMER
841009	2052	1.30	16	8	1	5	8.4	16.4		64000	0.1		0.9		15		85							KCL/POLYMER
841010	2052	1.30	18	9	2	3	8.6	16.0		75000	0.1		1.2		15		85							KCL/POLYMER
841011	2052	1.30	16	8	1	2	8.3	17.0		71000	0.1		1.3		15		85							KCL/POLYMER
841012	2052	1.30	16	8	1	5	8.3	19.4		72000			1.3		16		84							KCL/POLYMER
841013	2052	1.30	24	13	2	8	8.2	18.7		71000			1.0		18		82							KCL/POLYMER
841014	2052	1.31	22	12	2	6		17.9		72000					18		82							KCL/POLYMER
841015	2052	1.30	19	8	2	4	8.0	18.0		73000			1.2		18		82							KCL/POLYMER
841016	2052	1.25	9	10	3	7	10	16.8	117	57000	0.2						100							NaCl/POLYM.
841017	2056	1.23	16	8	2	4	10.8	15.8	10.2	61000	0.5				11		89							NaCl/POLYM.

Daily mud properties

System : Boredata Sandnes

Well: 16/4-1

Mud Contractor: ANCHOR

..Date..
19850625

3

Date	Mid depth (m)	Mud dens. (r.d)	PV cps	YP mPa	GEL 0 mPa	GEL 10 mPa	Ph	100 psi (cc)	HP/HT (cc)	Cl- inn/out mg/l	Alkalinity Pf	Alkalinity Pm	Alkalinity Mf	Ca++ inn/out mg/l	Oil %	Sol %	H2O %	V.G. meter at 115AF 600 rpm	300 rpm	200 rpm	100 rpm	6 rpm	3 rpm	Mud type
8410181	2161	1.20	19	10	2	3	11.5	14.8		65000	0.7					11	89							NaCl/POLYM.
8410191	2161	1.21	15	10	2	3	11.6	14.9	11.6	65000	0.7					11	89							NaCl/POLYM.
8410201	2161	1.21	16	9	2	3	11.8	15.0	11.9	65000	0.7					11	89							NaCl/POLYM.
8410211	2161	1.21	16	9	2	3	11.9	15.1	12.2	65000	0.7					11	89							NaCl/POLYM.
8410221	2161	1.20	14	5	1	2	12.5	16.8		65000	3.8		4.8			11	89							NaCl/POLYM.
8410231	2174	1.20	13	7	1	2	12.5	16.5	13.8	64000	3.7		4.7			11	89							NaCl/POLYM.
8410241	2283	1.25	20	7	1	2	12.0	17.0		64000	3.5		4.1			13	87							NaCl/POLYM.
8410251	2355	1.25	18	7	1	2	12.0	15.8		66000	1.3		2.3			13	87							NaCl/POLYM.
8410261	2404	1.25	17	8	1	1	12.0	16.0	12.4	66000	1.3		2.4			12	88							NaCl/POLYM.
8410271	2440	1.25	18	9	1	3	10.4	16.6	16.0	63000	0.5		1.1			12	88							NaCl/POLYM.
8410281	2501	1.25	20	10	1	3	9.5	16.4	14.6	63000	0.3		0.8			13	87							NaCl/POLYM.
8410291	2573	1.25	21	10	1	3	9.5	16.8	15.6	62000	0.3		0.8			13	87							NaCl/POLYM.
8410301	2588	1.25	18	10	1	3	9.5	16.7	16.0	60000	0.3		0.7			13	87							NaCl/POLYM.
8410311	2664	1.25	17	9	1	4	10.5	17.3	15.8	60000	0.6		1.3			13	87							NaCl/POLYM.
8411011	2672	1.25	20	10	1	3	10.0	17.0	16.0	60000	0.3		0.8			13	87							NaCl/POLYM.
8411021	2733	1.25	19	10	1	4	9.8	16.8		60000	0.3		0.7			13	87							NaCl/POLYM.
8411031	2795	1.25	19	8	1	4	9.9	15.9		64000	0.2		0.8			13	87							NaCl/POLYM.
8411041	2854	1.25	18	9	1	3	10.3	16.2	16.6	63000	0.3		0.8			13	87							NaCl/POLYM.
8411051	2892	1.25	25	10	2	5	10.0	16.2		62000	0.2		0.9			13	87							NaCl/POLYM.
8411061	2907	1.25	18	9	2	4	10.6	15.5	16.6	58000	0.2		0.8			13	87							NaCl/POLYM.
8411071	2909	1.25	18	9	2	3	10.4	15.9	16.8	59500	0.2		0.8			13	87							NaCl/POLYM.
8411081	2909	1.25	18	9	2	4	10.4	16.0	16.8	59000	0.2		0.7			13	87							NaCl/POLYM.
8411091	2909	1.25	15	7	1	3	10.1	16.0	16.9	59000	0.2		0.8			12	88							NaCl/POLYM.
8411101	2909	1.25	15	7	1	3	10.1	16.0	16.9	59000	0.2		0.7			12	88							NaCl/POLYM.
8411111	1902	1.25	16	9	1	2	12.0	16.2	17.0	59000	0.6		1.5			12	88							NaCl/POLYM.
8411121	1902	1.25	16	9	2	6	12.0	16.2	17.0	59000	0.6		1.5			12	88							NaCl/POLYM.

TABLE B

MUD MATERIAL CONSUMPTION

Material	Quantity	Unit/Weight
Barite	337	M/T
Bentonite	57	M/T
Caustic Soda	144	25 kg/sx
Soda Ash	267	30 kg/sx
Sodium Bicarbonate	186	50 kg/sx
Aluminium Stearate	3	25 kg/sx
KCl Mud	305	M^3
KCl Brine	238.5	M^3
KCl	2669	50 kg/sx
AA-100 HV	410	25 kg/sx
AA-100 LV	250	25 kg/sx
Anco Biovis	321	25 kg/sx
Ancomel	387	25 kg/sx
A-Oxin	2	25 L
CMC Lovis	170	25 kg/sx
XC Polymer	32	25 kg/sx
Anco - Lube	10	200 L
Drilling Detergent	3	200 L
Mica	183	25 kg/sx
Nut Plug	219	25 kg/sx
Sodium Chloride	142	50 kg/sx

Saga Petroleum a.s.

Document Id. : R-EUG-0229
Reference Code :
Date : AUGUST 1993
Revision Number :

Title

GEOCHEMICAL DATA REPORT FOR WELL 16/4-1

Authors(s)

NIGEL MILLS

Abstract

Nine samples from the cored interval in well 16/4-1 have been analysed by Iatroscan (TLC-FID).

NOT INCLUDED IN WELL TRADE.

Key Words

16/4-1, geochemistry, Iatroscan

Classification: ☐ Free ☒ Saga and partners ☐ Internal ☐ Confidential ☐ Strictly confidential

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1 Objectives

The objective of this study was to characterise the extractable hydrocarbons in nine core samples from well 16/4-1.

3 Samples and analytical scheme

Nine samples were picked from the cored interval in the well on the 7th of September 1992. All samples were analysed by Iatroscan (TLC-FID).

4 Vitrinite reflectance

No samples were analysed.

5 TOC and Rock Eval

No samples were analysed.

6 Iatroscan (TLC-FID)

Nine samples were analysed, and the results are tabulated in Table 1.

7 GC-FID

No samples were analysed.

8 GC/MS

No samples were analysed.

9 Stable carbon isotopes

No samples were analysed.

Tab. 1

SAGLAB RESULTS MANAGEMENT : EXTRACTION ANALYSIS RESULTS in mg/g Rock

Data for Well 16/4-1

Type	St.Depth	En.Depth	Weight (g)	EOM mg/g Rock	EOM mg/g TOC	Sat (mg/g)	Aro (mg/g)	NSO (mg/g)	Asph (mg/g)	Polars (mg/g)	TOC (%)	M/I
CCP	2161.50	2161.50	2.82	0.00		0.00	0.00			0.00		I
CCP	2163.50	2163.50	3.17	0.00		0.00	0.00			0.00		I
CCP	2165.50	2165.50	3.02	0.10		0.00	0.00			0.10		I
CCP	2167.50	2167.50	2.72	0.19		0.00	0.00			0.19		I
CCP	2169.50	2169.50	2.39	0.08		0.00	0.00			0.08		I
CCP	2408.35	2408.35	2.40	0.09		0.00	0.00			0.09		I
CCP	2412.60	2412.60	2.59	0.09		0.00	0.00			0.09		I
CCP	2418.70	2418.70	2.45	0.04		0.00	0.00			0.04		I
CCP	2420.60	2420.60	1.94	0.00		0.00	0.00			0.00		I
Averages this Well:				0.07	0.00	0.00	0.00	0.00	0.00	0.07	0.00	
Averages all Wells:				0.07	0.00	0.00	0.00	0.00	0.00	0.07	0.00	

9 RESULT(s) selected ..., from the following search criteria:
Nat: NOR, Well: 16/4-1, Type:
CCP, Depth between: 0.000 and
99999.990 m

L-432

.3

Eni GROUP **Norsk Agip**

Norwegian Petroleum Directorate
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Your Ref.:

Our Ref.: 99/108441/EXP/TOLO/ELLO
File: 01 11 02

Forus, February 25, 1999

GEOCHEMICAL ANALYSIS OF CORE CHIPS FROM CORE #1 - WELL 16/4-1

Please find enclosed the analysis performed on the released core chips from well 16/4-1.

We will take the opportunity to thank you for the positive co-operation regarding release of data for the North Sea Awards 1999 application.

Yours faithfully
Norsk Agip A/S

F. Conticini
Exploration Manager

Encl.

TELEFAX

from

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From:	Peter Barry Hall
Date:	16/2/99
Our ref.:	16/4-1
Pages to follow:	2

Experimental

Thermal Extraction/Pyrolysis Gas Chromatography

The instrument used for this analysis is a Varian 3400 Gas Chromatogaph interfaced to a pyrolysis oven (the pyrolyser). Up to 15 mg of whole rock sample is loaded on the pyrolyser and heated isothermally, at 300°C, for 4 min, during which time thermal extraction of the free hydrocarbons occurs (equivalent to the S1 peak of the Rock-Eval). The released gases pass to a 25 m OV1 column with a liquid nitrogen-cooled trap.

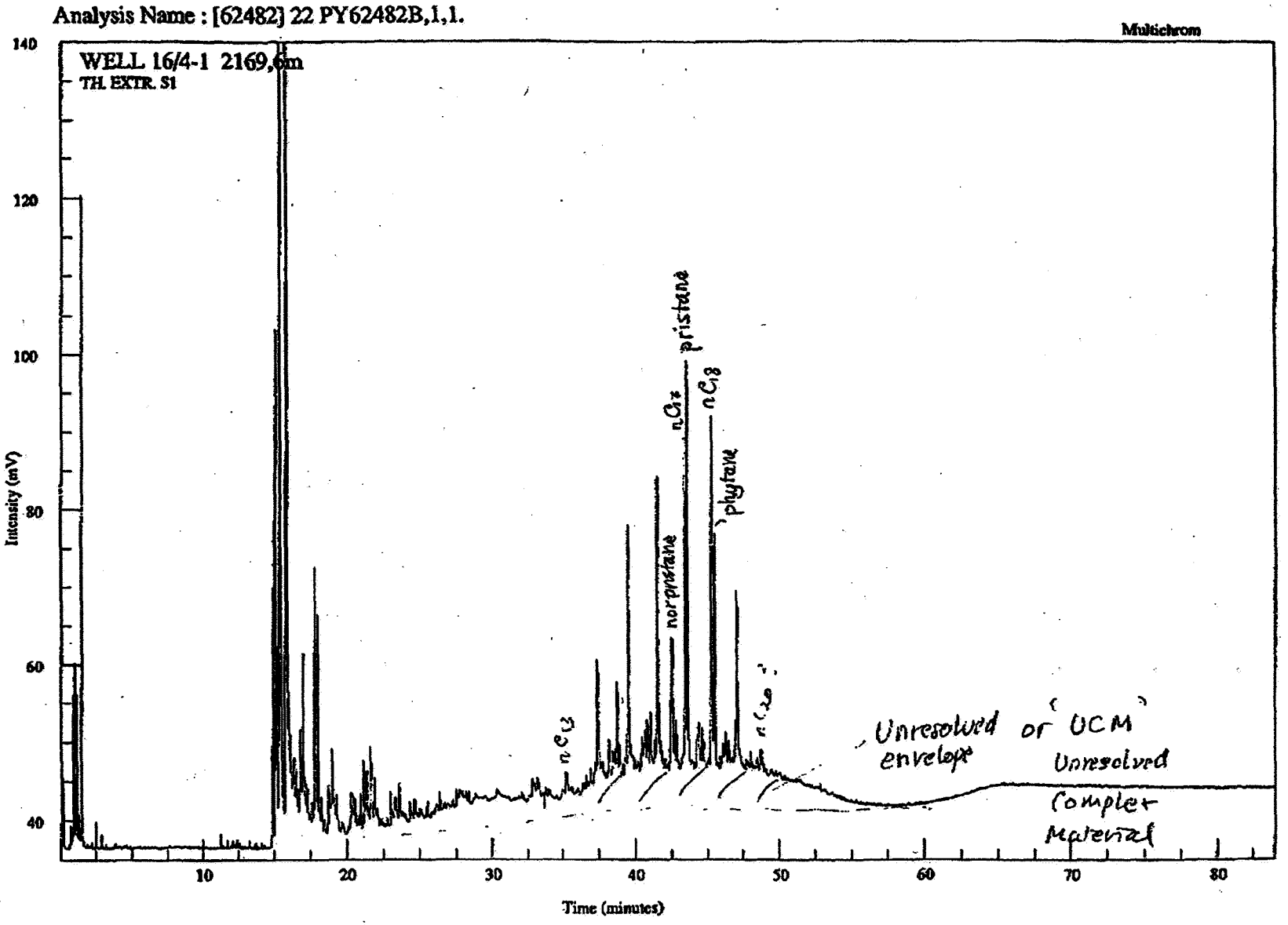
After 4 min the pyrolysis oven is temperature programmed up to 530°C, at a rate of 37°C/min, causing bound hydrocarbons to be released from the kerogen (equivalent to the S2 peak of the Rock-Eval). The released gases pass to a 25 m OV1 column with a liquid nitrogen-cooled trap.

The temperature program of the gas chromatograph oven, in which the columns are housed is -10°C to 290°C at a rate of 6°C/min. Both the columns are linked to a FID.

for Geolab Nor AS
Regards Peter B. Hall
Peter Barry Hall

13:23

16.02.99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WELL 16/4-1 2169,6m
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Intensity (mV)
Time (minutes)
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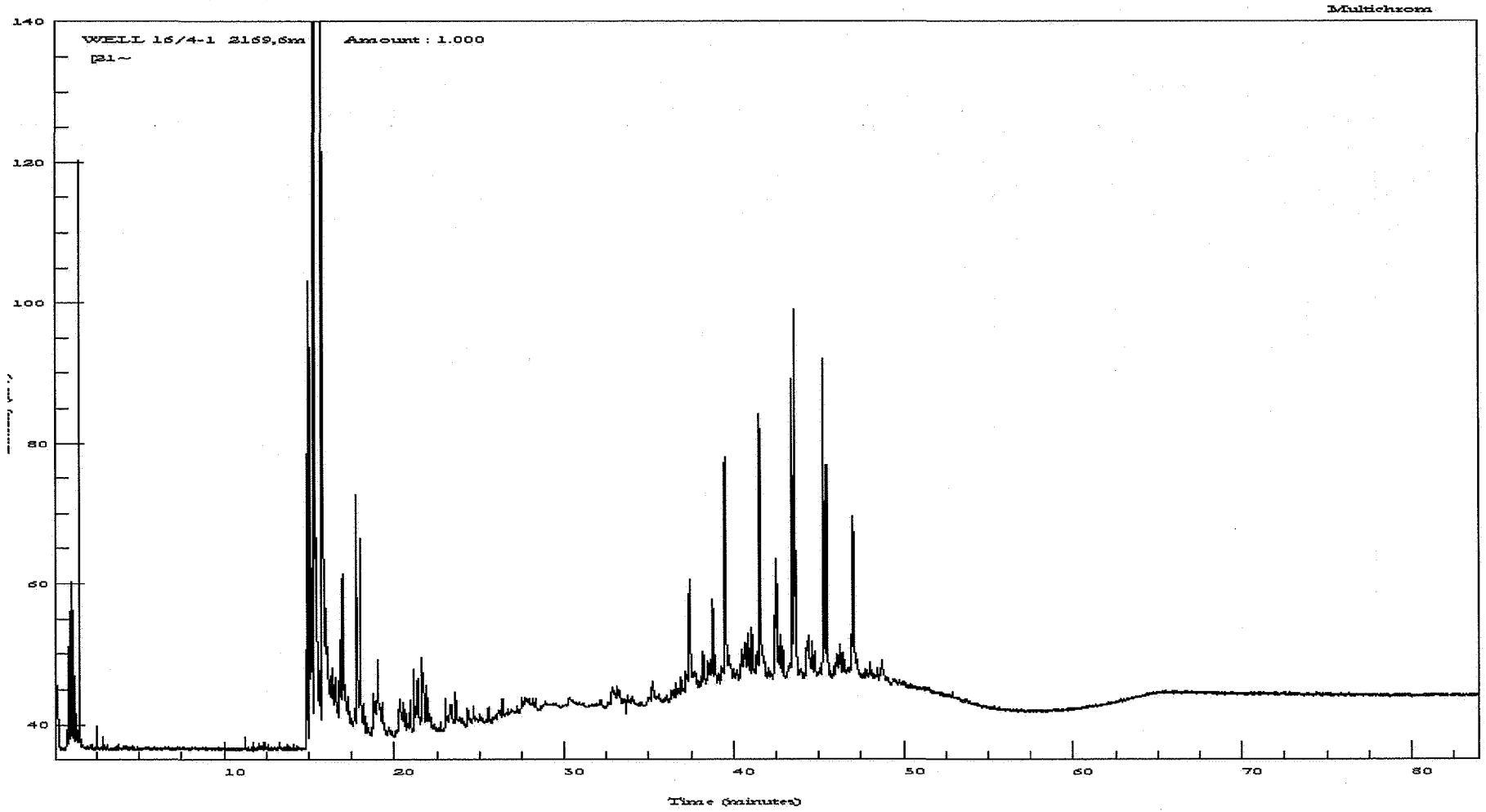
norpristane
pristane
nC18
phytane
nC20
Unresolved envelope
or UCM
Unresolved
Complex
Material

Analysis Name : [62482] 22 FY62482B,1,1.



Acquired on 12-FEB-1999 at 13:21

Reported on 17-FEB-1999 at 13:20