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REGISTHET

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## Geochemical Report for

### Well NOCS 2/5-9

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## Chapter 1

### INTRODUCTION

Well NOCS 2/5-9 was analysed on behalf of Amoco Norway Oil Company by authorization of Ray Pratt.

The well is located in the Norwegian sector of the North Sea, east of the Ekofisk field. All depths are driller's depth given relative to KB. There is a discrepancy between driller's depth and logger's depth in this well. This ranges from 3 m higher at 3100 m to 8 m higher at TD.

Samples (cuttings) were supplied by Amoco Norway Oil Company and delivered to Geolab Nor's laboratory in Trondheim. A preliminary stratigraphy was provided by Amoco and used in a modified form in this report.

Some of the samples were analysed as "hot shot" samples during the drilling of the well to assess the maturity and kerogen type, but the majority of the samples were analysed as routine geochemistry samples after completion of the well. Both screening and follow-up analyses were performed (although not GC-MS or isotope analyses). The well was analysed from 2890 m to 5407 m. The results are presented in the relevant stratigraphic sections in the report.

This report is divided into chapters according to the various analytical methods used. Within the chapters the results are mainly discussed in stratigraphic order.

## 1.1 General Comments

Cuttings samples were supplied unwashed in plastic bags. The samples were washed and described by Geolab Nor and the samples were picked before analyses commenced.

The quality of the rock samples was very variable. Many of the samples had an excellent quality, but many samples, especially in the lower part of the Tyne Group, were severely contaminated by drilling mud additives. Some of the samples consisted almost exclusively of barite.

## 1.2 Analytical Program

The analytical program was set up in accordance with Ray Pratt in Amoco Norway Oil Company. However, some additional Rock-Eval analyses were performed in the pre-Jurassic section. Samples were analysed from 2890 m to 5407 m:

<u>Analysis type</u>	<u>No of samples</u>	<u>Figures</u>	<u>Tables</u>
Lithology description	177	2	1
TOC	104	2	1,2
Rock-Eval pyrolysis	104	3,4,5	2
Thermal extraction GC (GHM, S <sub>1</sub> )	28	6a-d	
Pyrolysis GC (GHM, S <sub>2</sub> )	28	7a-d,8	3
Extraction - MPLC separation	10		4
Saturated hydrocarbon GC	10	9a-d	5
Aromatic hydrocarbon GC	10	10a-c	6
Vitrinite reflectance	18		7
Visual kerogen microscopy	14	12	7,8

## ANALYSES PERFORMED:

Depths	Lithology Description	TOC	Rock-Eval Pyrolysis	Thermal Extraction GC(GHMS1)	Pyrolysis GC(GHMS2)
2890	x	x	x	x	x
2990	x				
3090	x	x	x		
3192	x	x	x	x	x
3288	x	x	x		
3318	x	x	x		
3348	x				
3378	x	x	x		
3408	x				
3438	x	x	x		
3468	x				
3498	x	x	x		
3531	x				
3561	x	x	x		
3600	x	x	x		
3621	x				

Depths	Lithology Description	TOC	Rock-Eval Pyrolysis	Thermal Extraction GC(GHMS1)	Pyrolysis GC(GHMS2)
3651	X	X	X		
3681	X				
3702	X	X	X		
3732	X				
3759	X	X	X		
3789	X				
3819	X	X	X		
3849	X	X	X		
3879	X				
3909	X				
3939	X	X	X		
3989	X	X	X		
3999	X				
4002	X				
4011	X	X	X		
4020	X				
4032	X				
4041	X				
4050	X	X	X		
4059	X				
4071	X				
4080	X				
4089	X	X	X	X	X
4101	X				
4110	X				
4119	X				
4131	X	X	X		
4140	X	X	X	X	X
4143	X	XX	XX	X	X
4149	X	X	X		
4161	X	X	X	X	X
4170	X	X	X		
4179	X	X	X		
4191	X	X	X	X	X
4200	X	X	X		
4209	X	X	X		
4221	X	X	X	X	X
4230	X	X	X		
4239	X	X	X		
4242	X				
4251	X	X	X	X	X

Depths	Lithology Description	TOC	Rock-Eval Pyrolysis	Thermal Extraction GC(GHMS1)	Pyrolysis GC(GHMS2)
4260	x	x	x		
4263	x	x	x		
4281	x	x	x		
4293	x	x	x	x	x
4300	x	x	x		
4302	x	x	x		
4311	x	x	x		
4323	x	x	x	x	x
4332	x	x	x		
4362	x	x	x	x	x
4368	x	x	x		
4380	x	x	x	x	x
4389	x	x	x		
4401	x	x	x		
4410	x	x	x		
4419	x	x	x	x	x
4431	x	x	x		
4440	x	x	x		
4449	x	x	x		
4461	x	x	x		
4470	x	x	x		
4479	x				
4491	x	x	x		
4500	x				
4509	x	x	x	x	x
4521	x	x	x		
4530	x	x	x		
4539	x	x	x	x	x
4548	x	x	x		
4560	x	x	x		
4569	x	x	x		
4578	x	x	x	x	x
4590	x				
4599	x				
4600	x	x	x		
4611	x	x	x		
4620	x	x	x	x	x
4629	x	x	x		
4638	x	x	x		
4641	x	x	x		
4650	x	x	x	x	x

Depths	Lithology Description	TOC	Rock-Eval Pyrolysis	Thermal Extraction GC(GHMS1)	Pyrolysis GC(GHMS2)
4659	X				
4671	X	X	X		
4686	X	X	X		
4689	X	X	X		
4701	X	X	X	X	X
4710	X	X	X		
4719	X	X	X		
4731	X	X	X		
4740	X	X	X		
4749	X	X	X	X	X
4761	X	X	X		
4770	X	X	X		
4779	X	X	X		
4800	X	X	X	X	X
4809	X	X	X		
4821	X				
4830	X				
4851	X	X	X		
4860	X	X	X	X	X
4869	X	X	X		
4878	X	X	X		
4890	X	X	X	X	X
4899	X				
4911	X				
4920	X				
4929	X				
4941	X				
4950	X				
4959	X				
4968	X	X	X	X	X
4977	X				
4986	X				
4998	X				
5007	X				
5025	X				
5034	X				
5043	X				
5052	X				
5061	X				
5070	X				
5079	X				

Depths	Lithology Description	TOC	Rock-Eval Pyrolysis	Thermal Extraction GC(GHMS1)	Pyrolysis GC(GHMS2)
5088	X				
5097	X				
5106	X				
5115	X				
5130	X				
5139	X				
5145	X	X	X		
5147	X	X	X		
5148	X				
5157	X	X	X		
5166	X				
5175	X	X	X		
5184	X				
5193	X				
5202	X	X	X	X	X
5211	X				
4220	X				
5229	X				
5238	X				
5247	X				
5256	X	X	X		
5265	X				
5274	X	X	X		
5283	X				
5292	X	X	X	X	X
5301	X				
5310	X				
5319	X				
5328	X				
5337	X				
5346	X	X	X		
5355	X				
5358	X				
5364	X				
5373	X				
5382	X				
5391	X				
5397	X	X	X		
5400	X	X	X		
5407	X	X	X	X	X
5418	X				



Depths	Lithology Description	TOC	Rock-Eval Pyrolysis	Thermal Extraction GC(GHMS1)	Pyrolysis GC(GHMS2)
5427	x				
5436	x				
5445	x				
5454	x				
5460	x				
<b>TOTAL</b>	<b>177</b>	<b>104</b>	<b>104</b>	<b>28</b>	<b>28</b>

## ANALYSES PERFORMED:

Depths	Extraction MPLC Separation	Saturated Hydrocarbon GC	Aromatic Hydrocarbon GC	Vitrinite Reflectance	Visual Kerogen Microscopy
2890	x	x	x	x	x
3090				x	
3192				x	x
4089	x	x	x		x
4140	x	x	x		x
4191	x	x	x		x
4200				x	
4221					x
4293	x	x	x		x
4362					x
4368				x	
4419	x	x	x		x
4449				x	
4509				x	
4539	x	x	x		
4560				x	
4600					x
4641					x
4650				x	

Depths	Extraction MPLC Separation	Saturated Hydrocarbon GC	Aromatic Hydrocarbon GC	Vitrinite Reflectance	Visual Kerogen Microscopy
4701	x	x	x	x	
4770				x	
4851				x	
4968	x	x	x	x	
5145					x
5147					x
5157				x	
5274				x	
5397					x
5407	x	x	x	x	
<b>TOTAL</b>	<b>10</b>	<b>10</b>	<b>10</b>	<b>16</b>	<b>14</b>

**List of abbreviations used for parameters, ratios and analytical methods**  
(sorted alphabetically)

CPI	=	Carbon Preference Index, $0.5 \times \frac{C_{25}+C_{27}+C_{29}+C_{31}+C_{33}}{C_{24}+C_{26}+C_{28}+C_{30}+C_{32}} + \frac{C_{25}+C_{27}+C_{29}+C_{31}+C_{33}}{C_{26}+C_{28}+C_{30}+C_{32}+C_{34}}$
EOM	=	Extractable Organic Matter
FID	=	Flame Ionisation Detector
FPD	=	Flame Photometric Detector
GC	=	Gas Chromatograph
GC-MS	=	Gas Chromatograph - Mass Spectrometer
GHM	=	Geofina Hydrocarbon Meter (combined thermal extraction - pyrolysis gas chromatograph)
HC	=	Hydrocarbons
HI	=	Hydrogen Index (100 x S <sub>2</sub> /TOC)
HPLC	=	High Pressure Liquid Chromatograph
MDBT(4/1)	=	Ratio of 4-/1-methyl dibenzothiophene
MNR	=	Ratio of 2-/1-methyl naphthalene
MP	=	Methyl phenanthrene
MPI1	=	Methyl phenanthrene Index, $1.5 \times (3MP+2MP) / P+9MP+1MP$
MPLC	=	Medium Pressure Liquid Chromatograph
NSO	=	Nitrogen-, Sulphur- and Oxygen-compounds
OI	=	Oxygen Index (100 x S <sub>3</sub> /TOC)
P	=	Phenanthrene
PI	=	Production Index (S <sub>1</sub> /(S <sub>1</sub> +S <sub>2</sub> ))
PP	=	Petroleum Potential (S <sub>1</sub> +S <sub>2</sub> )
Ro (%)	=	Measured Vitrinite Reflectance in Percent
Rock-Eval	=	Oil show and source rock evaluation instrument
S <sub>1</sub>	=	Amount of Free Hydrocarbons, Rock-Eval
S <sub>2</sub>	=	Amount of Kerogen pyrolysate, Rock-Eval
S <sub>3</sub>	=	Amount of Oxidised Organic Material
SCI	=	Spore Colour Index (maturity indicator)
TCD	=	Thermal Conductivity Detector
TAI	=	Thermal Alteration Index (maturity indicator)
Tmax	=	Temperature of maximum pyrolysate yield, Rock-Eval
TOC	=	Total Organic Carbon

## Abbreviations

### List of abbreviations used for lithology description (sorted alphabetically)

ang	= angular
bar	= Baryte (mud additive)
bit	= bituminous
bl	= blue/blueish
blk	= black
br	= brittle
brn	= brown/brownish
Ca	= Carbonate (limestone/chalk/dolomite/siderite)
calc	= calcareous
carb	= carbonaceous
cem	= cement used as additive (under "cont") or to describe cemented S/Sst
Chert	= Chert
chk	= Chalk/chalky
cly	= clayey/shaly
cngl	= conglomeratic
Coal	= Coal
Coal-ad	= Coal-like additive (e.g. chromlignosulfonate)
Congl	= Conglomerat
Cont	= Contamination(s)
crs	= coarse grained
dd	= dried drilling mud
dol	= Dolomite/dolomitic
drk	= dark (colour)
dsk	= dusk/dusky (colour)
evap	= Salt/Gypsum/Halite (natural "Other" or as additive "Cont")
f	= fine grained
fe	= ferruginous
fib	= fibres (mud additive/contamination)
fis	= fissile
fos	= fossiliferous
glauc	= glauconite/glauconitic
gn	= green/greenish
gy	= grey/greyish
hd	= hard
ign	= Igneous (material derived from igneous source)
Kaolin	= Kaolin(ite)
kln	= kaolinitic
l	= loose
lam	= laminated/laminae
lt	= light (colour)
m	= medium (colour or grain size)
Marl	= Marl (calcareous claystone/mudstone)
mic	= micaceous
Mica-ad	= Mica used as mud additive

mrl	= marly
No Mat.	= No material left over after washing
ns	= nutshells (mud additive)
ol	= olive
ool	= Oolite/oolitic
or	= orange
Other	= Other lithology/mineral, specified after this word
pi	= pink/pinkish
pl	= pale (colour)
prp	= paint/rust/plastic contaminations/additives
pu	= purple
pyr	= Pyrite/pyritic
red	= red/reddish
rnd	= round/rounded
s	= sandy
sft	= soft
S/Sst	= Sand and/or sandstone
Sh/Clst	= Shale and/or claystone
sid	= Siderite/sideritic
sil	= siliceous/cherty
slt	= silty
Sltst	= siltstone
st	= stained (with natural oil or oil-like additive)
tar-ad	= Tar-like additive (e.g. "Black Magic")
trbfgs	= turbodrilled fragments
Tuff	= Tuff
tuff	= tuffaceous
v col	= various colours
w	= white
wx	= waxy
y	= yellow/yellowish

## ***Analytical Methods***

This is a brief description of the various analytical methods and instruments used by Geolab Nor, the importance and use of the results. Interpretation limits of numeric values are given in the "Interpretation Limits".

### **Headspace and Occluded Gas**

Analysis of the C1 - C5+ gas content of the headspace and occluded gases. Requires canned samples. Gives indications about the gas containing sections of a well, whether the gas is biogenic or thermogenic and indications of maturity.

### **TOC**

Total organic carbon analysis of a rock indicates how much organic material is present in wt %. Either from a LECO or Rock-Eval instrument. Important for quantifying source rocks.

### **Rock-Eval**

This instrument determines the amounts of free hydrocarbons (S1), the amounts of material (pyrolysate) generated from kerogen (S2) and oxidised organic material (S3) plus gives a maturity indication (Tmax). It is used to identify zones of migrated hydrocarbons (high S1), rich source rocks (high S2), oxidized kerogen (high S3) and to get a first estimate of the maturity (empirical Tmax scale). Kerogen type can be estimated by the hydrogen index (HI). This parameter is however, maturity dependent. See "Interpretation Limits" for interpretation of values.

## **GHM**

The Geofina Hydrocarbon Meter is a combined thermal extraction and pyrolysis gas chromatography instrument. It will give a chromatogram of the free hydrocarbons as well as of the pyrolysis products of the kerogen for small (< 20 mg) samples. Useful for determining the type of free hydrocarbons present (e.g. light oil, heavy oil, residual oil, biodegraded oil, condensate, oil based mud) and to evaluate the source rock (type and maturity, e.g. immature oil-prone, immature gas-prone, mature oil-prone etc.). Gas prone source rocks will show compounds mainly in the C1 - C5 range, oil prone source rocks will show abundant compounds in the C8 - C25 range. With maturation the long peaks representing the long-chained molecules will diminish.

## **Solvent Extraction and Chromatography**

Free hydrocarbons present in both source rocks and reservoir rocks can be extracted with solvents (e.g. dichloromethane). The extract is called Extractable Organic Material (EOM) and can be quantified. The EOM is separated into saturated hydrocarbons, aromatic hydrocarbons (together called hydrocarbons or HC), asphaltenes and NSO-compounds (nitrogen-, sulphur- and oxygen-compounds) and by precipitation and liquid chromatography each quantified. These data give information as to the type of hydrocarbons present (e.g. rich or poor in saturated hydrocarbons) and the richness and maturity of source rocks. The saturated and aromatic hydrocarbon fractions are separately analysed by gas chromatography (GC). These give chromatograms identifying and showing the relative contents of the individual (major) compounds that make up the oil or source rock extract. These chromatograms will indicate the type of oil present (e.g. light, heavy, biodegraded etc.), its maturity (e.g. the MPI1 index) and say something about their origin (e.g. using the pristane/phytane ratio, MDBT index). The carbon preference index (CPI) can be used to differentiate between terrestrial (odd preference) and marine (no odd preference) source rocks. However, when a source rock reach peak oil generation the CPI will almost always approach one, regardless of original source rock type.

### **Vitrinite Reflectance**

This is the primary maturation parameter. The  $R_o$  is measured in percent by the use of a special microscope and can empirically be related to the temperatures in which oil generation occurs (e.g. Geolab Nor consider that oil generation starts in earnest at 0.6 %  $R_o$ , and is mostly finished by 1.0 %  $R_o$  for a rich oil-prone source rock).

### **Visual Kerogen Microscopy**

The examination of kerogen concentrate smear slides under a special microscope can give estimates as to the amount and quality of the kerogen (e.g. oil- or gas-prone) and its maturity using spore colour (SCI or TAI). The SCI maturity scale can be related to the vitrinite reflectance maturity scale.

### **Carbon Isotope Analysis**

The stable carbon isotope composition of gases and liquid hydrocarbon compounds can be used to infer the origin and maturity of the hydrocarbons. It can also be used to correlate oils to see if they have the same source. The values are measured in relative ratios of  $^{13}\text{C}/^{12}\text{C}$  compared with an international standard (PeeDee Belemnite, also called PDB). As the ratio will vary with the type of organic matter and conditions of deposition, it can be used as a correlation tool.

### **Gas Chromatography - Mass Spectrometry**

This is also called biomarker analysis. This technique makes it possible to examine even extremely small amounts of complex biological compounds present in oils or extracts from source rocks. These compounds are derived from the organisms that originally were the raw material for the oil. As the composition and breakdown of these original organisms vary for the different source rocks it is possible to use this analytical method to correlate oil(s) to possible source rocks and also to cross-correlate oils. The method can also be used to assess maturity since some of the compounds are known to undergo specific transformations in response to temperature changes.



**Note of Caution**

There is no single geochemical method which will always yield a universally correct solution. Some analytical techniques may not be applicable in certain geological circumstances. It is therefore highly recommended that as many parameters as possible are compared in order to reduce the margin of error. These are some of the reasons why many different analytical techniques are used that seemingly give similar answers.

## EXPERIMENTAL PROCEDURES

## Total Organic Carbon (TOC) and Total Carbon Analysis

This analysis is performed using a LECO CS244 Carbon Analyser.

Hand-picked lithologies from cuttings samples are crushed with a mortar and pestle and approximately 200 mg (50 mg for coals) are accurately weighed into LECO crucibles. The samples are then treated three times with 10 % hydrochloric acid to remove oxidized (carbonate) carbon, and washed four times with distilled water. The samples are dried on a hotplate at 60 - 70°C before analysis of total organic carbon. Total carbon is also analysed on the same instrument using approximately 200 mg of untreated crushed whole rock. Oxidized (carbonate) carbon is calculated by weight difference.

Total organic carbon can also be analysed on the Rock-Eval II Pyrolyser during the normal run of the instrument.

## Rock-Eval Pyrolysis

This analysis is performed by using a Rock-Eval II Pyrolyser. Approximately 100 mg crushed whole rock is analysed. The sample is first heated at 300°C for three min in an atmosphere of helium to release the free hydrocarbons present (S1 peak) and then pyrolysed by increasing the temperature from 300°C to 600°C (temp. gradient 25°C/min) (S2 peak). Both the S1 and S2 yields are measured using a flame ionization detector (FID). In the temperature interval between 300°C and 390°C, the released gases are split and a proportion passed through a carbon dioxide trap, which is connected to a thermal conductivity detector (TCD). The value obtained from the TCD corresponds to the amount of oxygen contained in the kerogen of the sample and is reported as the S3 peak.

The ROCK-EVAL II Pyrolyser also analyses the TOC of each sample during the normal run of the instrument.

## **Thermal Extraction/Pyrolysis Gas Chromatography**

The instrument used for this analysis is a Varian 3400 Gas Chromatograph 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.

## **Solvent Extraction of Organic Matter (EOM)**

The samples are extracted using a Tecator Soxtec HT-System. Carefully weighed samples are taken in a pre-extracted thimble. Some activated copper is added to the extraction cup and dichloromethane is used as an extraction solvent. The samples are boiled for 1 hour and then rinsed for 2 hours. If the samples contain more than 10 % TOC, then the whole procedure is repeated once. The resulting solution is filtered and the solvent removed by rotary evaporation (200 mb, 30°C). The amount of EOM is gravimetrically established.

## Removal of Asphaltenes

Asphaltenes are removed from the EOM by precipitation in n-pentane. N-pentane is added to the EOM and the solution is then stored in the dark and at ambient temperature for at least 8 hours. The solution is then filtered (Baker 10-spe system) and the precipitated asphaltenes dissolved in dichloromethane are returned to the original flask. The solvent is removed by rotary evaporation (200 mb and 30°C).

## Chromatographic Separation of deasphalted EOM

Chromatographic separation is performed using an MPLC system developed by the company. The EOM (minus asphaltenes) is injected into the MPLC and separated using hexane as an eluent. The saturated and aromatic hydrocarbon fractions are collected and the solvent removed using a rotary evaporator at 30°C. The fractions are then transferred to small pre-weighed vials and evaporated to dryness in a stream of nitrogen. The vials are re-weighed to obtain the weights of both the saturated and the aromatic fractions. The weight of the NSO fraction which is retained on the column, is obtained by weight difference.

## Gas Chromatographic Analyses

Saturated hydrocarbon fractions:

The instrument used for this analysis is a PERKIN ELMER 8320 Gas Chromatograph equipped with an FID detector and an OV1 column. The carrier gas is helium and the temperature program runs from 80°C to 300°C at a rate of 4°C/min. Final hold time is 20 mins. The saturated hydrocarbon fraction is diluted by 1:30 and a 1 microlitre aliquot of this is injected into the instrument.

Aromatic hydrocarbon fractions:

The instrument used is a Varian 3400 Gas Chromatograph with a 25 m SE 54 capillary column, split injector and a column splitter leading to FID and FPD detectors,

which allows simultaneous analysis of co-eluting hydrocarbons and sulphur compounds. The carrier gas is helium and the temperature program runs from 40°C to 290°C at a rate of 4°C/min. Final hold time is 10 mins. The aromatic hydrocarbon fraction is diluted by 1:30 and a 1 microlitre aliquot of this is injected into the instrument.

### **Vitrinite Reflectance Analysis**

Samples to be analysed for vitrinite reflectance are ground to small granules (if necessary) using a pestle and mortar and are then mounted in a fast setting resin. The resin blocks are first ground flat using a coarse corundum paper to expose the rock granule surfaces and then with three finer grades of corundum paper to improve these surfaces and reduce scratches. The blocks are finally polished on a rotating Selvyt-covered lap using three grades of diamond suspension fluid. An appropriate lubricant is used when necessary.

Reflectance measurements are made under oil immersion at 546nm using a Zeiss Universal Photo microscope II equipped with a HP 9000 series computer system. The polished blocks are mounted on the microscope stage and scanned manually in order to locate and measure particles of vitrinite. An attempt is made to obtain readings from 15-20 individual particles per sample, but this is not always possible in samples with low amounts of phytoclasts.

### **Visual Kerogen Microscopy**

Kerogen concentrates are obtained from samples prepared by HCl and HF digestion followed by zinc bromide flotation to remove pyrite and other heavy mineral residues. The cleaned concentrates are mounted on slides by smearing, these being analysed microscopically in transmitted white light and UV light (530 nm barrier filter) to determine the Spore Colour or Thermal Alteration Indices (SCI or TAI) and the colour and intensity of spore fluorescence. The spore colour index, backed by spore fluorescence, is used as an alternative maturity parameter to verify the results obtained from vitrinite reflectance.

**APPENDIX 1:  
TABLES**

- 1-

Table 1 : Lithology description for well NOCS 2/5-9

Depth unit of measure: m

Depth	Type		Trb	Sample
Int Cvd	TOC%	% Lithology description		
2890.00				0001
	1.71	100 Sh/Clst: lt gn gy		0001-1L
2990.00				0002
		95 Sh/Clst: m lt gn gy		0002-1L
		5 Ca : w to lt y brn		0002-2L
3090.00				0003
	0.30	95 Sh/Clst: lt gn gy to lt bl gy		0003-1L
		5 Ca : w to lt y brn		0003-2L
		tr Coal : blk		0003-3L
3192.00				0004
	1.17	100 Sh/Clst: m lt bl gy		0004-1L
		tr Ca : w to lt y brn		0004-2L
3288.00				0005
	0.13	95 Ca : w		0005-1L
		5 Sh/Clst: m lt bl gy		0005-2L
		tr Sh/Clst: m gy red		0005-3L
3318.00				0006
	0.05	100 Ca : w		0006-1L
		tr Sh/Clst: m lt bl gy		0006-2L
		tr Sh/Clst: m gy red		0006-3L



- 2-

Table 1 : Lithology description for well NOCS 2/5-9

Depth unit of measure: m

Depth	Type			Trb	Sample
Int Cvd	TOC%	%	Lithology description		
3348.00					0007
		100	Ca : w		0007-1L
			tr Sh/Clst: m lt bl gy		0007-2L
			tr Sh/Clst: m gy red		0007-3L
3378.00					0008
	0.10	100	Ca : w to pl gy		0008-1L
			tr Sh/Clst: m lt bl gy		0008-2L
			tr Sh/Clst: m gy red		0008-3L
3408.00					0009
		100	Ca : w		0009-1L
3438.00					0011
	0.02	95	Ca : w		0011-1L
		5	Sh/Clst: m lt bl gy to m gy red		0011-2L
3468.00					0010
		95	Ca : w		0010-1L
		5	Sh/Clst: m lt bl gy to m gy red		0010-2L
3498.00					0012
	0.07	100	Ca : w		0012-1L
3531.00					0013
		100	Ca : w		0013-1L
			tr Sh/Clst: m lt bl gy to m gy red		0013-2L

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Table 1 : Lithology description for well NOCS 2/5-9

Depth unit of measure: m

Depth	Type				Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
3561.00						0014
		0.02	100 Ca	: w		0014-1L
3600.00						0015
		0.05	100 Ca	: w		0015-1L
3621.00						0016
			100 Ca	: w		0016-1L
3651.00						0017
		0.05	100 Ca	: w		0017-1L
3681.00						0018
			100 Ca	: w		0018-1L
3702.00						0019
		0.04	100 Ca	: w		0019-1L
3732.00						0020
			95 Ca	: w		0020-1L
			5 Sh/Clst:	m drk bl gy to m gy red to m drk gy		0020-2L

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Table 1 : Lithology description for well NOCS 2/5-9

Depth unit of measure: m

Depth	Type			Trb	Sample
Int Cvd	TOC%	%	Lithology description		
3759.00					0021
	0.10	100	Ca : w		0021-1L
3789.00					0022
		100	Ca : w		0022-1L
3819.00					0023
	0.12	100	Ca : w		0023-1L
3849.00					0024
	0.11	100	Ca : w		0024-1L
3879.00					0025
		100	Ca : w		0025-1L
3909.00					0026
		100	Ca : w		0026-1L
3939.00					0027
	0.10	100	Ca : w		0027-1L
3969.00					0028
	0.14	100	Ca : w		0028-1L

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Table 1 : Lithology description for well NOCS 2/5-9

Depth unit of measure: m

Depth	Type			Trb	Sample
Int Cvd	TOC%	%	Lithology description		
3999.00					0029
		100 Ca	: w		0029-1L
4002.00					0030
		100 Ca	: w to pl w		0030-1L
4011.00					0031
	0.29	100 Ca	: w to pl w		0031-1L
4020.00					0032
		100 Ca	: w to pl w		0032-1L
4032.00					0033
		100 Ca	: w to pl w		0033-1L
4041.00					0034
		100 Ca	: w to pl gy w		0034-1L
4050.00					0035
	0.25	100 Ca	: w to pl gy w		0035-1L
4059.00					0036
		100 Ca	: w to pl gy w		0036-1L

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Table 1 : Lithology description for well NOCS 2/5-9

Depth unit of measure: m

Depth	Type		Trb	Sample
Int Cvd	TOC%	%		
Lithology description				
4071.00				0037
		100 Ca		0037-1L
4080.00				0038
		100 Ca		0038-1L
		tr Sh/Clst:		0038-2L
		drk gy		
4089.00				0039
	1.81	100 Ca		0039-1L
		tr Sh/Clst:		0039-2L
		drk gy		
4101.00				0040
		100 Ca		0040-1L
4110.00				0041
		75 Sh/Clst:		0041-1L
		pl gn gy to m lt gn gy		0041-2L
		25 Ca		0041-3L
		: w to pl brn gy		
		tr Other		
		: y, pyr		
4119.00				0042
		95 Sh/Clst:		0042-1L
		pl gn gy to lt gn gy		0042-2L
		5 Ca		0042-3L
		: w to pl brn w		
		tr Other		
		: y, pyr		
4131.00				0043
	8.22	95 Sh/Clst:		0043-1L
		drk gy		0043-2L
		5 Ca		0043-3L
		: w to pl brn w		
		tr Other		
		: y, pyr		

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Table 1 : Lithology description for well NOCS 2/5-9

Depth unit of measure: m

Depth	Type				Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
4140.00						0044
		5.73	95	Sh/Clst: drk gy		0044-1L
			5	Sh/Clst: lt gn gy		0044-3L
				tr Ca : w to pl brn w		0044-2L
4143.00						0180
		0.25	60	Sh/Clst: m gy to ol gy, wx, pyr		0180-1L
		3.90	40	Sh/Clst: gy blk to brn blk		0180-2L
4149.00						0045
		0.29	85	Sh/Clst: lt gn gy to lt ol gy		0045-2L
			15	Sh/Clst: drk gy		0045-1L
4161.00						0046
		2.26	100	Sh/Clst: drk gy		0046-1L
4170.00						0047
		3.30	100	Sh/Clst: m drk gy		0047-1L
4179.00						0048
		3.35	100	Sh/Clst: drk gy		0048-1L
				tr Sh/Clst: pl gn gy		0048-2L
4191.00						0049
		4.92	100	Sh/Clst: drk gy		0049-1L

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Table 1 : Lithology description for well NOCS 2/5-9

Depth unit of measure: m

Depth	Type			Trb	Sample
Int	Cvd	TOC%	%	Lithology description	
4200.00					0050
	1.82	100		Sh/Clst: drk gy	0050-1L
4209.00					0051
	0.23	65		Sh/Clst: lt gy gn to lt ol gy	0051-2L
		25		Sh/Clst: drk gy	0051-1L
		10		Ca : w	0051-3L
4221.00					0052
	2.83	95		Sh/Clst: drk gy	0052-1L
		5		Sh/Clst: lt gy gn to lt ol gy	0052-2L
4230.00					0053
	2.94	60		Sh/Clst: drk gy	0053-1L
		40		Sh/Clst: lt gn gy to lt ol gy	0053-2L
4239.00					0054
	3.18	60		Sh/Clst: drk gy	0054-1L
		40		Sh/Clst: lt gn gy to lt ol gy	0054-2L
4242.00					0170
		60		Sh/Clst: drk gy	0170-1L
		40		Sh/Clst: m lt bl gy to lt gy	0170-2L
4251.00					0171
	6.56	100		Sh/Clst: drk gy	0171-1L

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Table 1 : Lithology description for well NOCS 2/5-9

Depth unit of measure: m

Depth	Type		Trb	Sample
Int Cvd	TOC%	% Lithology description		
4260.00				0055
	5.84	95 Sh/Clst: drk gy 5 Sh/Clst: lt gn gy to lt ol gy		0055-1L 0055-2L
4263.00				0172
	4.60	90 Sh/Clst: drk gy 10 Sh/Clst: lt gy tr Other : y, pyr		0172-1L 0172-2L 0172-3L
4281.00				0173
	3.78	100 Sh/Clst: drk gy tr Sh/Clst: lt gy		0173-1L 0173-2L
4293.00				0179
	4.83	100 Sh/Clst: drk gy		0179-1L
4300.00				0181
	5.46	90 Sh/Clst: gy blk to dsk brn, slt 5 Cont : w, f, bar 5 Sh/Clst: lt gy to lt gn gy tr Ca : w, chk tr Cont : prp		0181-1L 0181-2L 0181-3L 0181-4L 0181-5L
4302.00				0174
	5.81	100 Sh/Clst: drk gy tr Sh/Clst: lt gy		0174-1L 0174-2L



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Table 1 : Lithology description for well NOCS 2/5-9

Depth unit of measure: m

Depth	Type		Trb	Sample
Int Cvd	TOC%	% Lithology description		
4311.00				0175
	4.65	95 Sh/Clst: drk gy 5 Ca : w tr Sh/Clst: lt gy		0175-1L 0175-3L 0175-2L
4323.00				0176
	3.78	95 Sh/Clst: drk gy 5 Sh/Clst: lt gy		0176-1L 0176-2L
4332.00				0177
	3.23	95 Sh/Clst: drk gy 5 Ca : w tr Sh/Clst: lt gy		0177-1L 0177-3L 0177-2L
4362.00				0178
	3.63	95 Sh/Clst: drk gy 5 Sh/Clst: lt gy tr Ca : w		0178-1L 0178-2L 0178-3L
4368.00				0056
	4.06	100 Sh/Clst: drk gy to gy blk tr Sh/Clst: lt gn gy to lt ol gy		0056-1L 0056-2L
4380.00				0057
	2.14	100 Sh/Clst: drk gy to gy blk tr Sh/Clst: lt gn gy to lt ol gy		0057-1L 0057-2L

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Table 1 : Lithology description for well NOCS 2/5-9

Depth unit of measure: m

Depth	Type		Trb	Sample
Int Cvd	TOC%	%		
Lithology description				
4389.00				0058
	2.81	100		0058-1L
				0058-2L
4401.00				0059
	2.73	100		0059-1L
				0059-2L
4410.00				0060
	2.65	90		0060-1L
		5		0060-3L
		5		0060-4L
				0060-2L
4419.00				0061
	4.19	100		0061-1L
				0061-2L
4431.00				0062
	3.02	95		0062-1L
		5		0062-2L
				0062-3L
4440.00				0063
	3.04	95		0063-1L
		5		0063-2L
				0063-3L
				0063-4L

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Table 1 : Lithology description for well NOCS 2/5-9

Depth unit of measure: m

Depth	Type			Trb	Sample
Int	Cvd	TOC%	%	Lithology description	
4449.00					0064
		3.24	95	Sh/Clst: drk gy to gy blk	0064-1L
			5	Sh/Clst: lt gn gy	0064-3L
			tr	Ca : w	0064-2L
4461.00					0065
		2.86	90	Sh/Clst: drk gy to gy blk	0065-1L
			5	Ca : w	0065-2L
			5	Sh/Clst: lt gn gy	0065-3L
4470.00					0066
		2.50	90	Sh/Clst: drk gy to gy blk	0066-1L
			5	Ca : w	0066-2L
			5	Cont : w, bar	0066-4L
			tr	Sh/Clst: lt gn gy	0066-3L
4479.00					0067
			55	Cont : w, bar	0067-2L
	cvd		40	Sh/Clst: v col	0067-3L
			5	Sh/Clst: drk gy to gy blk	0067-1L
4491.00					0068
			50	Cont : brn, ns	0068-2L
		4.76	40	Sh/Clst: drk gy to gy blk	0068-1L
			10	Sh/Clst: m lt gn gy	0068-3L
4500.00					0069
			50	Sh/Clst: drk gy to gy blk	0069-1L
			40	Cont : brn, ns	0069-2L
			10	Sh/Clst: m lt gn gy	0069-3L

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Table 1 : Lithology description for well NOCS 2/5-9

Depth unit of measure: m

Depth	Type		Trb	Sample
Int Cvd	TOC%	% Lithology description		
4509.00				0070
	2.95	80 Sh/Clst: drk gy to gy blk		0070-1L
		20 Sh/Clst: m lt gn gy		0070-3L
		tr Cont : brn, ns		0070-2L
		tr Ca : w		0070-4L
		tr Cont : blk, Mica-ad		0070-5L
4521.00				0071
	5.83	90 Sh/Clst: drk gy to gy blk		0071-1L
		5 Sh/Clst: m lt gn gy		0071-2L
		5 Cont : blk, Mica-ad		0071-4L
		tr Ca : w		0071-3L
4530.00				0072
	6.02	95 Sh/Clst: drk gy to gy blk		0072-1L
		5 Cont : brn, ns		0072-3L
		tr Ca : w		0072-2L
4539.00				0073
	6.46	85 Sh/Clst: drk gy to gy blk		0073-1L
		10 Cont : brn, ns		0073-3L
		5 Cont : blk, Mica-ad		0073-4L
		tr Ca : w		0073-2L
4548.00				0074
	5.85	80 Sh/Clst: drk gy to gy blk		0074-1L
		10 Cont : brn, ns		0074-2L
		10 Cont : blk, Mica-ad		0074-3L
		tr Ca : w		0074-4L

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Table 1 : Lithology description for well NOCS 2/5-9

Depth unit of measure: m

Depth	Type		Trb	Sample
Int Cvd	TOC%	%		
Lithology description				
4560.00				0075
	5.83	90	Sh/Clst: drk gy to gy blk	0075-1L
		5	Cont : brn, ns	0075-2L
		5	Cont : blk, Mica-ad	0075-3L
		tr	Ca : w	0075-4L
4569.00				0076
	5.90	95	Sh/Clst: drk gy to gy blk	0076-1L
		5	Cont : brn, ns	0076-2L
		tr	Cont : blk, Mica-ad	0076-3L
4578.00				0077
	5.67	100	Sh/Clst: drk gy to gy blk	0077-1L
		tr	Cont : brn, ns	0077-2L
		tr	Ca : w	0077-3L
4590.00				0078
		50	Cont : brn, ns	0078-2L
		40	Sh/Clst: drk gy to gy blk	0078-1L
		10	Cont : v col, Mica-ad, prp	0078-3L
4599.00				0079
		60	Sh/Clst: drk gy to gy blk	0079-1L
		40	Cont : brn, ns	0079-2L
		tr	Cont : blk, Mica-ad, prp	0079-3L
4600.00				0182
	4.02	55	Sh/Clst: gy blk to blk, carb	0182-1L
		40	Cont : ns	0182-2L
		5	Cont : w, f, bar	0182-3L
		tr	Sltst : lt gy	0182-4L
		tr	Cont : prp	0182-5L
		tr	Cont : Mica-ad	0182-6L

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Table 1 : Lithology description for well NOCS 2/5-9

Depth unit of measure: m

Depth	Type		Trb	Sample
Int Cvd	TOC%	% Lithology description		
4611.00				0080
	6.27	100 Sh/Clst: drk gy to gy blk tr Cont : blk, Mica-ad		0080-1L 0080-2L
4620.00				0081
	5.11	100 Sh/Clst: drk gy to gy blk tr Cont : blk, Mica-ad		0081-1L 0081-2L
4629.00				0082
	5.04	95 Sh/Clst: drk gy to gy blk 5 Cont : brn, ns tr Cont : blk, Mica-ad		0082-1L 0082-2L 0082-3L
4638.00				0083
	4.56	80 Sh/Clst: drk gy to gy blk 10 Cont : brn, ns 5 Cont : w, bar 5 Sh/Clst: m lt gn gy tr Cont : blk, Mica-ad		0083-1L 0083-2L 0083-4L 0083-5L 0083-3L
4641.00				0183
	3.24	85 Sh/Clst: drk gy to gy blk, carb, slt 5 Cont : ns 5 Cont : or gy, dd 5 Sh/Clst: lt ol gy to lt gy tr Cont : prp		0183-1L 0183-2L 0183-3L 0183-4L 0183-5L

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Table 1 : Lithology description for well NOCS 2/5-9

Depth unit of measure: m

Depth	Type		Trb	Sample
Int Cvd	TOC%	%		
Lithology description				
4650.00				0084
	4.01	95	Sh/Clst: drk gy to gy blk	0084-1L
		5	Cont : w, bar	0084-3L
		tr	Cont : brn, ns	0084-2L
4659.00				0085
		70	Cont : w, bar	0085-3L
		15	Sh/Clst: drk gy to gy blk	0085-1L
		10	Cont : brn, ns	0085-2L
		5	Cont : blk, Mica-ad	0085-4L
4671.00				0086
	4.57	90	Sh/Clst: drk gy to gy blk	0086-1L
		5	Cont : brn, ns	0086-2L
		5	Cont : w, bar	0086-3L
		tr	Cont : blk, Mica-ad	0086-4L
4686.00				0087
	4.84	95	Sh/Clst: drk gy to gy blk	0087-1L
		5	Cont : brn, blk, ns, Mica-ad	0087-2L
4689.00				0088
	3.95	100	Sh/Clst: drk gy to gy blk	0088-1L
		tr	Cont : brn, blk, ns, Mica-ad	0088-2L
4701.00				0089
	3.52	95	Sh/Clst: drk gy to gy blk	0089-1L
		5	Cont : blk, prp	0089-2L

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Table 1 : Lithology description for well NOCS 2/5-9

Depth unit of measure: m

Depth	Type		Trb	Sample
Int Cvd	TOC%	% Lithology description		
4710.00				0090
	3.88	90 Sh/Clst: drk gy to gy blk 10 Cont : w, blk, bar, prp		0090-1L 0090-2L
4719.00				0091
	2.93	90 Sh/Clst: drk gy to gy blk 10 Cont : w, blk, bar, prp		0091-1L 0091-2L
4731.00				0092
	3.29	95 Sh/Clst: drk gy to gy blk 5 Cont : w, blk, bar, prp		0092-1L 0092-2L
4740.00				0093
	2.95	95 Sh/Clst: drk gy to gy blk 5 Sltst : w, calc		0093-1L 0093-2L
4749.00				0094
	2.59	100 Sh/Clst: drk gy to gy blk tr Cont : brn, ns		0094-1L 0094-2L
4761.00				0095
	2.79	95 Sh/Clst: drk gy to gy blk 5 Cont : brn, ns		0095-1L 0095-2L
4770.00				0096
	3.05	95 Sh/Clst: drk gy to gy blk 5 Cont : brn, prp tr Cont : w, bar		0096-1L 0096-2L 0096-3L



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Table 1 : Lithology description for well NOCS 2/5-9

Depth unit of measure: m

Depth	Type		Trb	Sample
Int Cvd	TOC%	% Lithology description		
4779.00				0097
	3.98	85 Sh/Clst: drk gy to gy blk 15 Cont : w, bar tr Cont : brn, prp		0097-1L 0097-3L 0097-2L
4800.00				0098
	3.46	85 Sh/Clst: drk gy to gy blk 15 Cont : w, bar tr Cont : brn, prp		0098-1L 0098-3L 0098-2L
4809.00				0099
	3.93	90 Sh/Clst: drk gy to gy blk 5 Cont : w, bar 5 Sltst : w, calc		0099-1L 0099-2L 0099-3L
4821.00				0100
		90 Cont : w, bar 10 Sh/Clst: drk gy to gy blk		0100-2L 0100-1L
4830.00				0101
		95 Cont : w, bar 5 Sh/Clst: drk gy to gy blk		0101-2L 0101-1L
4851.00				0102
	2.44	100 Sh/Clst: drk gy to gy blk tr Cont : w, bar		0102-1L 0102-2L

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Table 1 : Lithology description for well NOCS 2/5-9

Depth unit of measure: m

Depth	Type		Trb	Sample
Int Cvd	TOC%	% Lithology description		
4860.00				0103
	2.71	100 Sh/Clst: drk gy to gy blk		0103-1L
4869.00				0104
	2.77	100 Sh/Clst: drk gy to gy blk tr Cont : brn, ns		0104-1L 0104-2L
4878.00				0105
	3.08	100 Sh/Clst: drk gy to gy blk tr Cont : brn, ns		0105-1L 0105-2L
4890.00				0106
	2.59	95 Sh/Clst: drk gy to gy blk 5 Cont : w, bar		0106-1L 0106-2L
4899.00				0107
		100 Cont : w, bar tr Sh/Clst: drk gy to gy blk		0107-2L 0107-1L
4911.00				0108
		100 Cont : w, bar tr Sh/Clst: drk gy to gy blk		0108-2L 0108-1L
4920.00				0109
		100 Cont : w, bar tr Sh/Clst: drk gy to gy blk		0109-2L 0109-1L

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Table 1 : Lithology description for well NOCS 2/5-9

Depth unit of measure: m

Depth	Type		Trb	Sample
Int Cvd	TOC%	% Lithology description		
4929.00				0110
		100 Cont : w, bar		0110-2L
		tr Sh/Clst: drk gy to gy blk		0110-1L
4941.00				0111
		95 Cont : w, bar		0111-2L
		5 Sh/Clst: drk gy to gy blk		0111-1L
4950.00				0112
		90 Cont : w, bar		0112-2L
		10 Sh/Clst: drk gy to gy blk		0112-1L
4959.00				0113
		75 Cont : w, bar		0113-2L
		25 Sh/Clst: drk gy to gy blk		0113-1L
4968.00				0114
	2.78	90 Sh/Clst: drk gy to gy blk		0114-1L
		10 Cont : w, bar		0114-2L
4977.00				0115
		100 Cont : w, bar		0115-2L
		tr Sh/Clst: drk gy to gy blk		0115-1L
4986.00				0116
		95 Cont : w, bar		0116-2L
		5 Sh/Clst: drk gy to gy blk		0116-1L

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Table 1 : Lithology description for well NOCS 2/5-9

Depth unit of measure: m

Depth	Type		Trb	Sample
Int Cvd	TOC%	% Lithology description		
4998.00				0117
		95 Cont : w, bar		0117-2L
		5 Sh/Clst: drk gy to gy blk		0117-1L
5007.00				0118
		95 Cont : w, bar		0118-2L
		5 Sh/Clst: drk gy to gy blk		0118-1L
5025.00				0119
		95 Cont : w, bar		0119-2L
		5 Sh/Clst: drk gy to gy blk		0119-1L
5034.00				0120
		95 Cont : w, bar		0120-2L
		5 Sh/Clst: drk gy to gy blk		0120-1L
5043.00				0121
		95 Cont : w, bar		0121-2L
		5 Sh/Clst: drk gy to gy blk		0121-1L
5052.00				0122
		95 Cont : w, bar		0122-2L
		5 Sh/Clst: drk gy to gy blk		0122-1L
5061.00				0123
		100 Cont : w, bar		0123-2L
		tr Sh/Clst: drk gy to gy blk		0123-1L

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Table 1 : Lithology description for well NOCS 2/5-9

Depth unit of measure: m

Depth	Type		Trb	Sample
Int Cvd	TOC%	%		
Lithology description				
5070.00				0124
		100 Cont : w, bar		0124-2L
		tr Sh/Clst: drk gy to gy blk		0124-1L
5079.00				0125
		100 Cont : w, bar		0125-2L
		tr Sh/Clst: drk gy to gy blk		0125-1L
5088.00				0126
		100 Cont : w, bar		0126-2L
		tr Sh/Clst: drk gy to gy blk		0126-1L
5097.00				0127
		100 Cont : w, bar		0127-2L
		tr Sh/Clst: drk gy to gy blk		0127-1L
5106.00				0128
		95 Cont : w, bar		0128-2L
		5 Sh/Clst: drk gy to gy blk		0128-1L
5115.00				0129
		95 Cont : w, bar		0129-2L
		5 Sh/Clst: drk gy to gy blk		0129-1L
5130.00				0131
		100 Cont : w, bar		0131-2L
		tr Sh/Clst: drk gy to gy blk		0131-1L

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Table 1 : Lithology description for well NOCS 2/5-9

Depth unit of measure: m

Depth	Type		Trb	Sample
Int Cvd	TOC%	% Lithology description		
5139.00		100 Cont : w, bar tr Sh/Clst: drk gy to gy blk		0132 0132-2L 0132-1L
5145.00	2.44	90 Cont : w, f, bar 10 Sh/Clst: gy blk, calc, slt tr Cont : ns tr Cont : prp		0184 0184-1L 0184-2L 0184-3L 0184-4L
5147.00	2.40	100 Sh/Clst: gy blk, calc, pyr, slt tr Cont : brn gy, dd		0185 0185-1L 0185-2L
5148.00		100 Cont : w, bar tr Sh/Clst: drk gy to gy blk		0130 0130-2L 0130-1L
5157.00	2.72	95 Sh/Clst: drk gy to gy blk 5 Cont : w, bar		0133 0133-1L 0133-2L
5166.00		80 Cont : w, bar 20 Sh/Clst: drk gy to gy blk		0134 0134-2L 0134-1L

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Table 1 : Lithology description for well NOCS 2/5-9

Depth unit of measure: m

Depth	Type		Trb	Sample
Int Cvd	TOC%	%		
Lithology description				
5175.00				0135
	2.68	65 Cont : w, bar 35 Sh/Clst: drk gy to gy blk		0135-2L 0135-1L
5184.00				0136
		95 Cont : w, bar 5 Sh/Clst: drk gy to gy blk		0136-2L 0136-1L
5193.00				0137
		90 Cont : w, bar 10 Sh/Clst: drk gy to gy blk		0137-2L 0137-1L
5202.00				0138
	2.56	70 Sh/Clst: drk gy to gy blk 30 Cont : w, bar		0138-1L 0138-2L
5211.00				0139
		95 Cont : w, bar 5 Sh/Clst: drk gy to gy blk		0139-2L 0139-1L
5220.00				0140
		90 Cont : w, bar 10 Sh/Clst: drk gy to gy blk		0140-2L 0140-1L
5229.00				0141
cvd		100 Sh/Clst: drk gy to gy blk tr Cont : w, bar		0141-1L 0141-2L

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Table 1 : Lithology description for well NOCS 2/5-9

Depth unit of measure: m

Depth	Type				Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
5238.00						0142
				90 Cont : w, bar		0142-2L
				10 Sh/Clst: drk gy to gy blk		0142-1L
5247.00						0143
				80 Cont : w, bar		0143-2L
				20 Sh/Clst: drk gy to gy blk		0143-1L
5256.00						0144
				60 Cont : w, bar		0144-2L
		2.48		40 Sh/Clst: drk gy to gy blk		0144-1L
5265.00						0145
				60 Cont : w, bar		0145-2L
				40 Sh/Clst: drk gy to gy blk		0145-1L
5274.00						0146
		2.50		90 Sh/Clst: drk gy to gy blk		0146-1L
				10 Cont : w, bar		0146-2L
				tr Cont : red, prp		0146-3L
5283.00						0147
				90 Cont : w, bar		0147-2L
				10 Sh/Clst: drk gy to gy blk		0147-1L



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Table 1 : Lithology description for well NOCS 2/5-9

Depth unit of measure: m

Depth	Type		Trb	Sample
Int Cvd	TOC%	%		
Lithology description				
5292.00				0148
	2.45	80		0148-1L
		20	Sh/Clst: drk gy to gy blk	0148-2L
			Cont : w, bar	0148-3L
			tr Cont : red, prp	
5301.00				0149
		95	Cont : w, bar	0149-2L
		5	Sh/Clst: drk gy to gy blk	0149-1L
5310.00				0150
		95	Cont : w, bar	0150-2L
		5	Sh/Clst: drk gy to gy blk	0150-1L
5319.00				0151
		90	Cont : w, bar	0151-2L
		10	Sh/Clst: drk gy to gy blk	0151-1L
5328.00				0152
		90	Cont : w, bar	0152-2L
		10	Sh/Clst: drk gy to gy blk	0152-1L
			tr Cont : red, prp	0152-3L
5337.00				0153
		90	Cont : w, bar	0153-2L
		10	Sh/Clst: drk gy to gy blk	0153-1L
			tr Cont : red, prp	0153-3L

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Table 1 : Lithology description for well NOCS 2/5-9

Depth unit of measure: m

Depth	Type		Trb	Sample
Int Cvd	TOC%	% Lithology description		
5346.00				0154
	2.42	50 Sh/Clst: drk gy to gy blk 50 Cont : w, bar		0154-1L 0154-2L
5355.00				0155
		90 Cont : w, bar 10 Sh/Clst: drk gy to gy blk		0155-2L 0155-1L
5358.00				0156
cvd		100 Sh/Clst: drk gy to gy blk tr Cont : w, bar		0156-1L 0156-2L
5364.00				0157
		80 Cont : w, bar 20 Sh/Clst: drk gy to gy blk		0157-2L 0157-1L
5373.00				0158
		85 Cont : w, bar 15 Sh/Clst: drk gy to gy blk		0158-2L 0158-1L
5382.00				0159
		95 Cont : w, bar 5 Sh/Clst: drk gy to gy blk		0159-2L 0159-1L
5391.00				0160
		100 Cont : w, bar tr Sh/Clst: drk gy to gy blk		0160-2L 0160-1L

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Table 1 : Lithology description for well NOCS 2/5-9

Depth unit of measure: m

Depth	Type		Trb	Sample
Int Cvd	TOC%	%		
Lithology description				
5397.00				0186
	2.41	65	Sh/Clst: gy blk to blk to brn gy, calc, slt, trbofsgs	0186-1L
		30	Cont : w, f, bar	0186-2L
		5	Cont : prp	0186-3L
			tr Sltst : gy brn, st	0186-4L
5400.00				0167
	2.76	60	Sh/Clst: drk gy to gy blk	0167-1L
		40	Cont : w, bar	0167-2L
5407.00				0161
	2.81	95	Sh/Clst: drk gy to gy blk	0161-1L
		5	Cont : w, bar	0161-2L
5418.00				0162
		95	Cont : w, bar	0162-2L
		5	Sh/Clst: drk gy to gy blk	0162-1L
5427.00				0163
		100	Cont : w, bar	0163-2L
			tr Sh/Clst: drk gy to gy blk	0163-1L
5436.00				0164
		90	Cont : w, bar	0164-2L
		10	Sh/Clst: drk gy to gy blk	0164-1L

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Table 1 : Lithology description for well NOCS 2/5-9

Depth unit of measure: m

Depth	Type	Trb	Sample
Int Cvd	TOC% %		
Lithology description			
5445.00			0168
	90 Cont : w, bar		0168-2L
	10 Sh/Clst: drk gy to gy blk		0168-1L
5454.00			0165
	95 Cont : w, bar		0165-2L
	5 Sh/Clst: drk gy to gy blk		0165-1L
5460.00			0166
	90 Cont : w, bar		0166-2L
	10 Sh/Clst: drk gy to gy blk		0166-1L

Table 2 : Rock-Eval table for well NOCS 2/5-9

Depth unit of measure: m

Depth	Typ	Lithology	S1	S2	S3	S2/S3	TOC	HI	OI	PP	PI	Tmax	Sample
2890.00	cut	Sh/Clst: lt gn gy	4.21	5.19	1.82	2.85	1.71	304	106	9.4	0.45	426	0001-1L
3090.00	cut	Sh/Clst: lt gn gy to lt bl gy	0.13	0.48	0.53	0.91	0.30	160	177	0.6	0.21	434	0003-1L
3192.00	cut	Sh/Clst: m lt bl gy	0.28	2.95	0.39	7.56	1.17	252	33	3.2	0.09	439	0004-1L
3288.00	cut	Ca : w	0.01	0.03	0.73	0.04	0.13	23	562	-	0.25	442	0005-1L
3318.00	cut	Ca : w	-	0.01	0.53	0.02	0.05	20	1060	-	-	345	0006-1L
3378.00	cut	Ca : w to pl gy	0.01	0.02	0.46	0.04	0.10	20	460	-	0.33	325	0008-1L
3438.00	cut	Ca : w	0.01	0.02	0.45	0.04	0.02	100	2250	-	0.33	372	0011-1L
3498.00	cut	Ca : w	-	0.03	0.53	0.06	0.07	43	757	-	-	300	0012-1L
3561.00	cut	Ca : w	-	0.01	0.36	0.03	0.02	50	1800	-	-	362	0014-1L
3600.00	cut	Ca : w	0.02	0.03	0.50	0.06	0.05	60	1000	0.1	0.40	359	0015-1L
3651.00	cut	Ca : w	0.01	0.05	0.46	0.11	0.05	100	920	0.1	0.17	433	0017-1L
3702.00	cut	Ca : w	0.02	0.08	0.48	0.17	0.04	200	1200	0.1	0.20	437	0019-1L
3759.00	cut	Ca : w	0.06	0.06	0.52	0.12	0.10	60	520	0.1	0.50	438	0021-1L
3819.00	cut	Ca : w	0.07	0.08	0.65	0.12	0.12	67	542	0.2	0.47	382	0023-1L
3849.00	cut	Ca : w	0.09	0.05	0.71	0.07	0.11	45	645	0.1	0.64	301	0024-1L

Table 2 : Rock-Eval table for well NOCS 2/5-9

Depth unit of measure: m

Depth	Typ	Lithology	S1	S2	S3	S2/S3	TOC	HI	OI	PP	PI	Tmax	Sample
3939.00	cut	Ca : w	0.04	0.04	0.55	0.07	0.10	40	550	0.1	0.50	335	0027-1L
3969.00	cut	Ca : w	0.05	0.06	0.60	0.10	0.14	43	429	0.1	0.45	333	0028-1L
4011.00	cut	Ca : w to pl w	0.07	0.07	0.77	0.09	0.29	24	266	0.1	0.50	352	0031-1L
4050.00	cut	Ca : w to pl gy w	0.13	0.08	0.76	0.11	0.25	32	304	0.2	0.62	417	0035-1L
4089.00	cut	Ca : w to pl brn w	8.74	4.02	0.90	4.47	1.81	222	50	12.8	0.68	427	0039-1L
4131.00	cut	Sh/Clst: drk gy	8.32	33.51	0.91	36.82	8.22	408	11	41.8	0.20	438	0043-1L
4140.00	cut	Sh/Clst: drk gy	4.77	22.32	0.64	34.88	5.73	390	11	27.1	0.18	443	0044-1L
4143.00	cut	Sh/Clst: m gy to ol gy	0.51	0.16	0.13	1.23	0.25	64	52	0.7	0.76	423	0180-1L
4143.00	cut	Sh/Clst: gy blk to brn blk	4.21	15.30	0.32	47.81	3.90	392	8	19.5	0.22	444	0180-2L
4149.00	cut	Sh/Clst: lt gn gy to lt ol gy	0.13	0.15	0.42	0.36	0.29	52	145	0.3	0.46	438	0045-2L
4161.00	cut	Sh/Clst: drk gy	1.89	5.09	0.67	7.60	2.26	225	30	7.0	0.27	444	0046-1L
4170.00	cut	Sh/Clst: m drk gy	2.68	9.25	0.76	12.17	3.30	280	23	11.9	0.22	445	0047-1L
4179.00	cut	Sh/Clst: drk gy	4.06	9.26	0.89	10.40	3.35	276	27	13.3	0.30	440	0048-1L
4191.00	cut	Sh/Clst: drk gy	5.95	13.74	0.60	22.90	4.92	279	12	19.7	0.30	439	0049-1L
4200.00	cut	Sh/Clst: drk gy	2.50	6.28	0.98	6.41	1.82	345	54	8.8	0.28	442	0050-1L

Table 2 : Rock-Eval table for well NOCS 2/5-9

Depth unit of measure: m

Depth	Typ	Lithology	S1	S2	S3	S2/S3	TOC	HI	OI	PP	PI	Tmax	Sample
4209.00	cut	Sh/Clst: lt gy gn to lt ol gy	0.20	0.17	0.45	0.38	0.23	74	196	0.4	0.54	392	0051-2L
4221.00	cut	Sh/Clst: drk gy	2.26	6.99	0.91	7.68	2.83	247	32	9.3	0.24	446	0052-1L
4230.00	cut	Sh/Clst: drk gy	2.80	9.60	0.57	16.84	2.94	327	19	12.4	0.23	444	0053-1L
4239.00	cut	Sh/Clst: drk gy	2.91	9.64	0.45	21.42	3.18	303	14	12.6	0.23	444	0054-1L
4251.00	cut	Sh/Clst: drk gy	12.04	28.42	0.88	32.30	6.56	433	13	40.5	0.30	440	0171-1L
4260.00	cut	Sh/Clst: drk gy	7.38	18.04	0.75	24.05	5.84	309	13	25.4	0.29	441	0055-1L
4263.00	cut	Sh/Clst: drk gy	5.51	12.80	0.82	15.61	4.60	278	18	18.3	0.30	439	0172-1L
4281.00	cut	Sh/Clst: drk gy	6.74	13.71	0.82	16.72	3.78	363	22	20.5	0.33	439	0173-1L
4293.00	cut	Sh/Clst: drk gy	8.69	14.86	0.86	17.28	4.83	308	18	23.5	0.37	440	0179-1L
4300.00	cut	Sh/Clst: gy blk to dsk brn	10.50	18.21	0.39	46.69	5.46	334	7	28.7	0.37	442	0181-1L
4302.00	cut	Sh/Clst: drk gy	9.95	16.70	0.87	19.20	5.81	287	15	26.7	0.37	437	0174-1L
4311.00	cut	Sh/Clst: drk gy	6.90	11.70	0.94	12.45	4.65	252	20	18.6	0.37	437	0175-1L
4323.00	cut	Sh/Clst: drk gy	4.11	9.51	0.99	9.61	3.78	252	26	13.6	0.30	442	0176-1L
4332.00	cut	Sh/Clst: drk gy	2.74	6.98	0.85	8.21	3.23	216	26	9.7	0.28	444	0177-1L
4362.00	cut	Sh/Clst: drk gy	4.03	9.07	0.79	11.48	3.63	250	22	13.1	0.31	443	0178-1L

Table 2 : Rock-Eval table for well NOCS 2/5-9

Depth unit of measure: m

Depth	Typ	Lithology	S1	S2	S3	S2/S3	TOC	HI	OI	PP	PI	Tmax	Sample
4368.00	cut	Sh/Clst: drk gy to gy blk	5.04	11.19	0.95	11.78	4.06	276	23	16.2	0.31	446	0056-1L
4380.00	cut	Sh/Clst: drk gy to gy blk	2.34	6.87	0.70	9.81	2.14	321	33	9.2	0.25	450	0057-1L
4389.00	cut	Sh/Clst: drk gy to gy blk	3.14	10.24	0.70	14.63	2.81	364	25	13.4	0.23	449	0058-1L
4401.00	cut	Sh/Clst: drk gy to gy blk	2.86	8.54	0.74	11.54	2.73	313	27	11.4	0.25	450	0059-1L
4410.00	cut	Sh/Clst: drk gy to gy blk	2.95	8.17	0.72	11.35	2.65	308	27	11.1	0.27	446	0060-1L
4419.00	cut	Sh/Clst: drk gy to gy blk	4.93	11.68	0.91	12.84	4.19	279	22	16.6	0.30	448	0061-1L
4431.00	cut	Sh/Clst: drk gy to gy blk	3.40	9.87	0.75	13.16	3.02	327	25	13.3	0.26	449	0062-1L
4440.00	cut	Sh/Clst: drk gy to gy blk	2.85	8.32	0.80	10.40	3.04	274	26	11.2	0.26	451	0063-1L
4449.00	cut	Sh/Clst: drk gy to gy blk	3.91	9.51	0.78	12.19	3.24	294	24	13.4	0.29	449	0064-1L
4461.00	cut	Sh/Clst: drk gy to gy blk	3.13	9.02	0.70	12.89	2.86	315	24	12.2	0.26	447	0065-1L
4470.00	cut	Sh/Clst: drk gy to gy blk	2.71	7.34	0.77	9.53	2.50	294	31	10.1	0.27	449	0066-1L
4491.00	cut	Sh/Clst: drk gy to gy blk	5.29	10.97	0.63	17.41	4.76	230	13	16.3	0.33	450	0068-1L
4509.00	cut	Sh/Clst: drk gy to gy blk	2.40	7.91	0.55	14.38	2.95	268	19	10.3	0.23	450	0070-1L
4521.00	cut	Sh/Clst: drk gy to gy blk	7.54	13.40	0.77	17.40	5.83	230	13	20.9	0.36	450	0071-1L
4530.00	cut	Sh/Clst: drk gy to gy blk	9.76	14.75	0.67	22.01	6.02	245	11	24.5	0.40	453	0072-1L



Table 2 : Rock-Eval table for well NOCS 2/5-9

Depth unit of measure: m

Depth	Typ	Lithology	S1	S2	S3	S2/S3	TOC	HI	OI	PP	PI	Tmax	Sample
4539.00	cut	Sh/Clst: drk gy to gy blk	9.42	14.87	0.69	21.55	6.46	230	11	24.3	0.39	454	0073-1L
4548.00	cut	Sh/Clst: drk gy to gy blk	9.43	15.49	0.67	23.12	5.85	265	11	24.9	0.38	450	0074-1L
4560.00	cut	Sh/Clst: drk gy to gy blk	8.62	11.80	0.75	15.73	5.83	202	13	20.4	0.42	450	0075-1L
4569.00	cut	Sh/Clst: drk gy to gy blk	8.43	13.11	0.78	16.81	5.90	222	13	21.5	0.39	453	0076-1L
4578.00	cut	Sh/Clst: drk gy to gy blk	8.18	13.11	0.80	16.39	5.67	231	14	21.3	0.38	453	0077-1L
4600.00	cut	Sh/Clst: gy blk to blk	7.37	7.39	0.54	13.69	4.02	184	13	14.8	0.50	448	0182-1L
4611.00	cut	Sh/Clst: drk gy to gy blk	7.40	12.16	0.92	13.22	6.27	194	15	19.6	0.38	454	0080-1L
4620.00	cut	Sh/Clst: drk gy to gy blk	5.81	9.56	0.82	11.66	5.11	187	16	15.4	0.38	455	0081-1L
4629.00	cut	Sh/Clst: drk gy to gy blk	5.89	10.27	0.94	10.93	5.04	204	19	16.2	0.36	453	0082-1L
4638.00	cut	Sh/Clst: drk gy to gy blk	6.20	10.40	0.72	14.44	4.56	228	16	16.6	0.37	451	0083-1L
4641.00	cut	Sh/Clst: drk gy to gy blk	6.10	7.53	0.44	17.11	3.24	232	14	13.6	0.45	452	0183-1L
4650.00	cut	Sh/Clst: drk gy to gy blk	5.21	6.71	0.73	9.19	4.01	167	18	11.9	0.44	448	0084-1L
4671.00	cut	Sh/Clst: drk gy to gy blk	5.55	8.02	0.89	9.01	4.57	175	19	13.6	0.41	456	0086-1L
4686.00	cut	Sh/Clst: drk gy to gy blk	6.65	10.73	0.84	12.77	4.84	222	17	17.4	0.38	455	0087-1L
4689.00	cut	Sh/Clst: drk gy to gy blk	4.81	7.70	0.75	10.27	3.95	195	19	12.5	0.38	456	0088-1L

Table 2 : Rock-Eval table for well NOCS 2/5-9

Depth unit of measure: m

Depth	Typ	Lithology	S1	S2	S3	S2/S3	TOC	HI	OI	PP	PI	Tmax	Sample
4701.00	cut	Sh/Clst: drk gy to gy blk	3.66	5.76	0.75	7.68	3.52	164	21	9.4	0.39	455	0089-1L
4710.00	cut	Sh/Clst: drk gy to gy blk	4.26	6.79	0.75	9.05	3.88	175	19	11.1	0.39	455	0090-1L
4719.00	cut	Sh/Clst: drk gy to gy blk	3.32	4.68	0.72	6.50	2.93	160	25	8.0	0.41	456	0091-1L
4731.00	cut	Sh/Clst: drk gy to gy blk	3.69	6.32	0.84	7.52	3.29	192	26	10.0	0.37	457	0092-1L
4740.00	cut	Sh/Clst: drk gy to gy blk	3.11	4.09	0.80	5.11	2.95	139	27	7.2	0.43	456	0093-1L
4749.00	cut	Sh/Clst: drk gy to gy blk	2.70	2.84	0.78	3.64	2.59	110	30	5.5	0.49	458	0094-1L
4761.00	cut	Sh/Clst: drk gy to gy blk	2.73	3.07	0.95	3.23	2.79	110	34	5.8	0.47	458	0095-1L
4770.00	cut	Sh/Clst: drk gy to gy blk	3.19	4.00	0.96	4.17	3.05	131	31	7.2	0.44	456	0096-1L
4779.00	cut	Sh/Clst: drk gy to gy blk	5.79	7.41	1.13	6.56	3.98	186	28	13.2	0.44	456	0097-1L
4800.00	cut	Sh/Clst: drk gy to gy blk	5.03	7.69	0.96	8.01	3.46	222	28	12.7	0.40	455	0098-1L
4809.00	cut	Sh/Clst: drk gy to gy blk	4.70	6.92	1.03	6.72	3.93	176	26	11.6	0.40	456	0099-1L
4851.00	cut	Sh/Clst: drk gy to gy blk	2.45	2.98	0.99	3.01	2.44	122	41	5.4	0.45	458	0102-1L
4860.00	cut	Sh/Clst: drk gy to gy blk	2.68	3.26	1.10	2.96	2.71	120	41	5.9	0.45	458	0103-1L
4869.00	cut	Sh/Clst: drk gy to gy blk	2.62	3.24	1.08	3.00	2.77	117	39	5.9	0.45	457	0104-1L
4878.00	cut	Sh/Clst: drk gy to gy blk	3.16	4.00	1.08	3.70	3.08	130	35	7.2	0.44	456	0105-1L

Table 2 : Rock-Eval table for well NOCS 2/5-9

Depth unit of measure: m

Depth	Typ	Lithology	S1	S2	S3	S2/S3	TOC	HI	OI	PP	PI	Tmax	Sample
4890.00	cut	Sh/Clst: drk gy to gy blk	2.45	3.20	0.95	3.37	2.59	124	37	5.7	0.43	457	0106-1L
4968.00	cut	Sh/Clst: drk gy to gy blk	2.79	3.07	1.16	2.65	2.78	110	42	5.9	0.48	457	0114-1L
5145.00	cut	Sh/Clst: gy blk	3.58	3.37	0.02	168.50	2.44	138	1	6.9	0.52	451	0184-2L
5147.00	cut	Sh/Clst: gy blk	4.11	4.43	-	-	2.40	185	-	8.5	0.48	446	0185-1L
5157.00	cut	Sh/Clst: drk gy to gy blk	2.19	2.38	1.16	2.05	2.72	88	43	4.6	0.48	459	0133-1L
5175.00	cut	Sh/Clst: drk gy to gy blk	2.62	2.74	1.12	2.45	2.68	102	42	5.4	0.49	460	0135-1L
5202.00	cut	Sh/Clst: drk gy to gy blk	2.56	2.85	0.98	2.91	2.56	111	38	5.4	0.47	460	0138-1L
5256.00	cut	Sh/Clst: drk gy to gy blk	2.21	2.51	0.89	2.82	2.48	101	36	4.7	0.47	459	0144-1L
5274.00	cut	Sh/Clst: drk gy to gy blk	2.52	2.50	0.80	3.13	2.50	100	32	5.0	0.50	458	0146-1L
5292.00	cut	Sh/Clst: drk gy to gy blk	2.24	2.71	1.11	2.44	2.45	111	45	5.0	0.45	460	0148-1L
5346.00	cut	Sh/Clst: drk gy to gy blk	2.14	2.47	0.93	2.66	2.42	102	38	4.6	0.46	458	0154-1L
5397.00	cut	Sh/Clst: gy blk to blk to brn gy	3.05	3.20	0.16	20.00	2.41	133	7	6.3	0.49	452	0186-1L
5400.00	cut	Sh/Clst: drk gy to gy blk	2.33	2.99	0.88	3.40	2.76	108	32	5.3	0.44	456	0167-1L
5407.00	cut	Sh/Clst: drk gy to gy blk	2.25	2.80	1.14	2.46	2.81	100	41	5.1	0.45	455	0161-1L

Table 3 : Pyrolysis GC Data (S2 peak) as Percentage of Total Area for Well NOCS 2/5-9

Depth unit of measure: m

Depth	Typ	Lithology	C1	C2-C5	C6-C14	C15+	S2 from Rock-Eval	Sample
2890.00	cut	Sh/Clst: lt gn gy	4.15	19.63	61.69	14.53	5.19	0001-1L
3192.00	cut	Sh/Clst: m lt bl gy	2.62	14.75	46.13	36.50	2.95	0004-1L
4089.00	cut	Ca : w to pl brn w	2.62	13.63	36.77	46.98	4.02	0039-1L
4140.00	cut	Sh/Clst: drk gy	2.38	12.82	33.54	51.25	22.32	0044-1L
4143.00	cut	Sh/Clst: m gy to ol gy	5.47	33.87	49.23	11.43	0.16	0180-1L
4161.00	cut	Sh/Clst: drk gy	2.90	15.55	40.24	41.30	5.09	0046-1L
4191.00	cut	Sh/Clst: drk gy	5.55	9.03	35.67	49.76	13.74	0049-1L
4221.00	cut	Sh/Clst: drk gy	2.85	13.64	34.78	48.72	6.99	0052-1L
4251.00	cut	Sh/Clst: drk gy	2.84	14.62	34.02	48.53	28.42	0171-1L
4293.00	cut	Sh/Clst: drk gy	2.54	13.64	33.41	50.41	14.86	0179-1L
4323.00	cut	Sh/Clst: drk gy	3.21	15.13	36.03	45.63	9.51	0176-1L
4362.00	cut	Sh/Clst: drk gy	5.95	16.96	45.05	32.03	9.07	0178-1L
4380.00	cut	Sh/Clst: drk gy to gy blk	3.68	15.62	38.97	41.73	6.87	0057-1L
4419.00	cut	Sh/Clst: drk gy to gy blk	3.72	16.64	33.32	46.32	11.68	0061-1L

Table 3 : Pyrolysis GC Data (S<sub>2</sub> peak) as Percentage of Total Area for Well NOCS 2/5-9

Depth unit of measure: m

Depth	Typ	Lithology	C1	C2-C5	C6-C14	C15+	S <sub>2</sub> from Rock-Eval	Sample
4509.00	cut	Sh/Clst: drk gy to gy blk	3.67	13.65	36.82	45.86	7.91	0070-1L
4539.00	cut	Sh/Clst: drk gy to gy blk	6.08	17.07	34.43	42.42	14.87	0073-1L
4578.00	cut	Sh/Clst: drk gy to gy blk	5.65	16.09	34.78	43.48	13.11	0077-1L
4620.00	cut	Sh/Clst: drk gy to gy blk	6.58	17.96	36.07	39.39	9.56	0081-1L
4650.00	cut	Sh/Clst: drk gy to gy blk	5.65	16.22	35.54	42.59	6.71	0084-1L
4701.00	cut	Sh/Clst: drk gy to gy blk	6.56	17.91	38.11	37.42	5.76	0089-1L
4749.00	cut	Sh/Clst: drk gy to gy blk	6.36	18.94	40.39	34.31	2.84	0094-1L
4800.00	cut	Sh/Clst: drk gy to gy blk	5.48	15.13	36.21	43.18	7.69	0098-1L
4860.00	cut	Sh/Clst: drk gy to gy blk	5.64	17.63	37.95	38.78	3.26	0103-1L
4890.00	cut	Sh/Clst: drk gy to gy blk	6.48	19.86	42.53	31.13	3.20	0106-1L
4968.00	cut	Sh/Clst: drk gy to gy blk	6.06	17.68	40.52	35.74	3.07	0114-1L
5202.00	cut	Sh/Clst: drk gy to gy blk	6.28	20.82	40.11	32.79	2.85	0138-1L
5292.00	cut	Sh/Clst: drk gy to gy blk	5.91	17.77	38.62	37.71	2.71	0148-1L
5407.00	cut	Sh/Clst: drk gy to gy blk	5.61	18.05	38.61	37.73	2.80	0161-1L

Table 4 a: Weight of EOM and Chromatographic Fraction for well NOCS 2/5-9

Depth unit of measure: m

Depth	Typ	Lithology	Rock Extracted (g)	EOM (mg)	Sat (mg)	Aro (mg)	Asph (mg)	NSO (mg)	HC (mg)	Non-HC (mg)	TOC(e) (%)	Sample
2890.00	cut	Sh/Clst: lt gn gy	7.6	3.7	1.5	0.6	0.6	1.0	2.1	1.6	1.79	0001-1L
4089.00	cut	Ca : w to pl brn w	9.0	113.4	62.9	13.3	5.4	31.8	76.2	37.2	1.33	0039-1L
4140.00	cut	Sh/Clst: drk gy	8.8	5.1	2.1	1.4	0.5	1.1	3.5	1.6	0.30	0044-1L
4191.00	cut	Sh/Clst: drk gy	8.7	88.4	41.2	23.1	4.6	19.5	64.3	24.1	4.55	0049-1L
4293.00	cut	Sh/Clst: drk gy	8.3	69.5	33.2	18.4	3.1	14.8	51.6	17.9	4.84	0179-1L
4419.00	cut	Sh/Clst: drk gy to gy blk	8.2	82.0	39.6	20.7	4.1	17.6	60.3	21.7	4.29	0061-1L
4539.00	cut	Sh/Clst: drk gy to gy blk	9.1	127.0	62.9	32.2	7.6	24.3	95.1	31.9	6.50	0073-1L
4701.00	cut	Sh/Clst: drk gy to gy blk	8.4	53.9	35.2	8.4	1.9	8.4	43.6	10.3	3.67	0089-1L
4968.00	cut	Sh/Clst: drk gy to gy blk	7.5	47.8	30.5	10.0	1.4	5.9	40.5	7.3	3.14	0114-1L
5407.00	cut	Sh/Clst: drk gy to gy blk	9.4	50.2	31.5	10.6	1.8	6.3	42.1	8.1	2.88	0161-1L

Table 4 b: Concentration of EOM and Chromatographic Fraction (wt ppm rock) for well NOCS 2/5-9

Depth unit of measure: m

Depth	Typ	Lithology	EOM	Sat	Aro	Asph	NSO	HC	Non-HC	Sample
2890.00	cut	Sh/Clst: lt gn gy	486	197	78	78	131	276	210	0001-1L
4089.00	cut	Ca : w to pl brn w	12600	6988	1477	600	3533	8466	4133	0039-1L
4140.00	cut	Sh/Clst: drk gy	576	237	158	56	124	395	180	0044-1L
4191.00	cut	Sh/Clst: drk gy	10184	4746	2661	529	2246	7407	2776	0049-1L
4293.00	cut	Sh/Clst: drk gy	8373	4000	2216	373	1783	6216	2156	0179-1L
4419.00	cut	Sh/Clst: drk gy to gy blk	9975	4817	2518	498	2141	7335	2639	0061-1L
4539.00	cut	Sh/Clst: drk gy to gy blk	14033	6950	3558	839	2685	10508	3524	0073-1L
4701.00	cut	Sh/Clst: drk gy to gy blk	6439	4205	1003	227	1003	5209	1230	0089-1L
4968.00	cut	Sh/Clst: drk gy to gy blk	6347	4050	1328	185	783	5378	969	0114-1L
5407.00	cut	Sh/Clst: drk gy to gy blk	5363	3365	1132	192	673	4497	865	0161-1L

Table 4 c: Concentration of EOM and Chromatographic Fraction (mg/g TOC(e)) for well NOCS 2/5-9

Depth unit of measure: m

Depth	Typ	Lithology	EOM	Sat	Aro	Asph	NSO	HC	Non-HC	Sample
2890.00	cut	Sh/Clst: lt gn gy	27.20	11.03	4.41	4.41	7.35	15.44	11.76	0001-1L
4089.00	cut	Ca : w to pl brn w	947.37	525.48	111.11	45.11	265.66	636.59	310.78	0039-1L
4140.00	cut	Sh/Clst: drk gy	192.31	79.19	52.79	18.85	41.48	131.98	60.33	0044-1L
4191.00	cut	Sh/Clst: drk gy	223.83	104.32	58.49	11.65	49.37	162.81	61.02	0049-1L
4293.00	cut	Sh/Clst: drk gy	173.01	82.64	45.80	7.72	36.84	128.45	44.56	0179-1L
4419.00	cut	Sh/Clst: drk gy to gy blk	232.53	112.30	58.70	11.63	49.91	171.00	61.54	0061-1L
4539.00	cut	Sh/Clst: drk gy to gy blk	215.89	106.93	54.74	12.92	41.31	161.67	54.23	0073-1L
4701.00	cut	Sh/Clst: drk gy to gy blk	175.47	114.59	27.35	6.19	27.35	141.94	33.53	0089-1L
4968.00	cut	Sh/Clst: drk gy to gy blk	202.16	129.00	42.29	5.92	24.95	171.29	30.87	0114-1L
5407.00	cut	Sh/Clst: drk gy to gy blk	186.22	116.85	39.32	6.68	23.37	156.18	30.05	0161-1L



Table 4 d: Composition of material extracted from the rock (%) for well NOCS 2/5-9

Depth unit of measure: m

Depth	Typ	Lithology	Sat	Aro	Asph	NSO	HC	Non-HC	Sat	HC	Sample
			EOM	EOM	EOM	EOM	EOM	EOM	EOM	Aro	
2890.00	cut	Sh/Clst: lt gn gy	40.54	16.22	16.22	27.03	56.76	43.24	250.00	131.25	0001-1L
4089.00	cut	Ca : w to pl brn w	55.47	11.73	4.76	28.04	67.20	32.80	472.93	204.84	0039-1L
4140.00	cut	Sh/Clst: drk gy	41.18	27.45	9.80	21.57	68.63	31.37	150.00	218.75	0044-1L
4191.00	cut	Sh/Clst: drk gy	46.61	26.13	5.20	22.06	72.74	27.26	178.35	266.80	0049-1L
4293.00	cut	Sh/Clst: drk gy	47.77	26.47	4.46	21.29	74.24	25.76	180.43	288.27	0179-1L
4419.00	cut	Sh/Clst: drk gy to gy blk	48.29	25.24	5.00	21.46	73.54	26.46	191.30	277.88	0061-1L
4539.00	cut	Sh/Clst: drk gy to gy blk	49.53	25.35	5.98	19.13	74.88	25.12	195.34	298.12	0073-1L
4701.00	cut	Sh/Clst: drk gy to gy blk	65.31	15.58	3.53	15.58	80.89	19.11	419.05	423.30	0089-1L
4968.00	cut	Sh/Clst: drk gy to gy blk	63.81	20.92	2.93	12.34	84.73	15.27	305.00	554.79	0114-1L
5407.00	cut	Sh/Clst: drk gy to gy blk	62.75	21.12	3.59	12.55	83.86	16.14	297.17	519.75	0161-1L

Table 5 : Saturated Hydrocarbon Ratios for well NOCS 2/5-9

Depth unit of measure: m

Depth	Typ	Lithology	Pristane	Pristane	Pristane + Phytane	Phytane	CPI	Sample
			nC17	Phytane	nC17 + nC18	nC18		
2890.00	cut	Sh/Clst: lt gn gy	0.71	2.31	0.53	0.33	1.26	0001-1L
4089.00	cut	Ca : w to pl brn w	0.56	1.38	0.50	0.43	1.01	0039-1L
4140.00	cut	Sh/Clst: drk gy	0.49	1.83	0.43	0.36	1.06	0044-1L
4191.00	cut	Sh/Clst: drk gy	0.49	1.25	0.48	0.46	0.96	0049-1L
4293.00	cut	Sh/Clst: drk gy	0.66	1.18	0.67	0.68	1.03	0179-1L
4419.00	cut	Sh/Clst: drk gy to gy blk	0.46	1.40	0.42	0.38	1.05	0061-1L
4539.00	cut	Sh/Clst: drk gy to gy blk	0.36	1.75	0.31	0.25	1.07	0073-1L
4701.00	cut	Sh/Clst: drk gy to gy blk	0.35	1.72	0.30	0.25	1.06	0089-1L
4968.00	cut	Sh/Clst: drk gy to gy blk	0.34	1.75	0.29	0.23	1.02	0114-1L
5407.00	cut	Sh/Clst: drk gy to gy blk	0.35	1.69	0.30	0.24	1.06	0161-1L

Table 6 : Aromatic Hydrocarbon Ratios for well NOCS 2/5-9

Depth unit of measure: m

Depth	Typ	Lithology	MNR	DMNR	BPhR	2/1MP	MPI1	MPI2	Rc	DBT/P	4/1MDBT	(3+2) /1MDBT	Sample
2890.00	cut	Sh/Clst: lt gn gy	-	0.88	-	0.96	0.60	0.72	0.76	-	-	-	0001-1L
4089.00	cut	Ca : w to pl brn w	0.92	1.24	0.12	0.88	0.67	0.76	0.80	-	7.60	0.80	0039-1L
4140.00	cut	Sh/Clst: drk gy	0.88	1.21	0.19	0.81	0.51	0.57	0.71	-	8.11	0.78	0044-1L
4191.00	cut	Sh/Clst: drk gy	1.01	1.27	0.20	0.87	0.63	0.69	0.78	-	13.61	0.94	0049-1L
4293.00	cut	Sh/Clst: drk gy	1.01	1.28	0.17	0.83	0.63	0.69	0.78	-	14.51	0.96	0179-1L
4419.00	cut	Sh/Clst: drk gy to gy blk	1.00	1.31	0.14	0.85	0.65	0.72	0.79	-	14.18	1.44	0061-1L
4539.00	cut	Sh/Clst: drk gy to gy blk	1.10	1.55	0.13	0.88	0.71	0.77	0.83	-	17.79	1.39	0073-1L
4701.00	cut	Sh/Clst: drk gy to gy blk	1.11	1.75	0.14	0.95	0.74	0.82	0.84	-	29.53	1.66	0089-1L
4968.00	cut	Sh/Clst: drk gy to gy blk	1.36	2.17	0.18	1.02	0.79	0.90	0.87	-	-	-	0114-1L
5407.00	cut	Sh/Clst: drk gy to gy blk	1.33	2.23	0.18	1.06	0.78	0.87	0.87	-	-	-	0161-1L

Table 7 : Thermal Maturity Data for well NOCS 2/5-9

Depth unit of measure: m

Depth	Typ Lithology	Vitrinite Reflectance (%)	Number of Readings	Standard Deviation	Spore Fluorescence Colour	SCI	T <sub>max</sub> (°C)	Sample
2890.00	cut bulk	0.46	12	0.05	3+4	-	-	0001-0B
2890.00	cut Sh/Clst: lt gn gy	-	-	-	-	5.0	426	0001-1L
3090.00	cut bulk	0.46	7	0.05	3+4	-	-	0003-0B
3192.00	cut bulk	0.42	1	0.00	3+4	-	-	0004-0B
3192.00	cut Sh/Clst: m lt bl gy	-	-	-	-	5.5	439	0004-1L
4089.00	cut Ca : w to pl brn w	-	-	-	-	NDP	427	0039-1L
4140.00	cut Sh/Clst: drk gy	-	-	-	-	6.5(?)	443	0044-1L
4143.00	cut bulk	NDP	-	-	-	-	-	0180-0B
4191.00	cut Sh/Clst: drk gy	-	-	-	-	7.0(?)	439	0049-1L
4200.00	cut bulk	0.51	2	0.01	4	-	-	0050-0B
4221.00	cut Sh/Clst: drk gy	-	-	-	-	7.0(?)	446	0052-1L
4293.00	cut Sh/Clst: drk gy	-	-	-	-	6.5-7.0(?)	440	0179-1L
4300.00	cut bulk	0.57	5	0.05	-	-	-	0181-0B
4362.00	cut Sh/Clst: drk gy	-	-	-	-	7.0-8.0	443	0178-1L

Table 7 : Thermal Maturity Data for well NOCS 2/5-9

Depth unit of measure: m

Depth	Typ Lithology	Vitrinite Reflectance (%)	Number of Readings	Standard Deviation	Spore Fluorescence Colour	SCI	T <sub>max</sub> (°C)	Sample
4368.00	cut bulk	0.48	19	0.05	4	-	-	0056-0B
4419.00	cut Sh/Clst: drk gy to gy blk	-	-	-	-	8.0	448	0061-1L
4449.00	cut bulk	0.45	6	0.05	4	-	-	0064-0B
4509.00	cut bulk	0.50	13	0.04	4-5	-	-	0070-0B
4560.00	cut bulk	0.62	3	0.06	-	-	-	0075-0B
4600.00	cut Sh/Clst: gy blk to blk	-	-	-	-	8.5?-9.1	448	0182-1L
4641.00	cut Sh/Clst: drk gy to gy blk	-	-	-	-	8.5-9.0	452	0183-1L
4650.00	cut bulk	0.57	11	0.04	-	-	-	0084-0B
4701.00	cut bulk	0.60	9	0.07	-	-	-	0089-0B
4770.00	cut bulk	0.58	7	0.05	-	-	-	0096-0B
4851.00	cut bulk	0.73	5	0.03	-	-	-	0102-0B
4968.00	cut bulk	0.79	2	0.05	-	-	-	0114-0B
5145.00	cut Sh/Clst: gy blk	-	-	-	-	8.5	451	0184-2L
5147.00	cut Sh/Clst: gy blk	-	-	-	-	8.5-9.0	446	0185-1L

Table 7 : Thermal Maturity Data for well NOCS 2/5-9

Depth unit of measure: m

Depth	Typ Lithology	Vitrinite Reflectance (%)	Number of Readings	Standard Deviation	Spore Fluorescence Colour	SCI	T <sub>max</sub> (°C)	Sample
5157.00	cut bulk	0.88	6	0.06	-	-	-	0133-0B
5274.00	cut bulk	0.86	7	0.09	-	-	-	0146-0B
5397.00	cut Sh/Clst: gy blk to blk to brn gy	-	-	-	-	9.0	452	0186-1L
5407.00	cut bulk	0.78	13	0.09	-	-	-	0161-0B

Table 8 : Visual Kerogen Composition Data for well NOCS 2/5-9

Depth unit of measure: m

Depth	Typ	Lithology	L I P T %	A m r e l t	L i p D e t	S p / P o l l	C u t i c l e	R e g i s t r a l	D i n c r o f l	A B i t L	I N E R T %	F u s i n	S e m F u s	I n t e n s	M i c r o i n	S c l e r o i	B i t I	V I T R %	T e l l i n	C o l l i n	V i t e r i n	A m o r t u i t y	Sample
2890.00	cut	Sh/Clst: lt gn gy	85	*	*	**		*	*		TR		*					15	*	*			0001-1L
3192.00	cut	Sh/Clst: m lt bl gy	75	**		*		**	*		10	*	**					15	*	**			0004-1L
4089.00	cut	Ca : w to pl brn w	TR								TR							TR					0039-1L
4140.00	cut	Sh/Clst: drk gy	90	**		*		**	*		5		*					5		*			0044-1L
4191.00	cut	Sh/Clst: drk gy	60	**	*	*	?	**	*	*	20	*	*					20	*	*			0049-1L
4221.00	cut	Sh/Clst: drk gy	40	**		*	?	*	*	*	30		*					30	*	**			0052-1L
4293.00	cut	Sh/Clst: drk gy	90	**		*		*		*	10		*					TR		*			0179-1L
4362.00	cut	Sh/Clst: drk gy	40	**	*	*	*	**	*	*	30	*	*	**				30	*	**			0178-1L
4419.00	cut	Sh/Clst: drk gy to gy blk	85	**		*	*	*	*		5	*	**					10	*	**			0061-1L
4600.00	cut	Sh/Clst: gy blk to blk	100	**		*	?	*			TR		*					TR		*			0182-1L
4641.00	cut	Sh/Clst: drk gy to gy blk	80	*	**	*		*	*		5		*					15	**	*			0183-1L
5145.00	cut	Sh/Clst: gy blk	50	**	**	?		*			?5	*						45	**	*			0184-2L

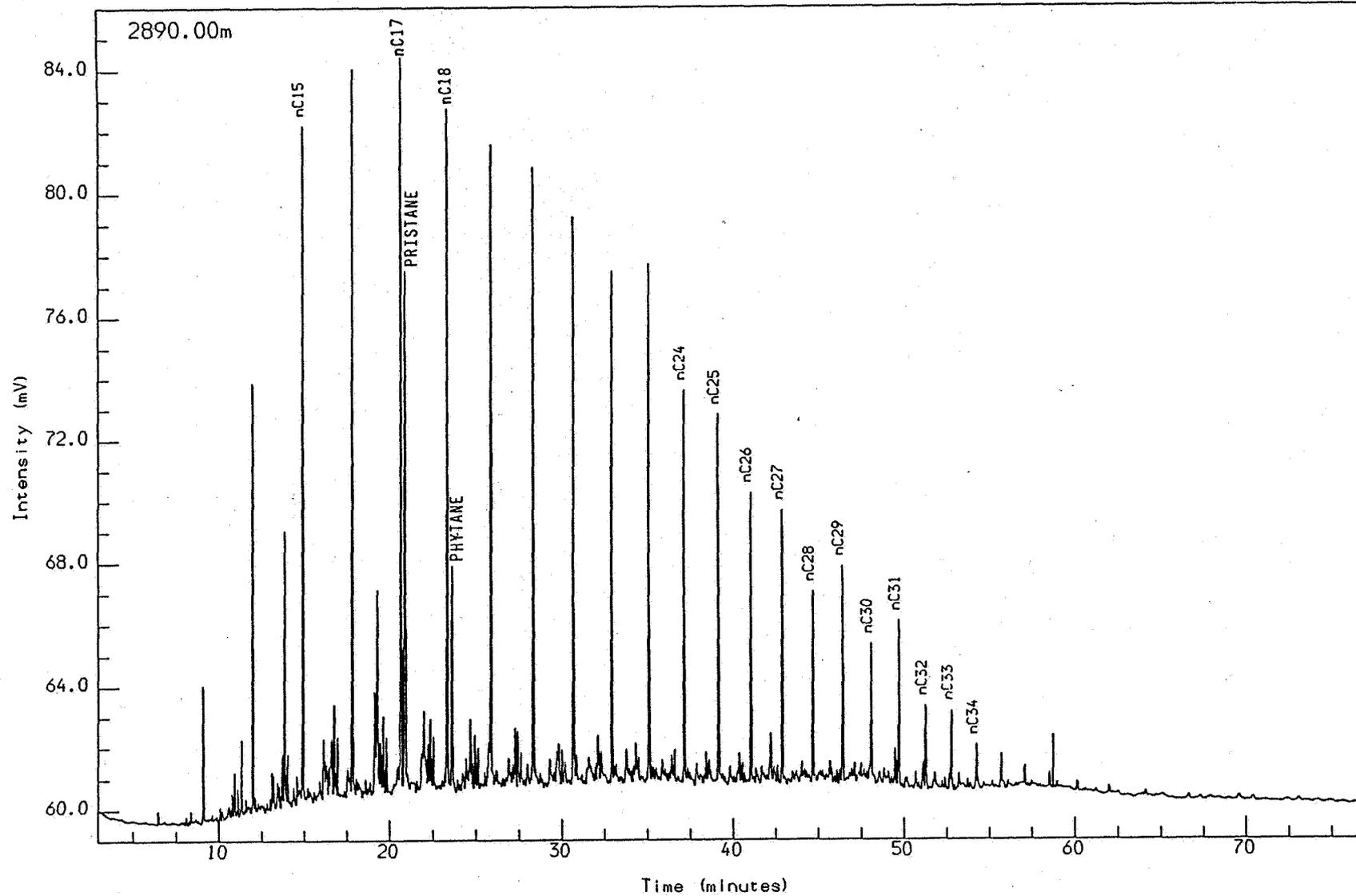




Saturated Fraction Chromatograms (FID)

Analysis Name : [526168] 11 SG3800011L.1.1.

Multichrom



WELL NOCS 2/5-9  
SATURATED GC  
Sh/Clst: lt gn gy

2890.00m cut

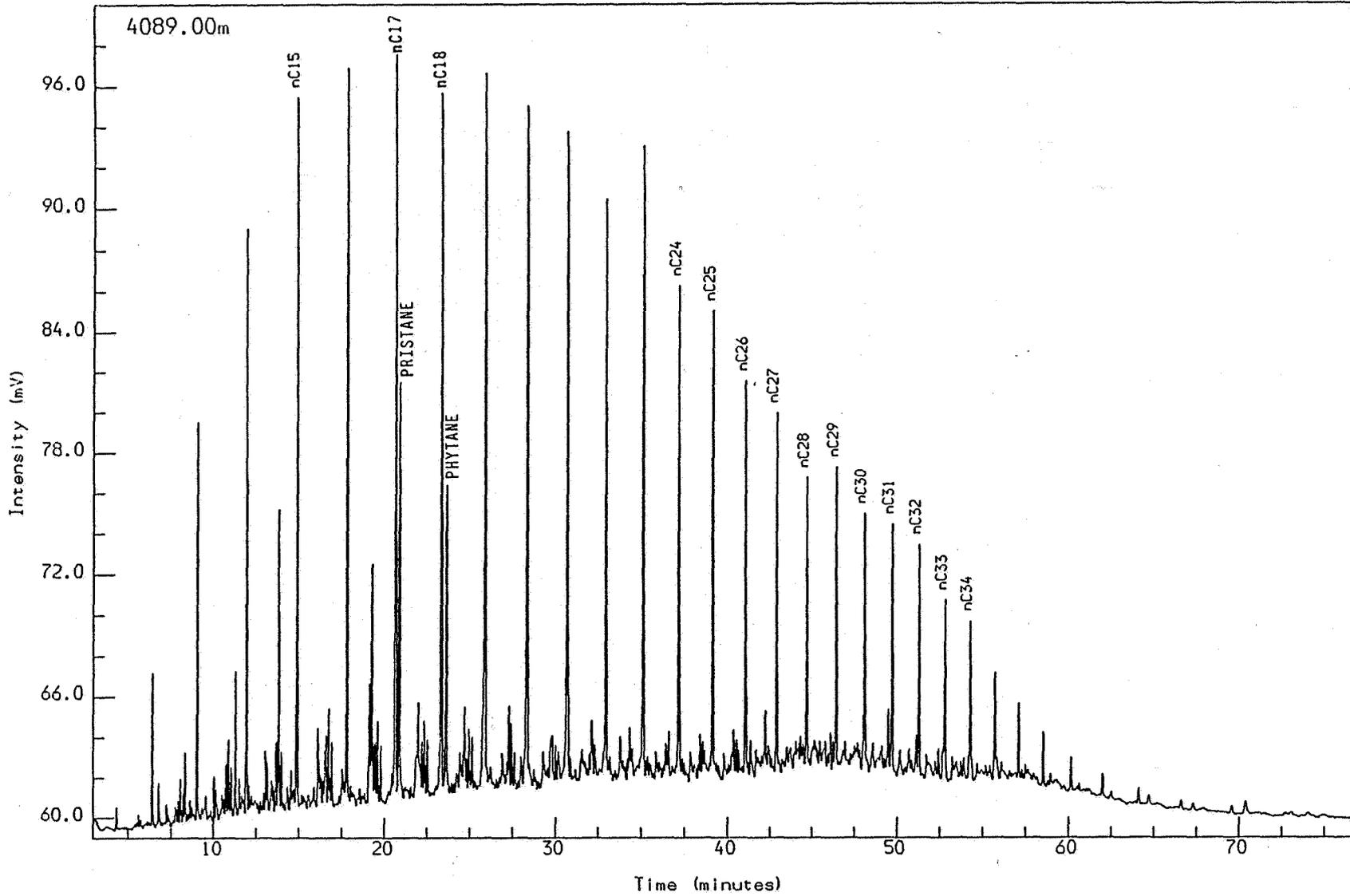
Reported on 9-MAR-1992 at 11:00

Schlumberger GECO-PRAKLA

GEOLAB NOR

Analysis Name : [526168] 11 SG3800391L,1,1.

Multichrom



WELL NOCS 2/5-9  
SATURATED GC  
Ca: w to pl brn w

4089.00m cut

Reported on 9-MAR-1992 at 19:49

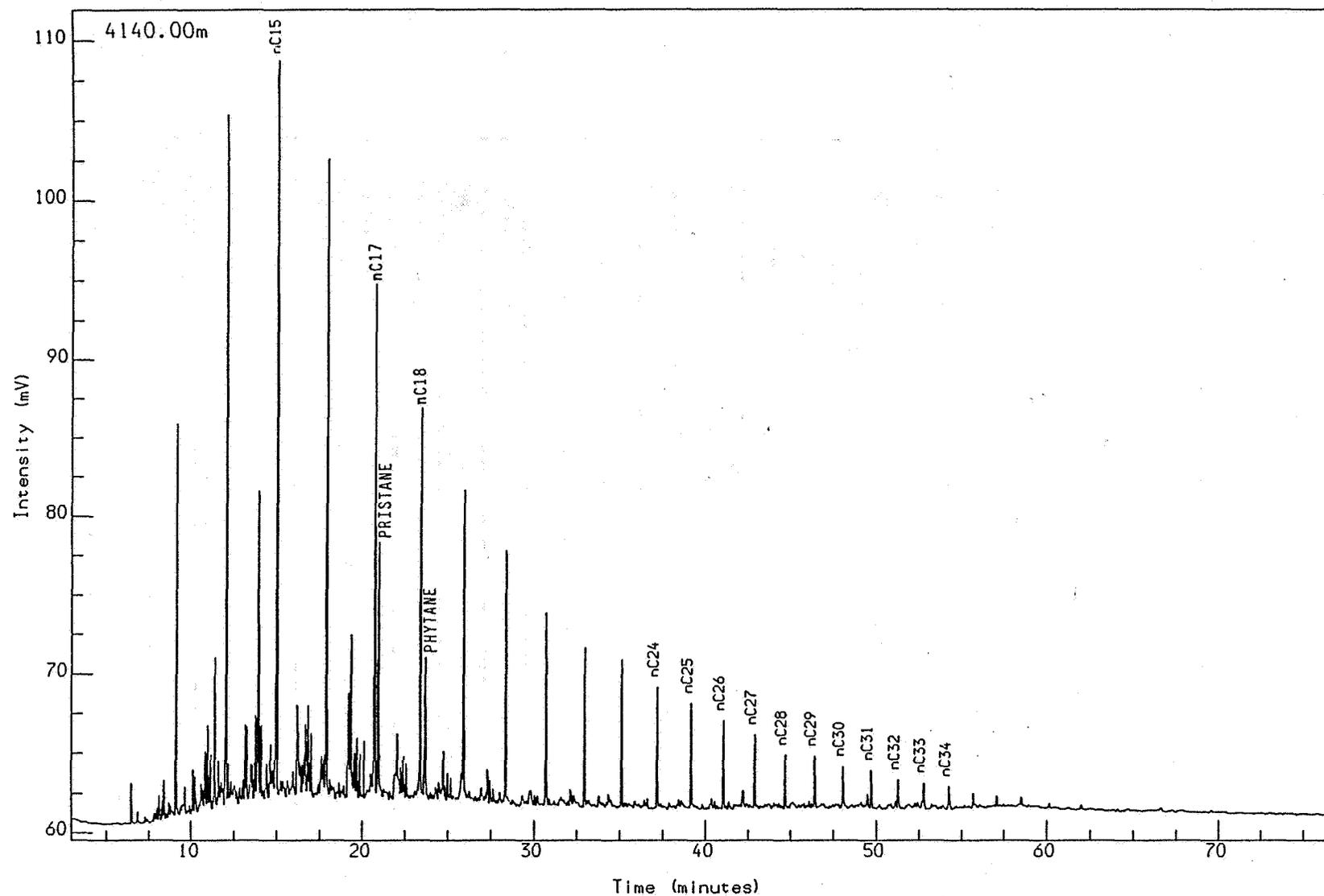
Schlumberger

GECO-PRAKLA

GEOLAB NO

Analysis Name : [526168] 11 SG3800441L,1,1.

Multichrom



WELL NOCS 2/5-9  
SATURATED GC  
Sh/Clst: drk gy

4140.00m cut

Reported on 9-MAR-1992 at 19:50

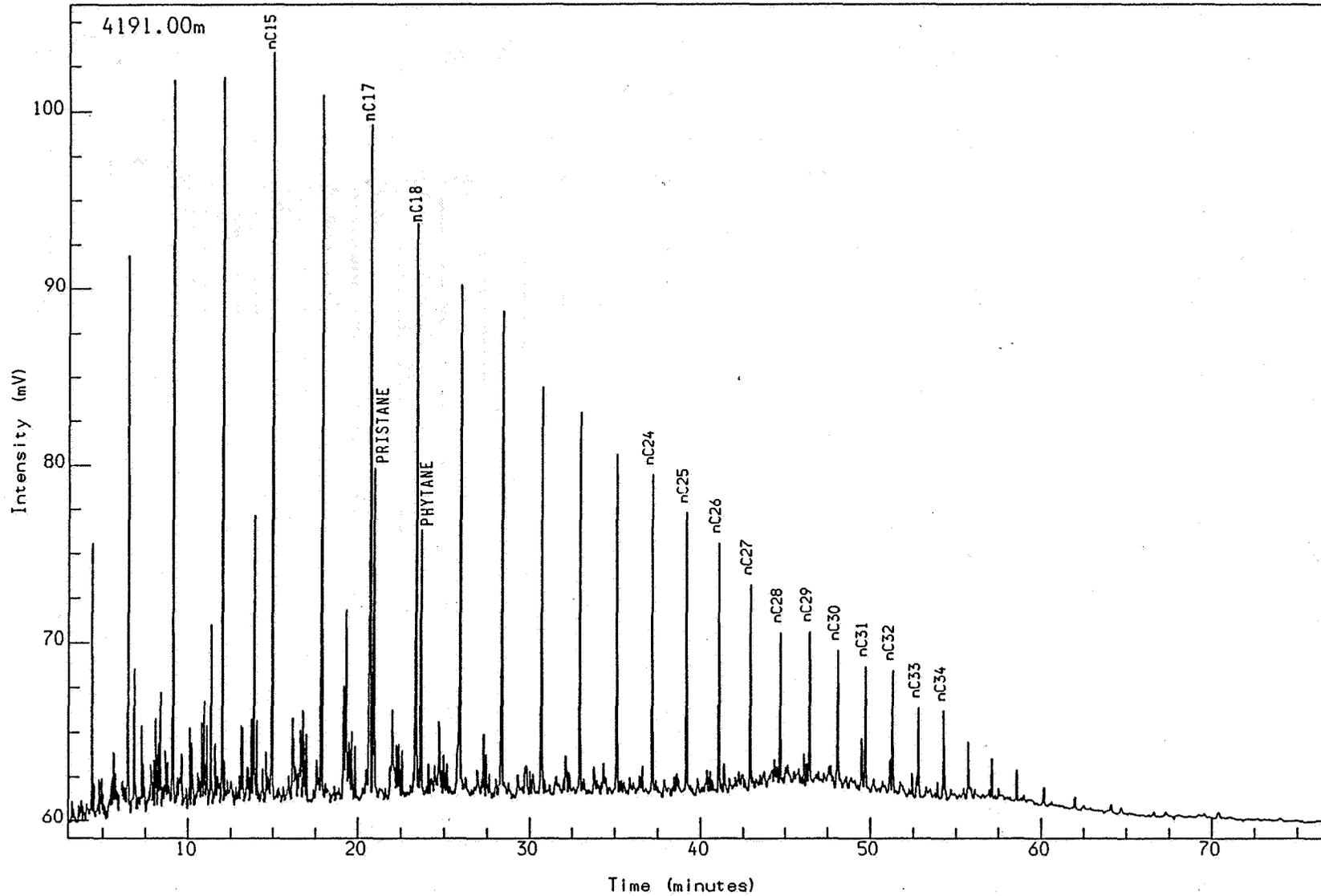
Schlumberger

GECO-PRAKLA

GEOLAB NOR

Analysis Name : [526168] 11 SG3800491L.1.1.

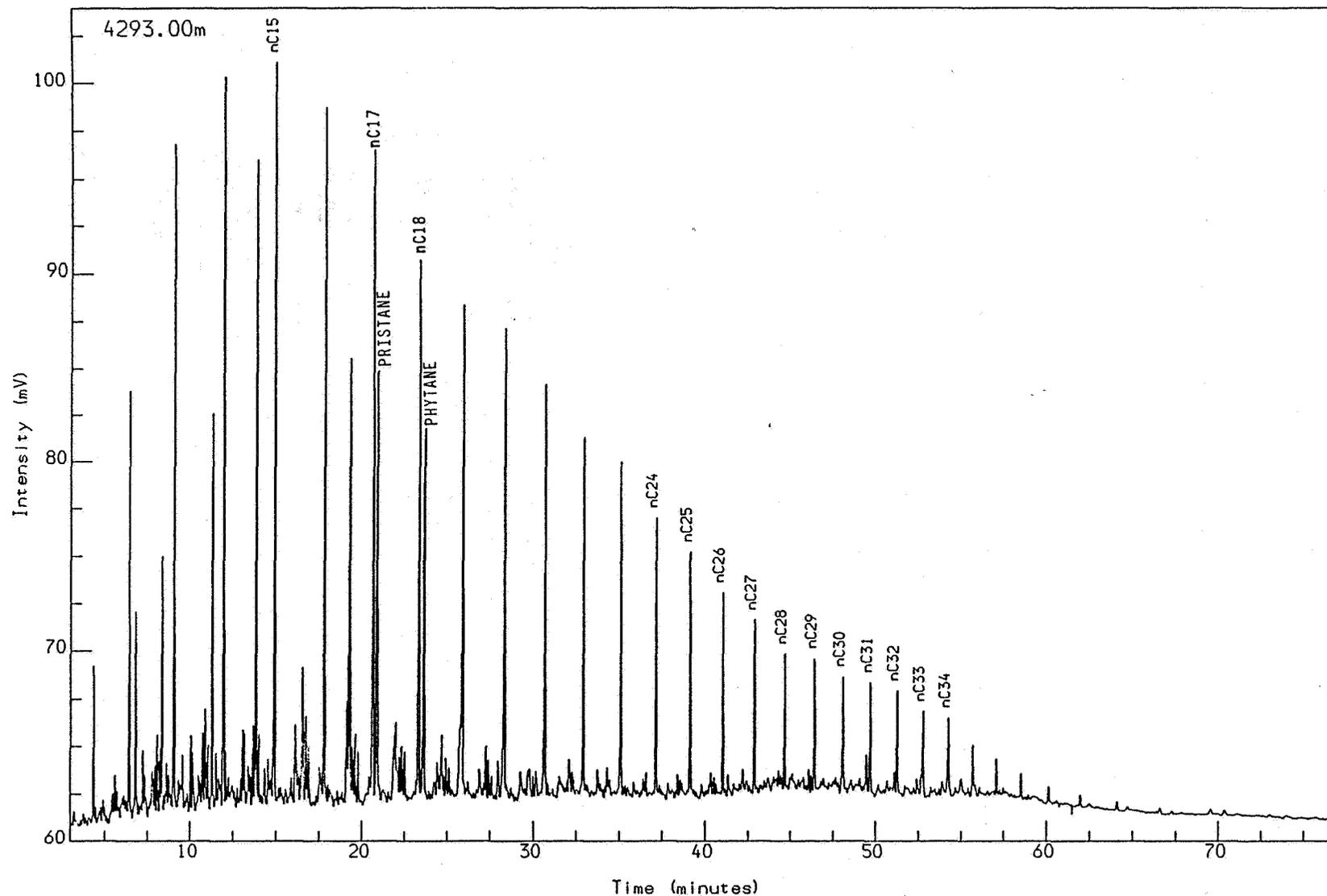
Multichrom



WELL NOCS 2/5-9  
SATURATED GC  
Sh/Clst: drk gy

4191.00m cut

Reported on 9-MAR-1992 at 19:53



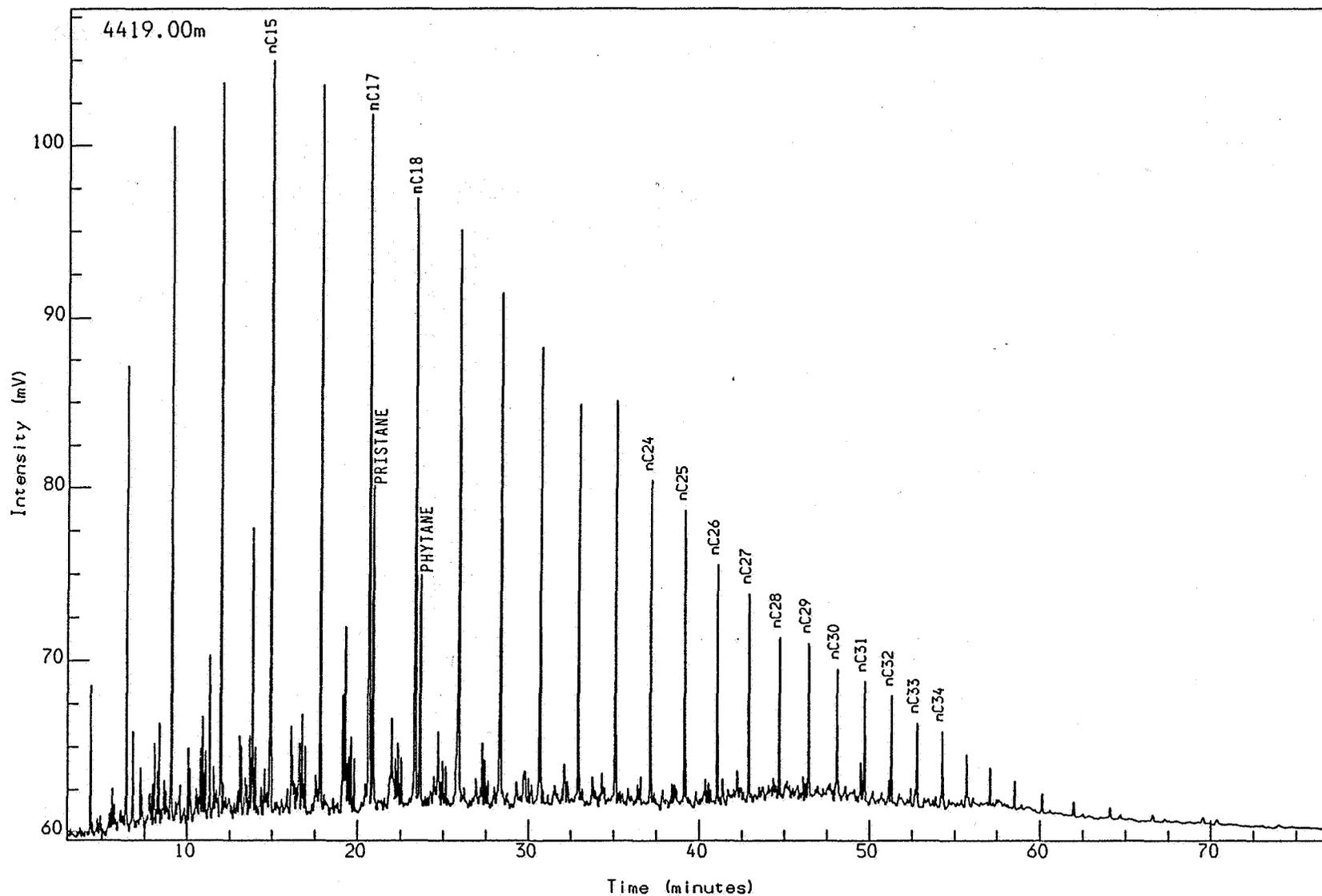
WELL NOCS 2/5-9  
SATURATED GC  
Sh/Clst: drk gy

4293.00m cut

Reported on 9-MAR-1992 at 19:54

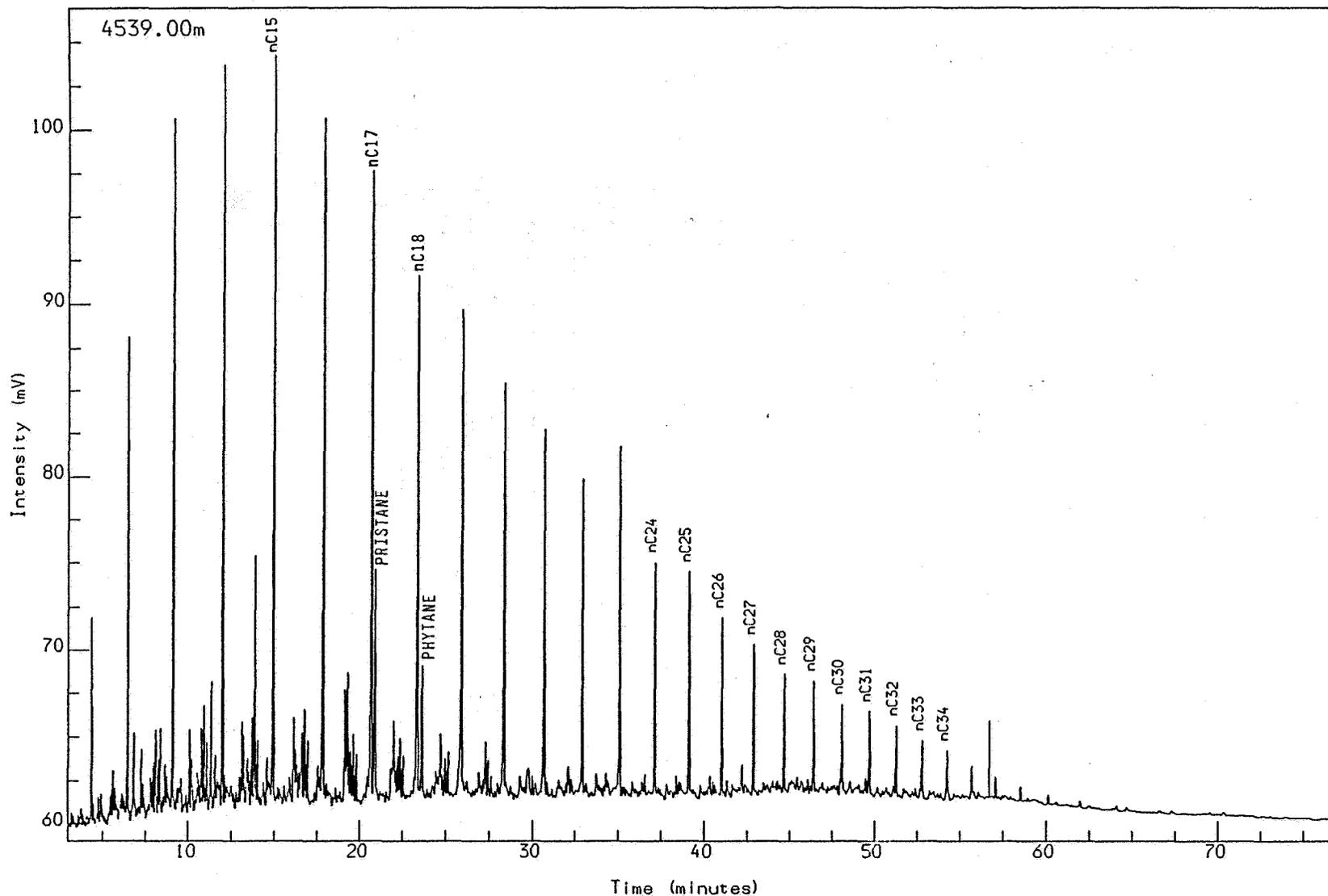
Analysis Name : [526168] 11 SG3800611L,1,1.

Multichrom



WELL NOCS 2/5-9                      4419.00m cut  
SATURATED GC  
Sh/Clst: drk gy to gy blk

Reported on 9-MAR-1992 at 19:58



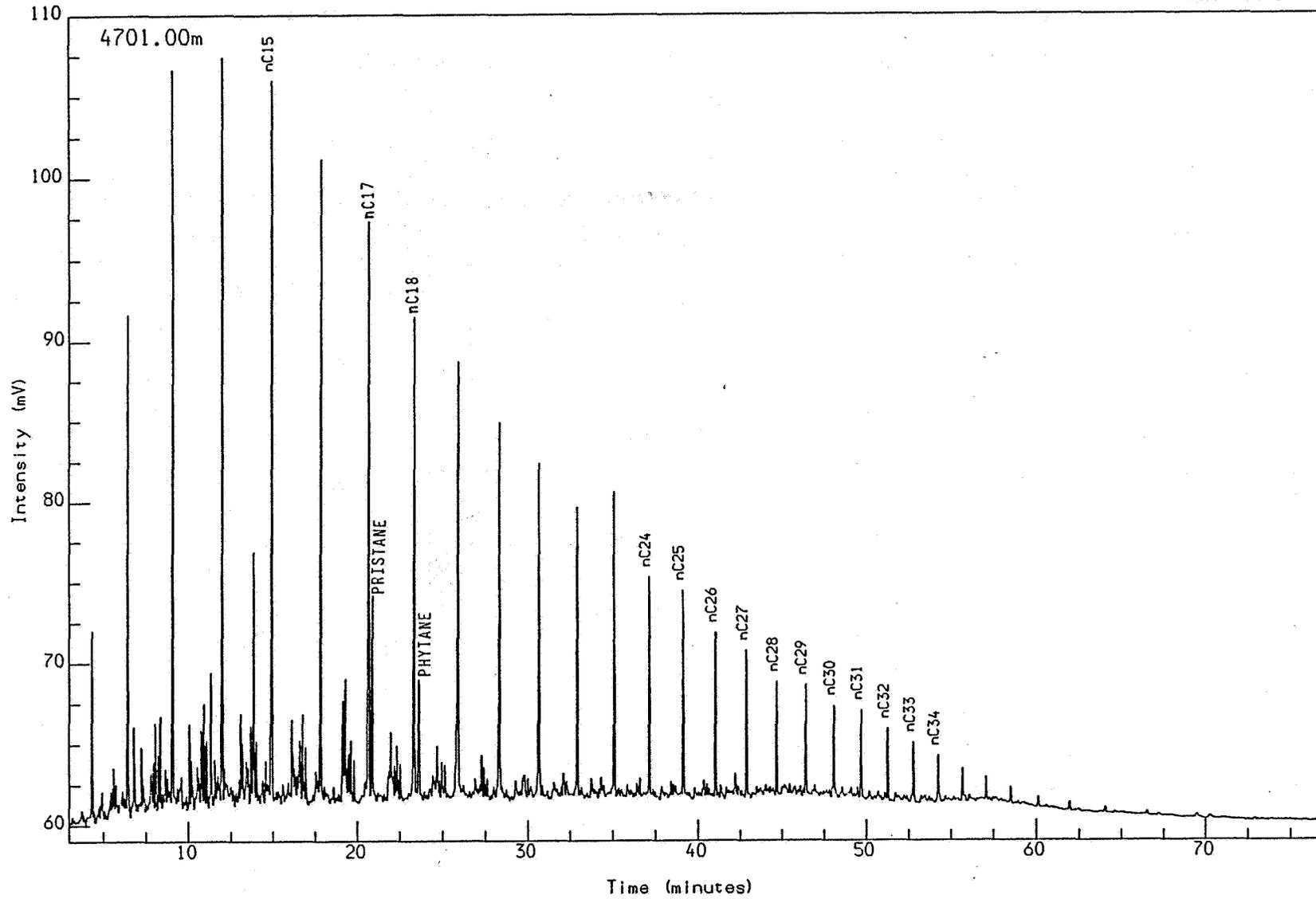
WELL NOCS 2/5-9                      4539.00m cut  
SATURATED GC  
Sh/Clst: drk gy to gy blk

Reported on 9-MAR-1992 at 20:06



Analysis Name : [526168] 11 SG5800891L,1,1.

Multichrom



WELL NOCS 2/5-9

4701.00m cut

Reported on 10-MAR-1992 at 08:09

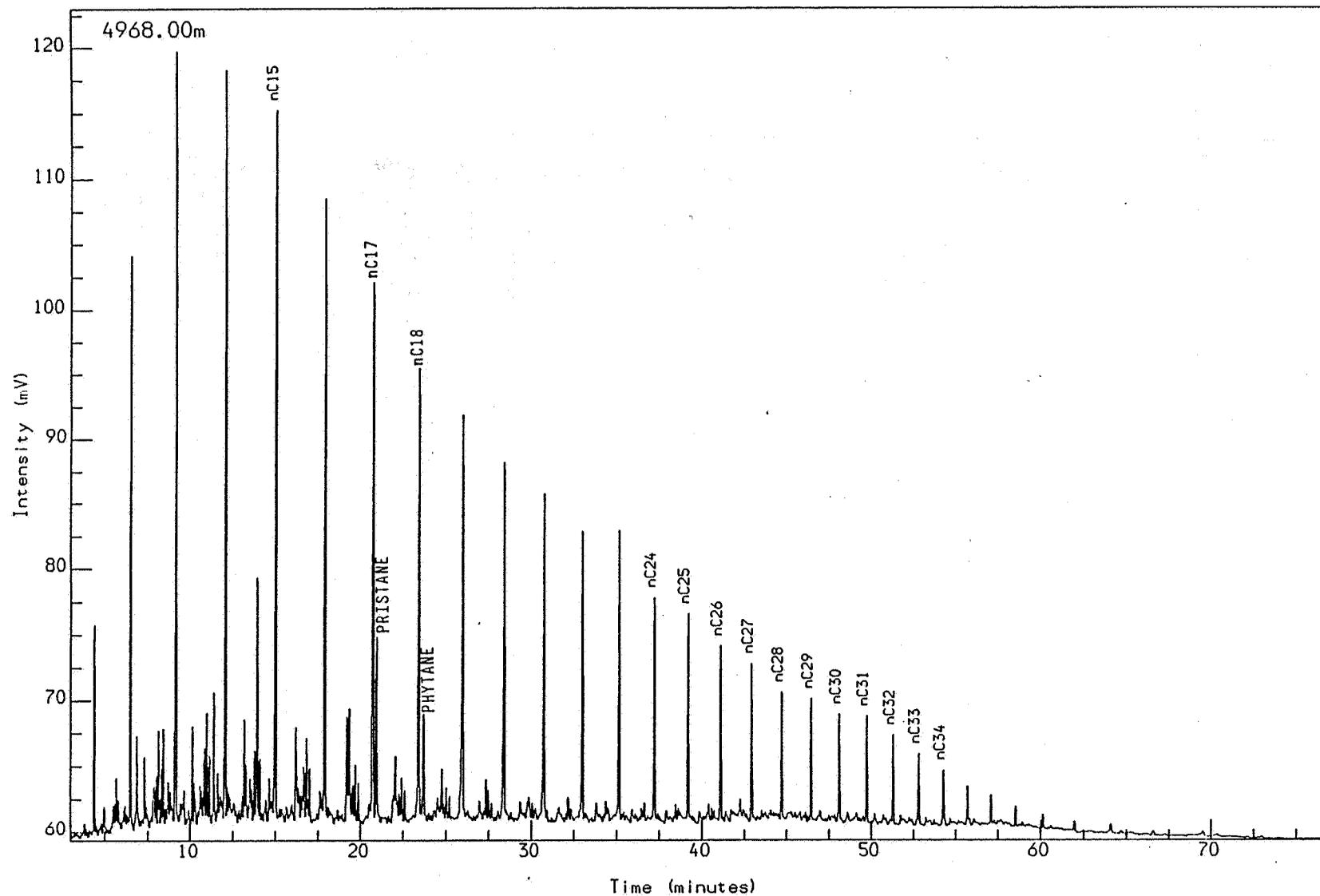
SATURATED GC

Sh/Clst: drk gy to gy blk

Schlumberger

GECO-PRAKLA

GEOLAB NO



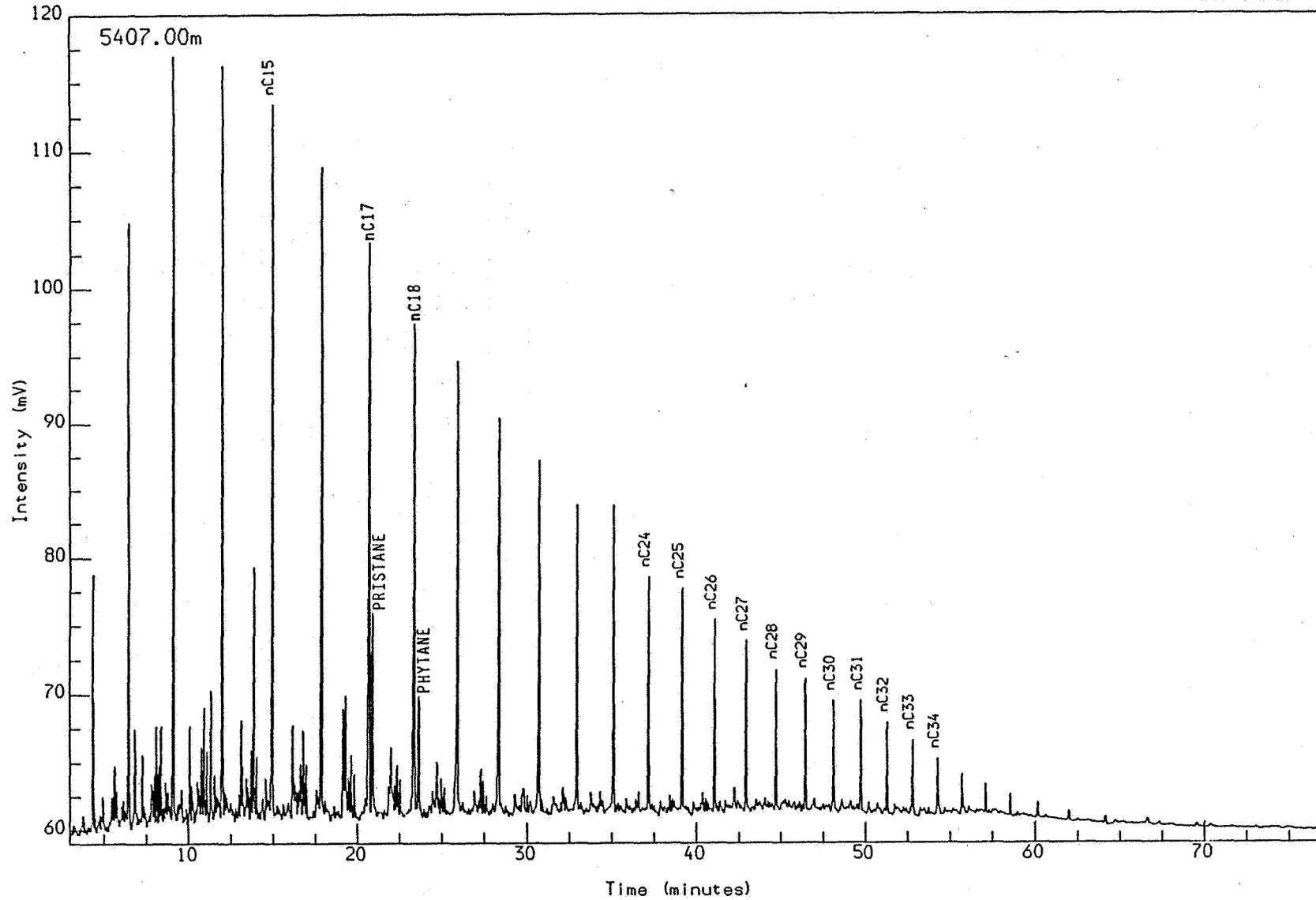
WELL NOCS 2/5-9  
SATURATED GC  
Sh/C1st: drk gy to gy blk

4968.00m cut

Reported on 10-MAR-1992 at 10:58

Analysis Name : [526168] 11 SG3801611L.1.1.

Multichrom



WELL NOCS 2/5-9

5407.00m cut

Reported on 10-MAR-1992 at 11:13

SATURATED GC

Sh/Clst: drk gy to gy blk

Schlumberger

GECO-PRAKLA

GEOLAB NOR