Ha M

PROPRIETARY EXPLORESSO

ESSO EXPLORATION NORWAY INC.

COMPLETION LOG

Scale 1:500

Well Name 30/10-5		Status Plugged and abandoned	
Area North sea Norway	Well Classification Wildcat	Total Depth 17,011 Feet	Deepest Penetration TRIASSIC ?
Location Lat.: 60° 00' 25,6" N Long.: 02° 04' 05,0" E	Date Spudded Aug 25, 1974	Elev. of Datum 77'	Water Depth 346'
Prepared by Esso Exploration Norway Inc.	Date Total Depth Reached April 8, 1975	Casing Data 20" at 2395' 13⅜" at 8848' 9⅝" at 12398' 7" at 14759'	Rig Neptune 7
Date: Revised:	Date Oper. Completed May 1, 1975		Contractor NORSEDRILL

LOGS RUN

IES	Sonic – GR – C	FDC – CNL – C	HDT	Temperature
Run 1 - 2395' - 8870'	Run 1 - 423' - 8888'	Run 1 – 5070' - 8859'	Run 1 – 6004' - 8871'	Run 1 – 8160' – 10086'
Run 2 - 8848' - 11414'	Run 2 - 8848' - 11411'	Run 2 – 14758' - 16999'	Run 2 - 8848' - 12457'	Run 2 – 11939' - 14235'
Run 3 - 10971' - 12408'	Run 3 - 11250,5' - 12449'	- 11811' – 12057'	Run 3 - 16591 - 17003'	
Run 4 - 12398' - 14765'	Run 4 - 12398' - 14764'	– 9350' - 9514'		
Run 5 - 14759' - 15850'	Run 5 - 14759' - 15840'			
Run 6 - 15662' - 17000'	Run 6 - 15662' - 17000'			

Cement Bond Run1 – 1202'-11808'				

Seismic check shots

Velocity Survey at Total Depth 17,011'

LITHOLOGIC SYMBOLS
(PROVISIONALLY APPROVED FOR FIELD TESTING)

?	*CLAY (NONFISSILE) - CLAYSTONE < 03mm*
– – –	*CLAY (FISSILE) OR SHALE < 03mm*
ᴧᴧᴧᴧ	*MUDSTONE*
ᴧᴧᴧᴧ	*SILT, COARSE (03-06mm) AND SILSTONE*
·	*SAND (06-2mm) AND SANDSTONE*
○	*GRANULE BOULDER (> 2mm) AND CONGLOMERATE*
Q	*QUARTZ*
▭	*FELDSPAR*
↗	*LITHIC OR ROCK FRAGMENTS*
◆	*PYRITE*
ϕ	*SIDERITE*
△	*CHERT*
■	*COAL*
▬	*CARBONACEOUS MATTER*
~	*GLAUCONITE*
'	*PHOSPHATE*
V	*VOLCANIC ASH OR BENTONITE*
˥	*MICA*
++	*GYPSUM*
+	*ANHYDRITE*
×	*HALITE*
✱	*POTASSIUM OR MAGNESIUM SALTS*

┬┴	*LIMESTONE*
┬┴ ⊥	*DOLOMITIC LIMESTONE* ⊥⊥ *VERY DOLOMITIC*
/ ⊥ /	*CALCAREOUS DOLOMITE* ⊥⊥ *VERY CALCAREOUS*
/ /	*DOLOMITE*
∽	*MARL*

SPECIFY TYPE OF CARBONATE BY ADDING TO BASIC LIMESTONE OR DOLOMITE SYMBOL THE APPROPRIATE ABBREVATION AS SHOWN BELOW

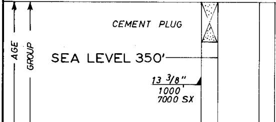
M M	*M = MICRITIC LIMESTONE*
G G	*G = GRAIN LIMESTONE (FOR GENERAL USE)*
S S	*S = SKELETAL LIMESTONE (FRAGMENTED AND NONFRAGMENTED)*
P P	*P = PELLETAL LIMESTONE*
F F	*F = FRAMEBUILDER LIMESTONE*
O O	*O = OOLITIC LIMESTONE*
K K	*K = CHALK*
D D	*D = DETRITAL LIMESTONE*
L L	*L = LUMP LIMESTONE*
m m	*m = MICROCRYSTALLINE OR MICROGRAINED < 03mm*

IGNEOUS ROCKS

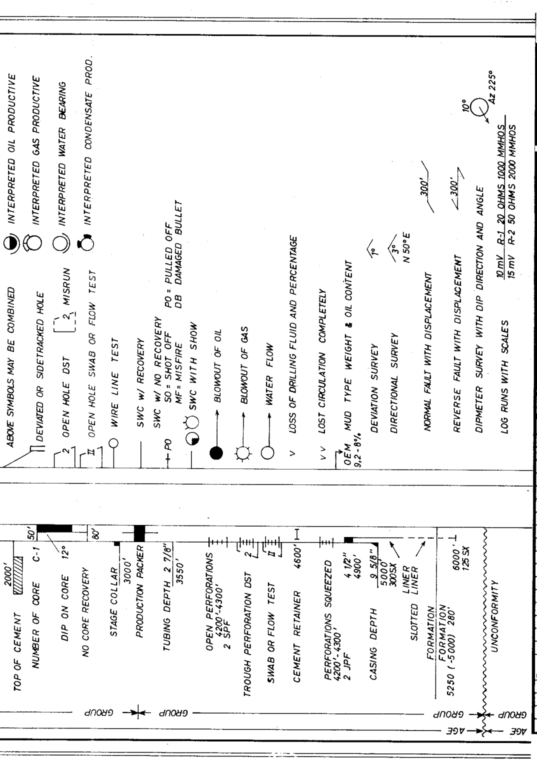
⁖	*IGNEOUS ROCKS IN GENERAL (WRITE OUT THE NAME WHERE THE SPECIFIC TYPE IS KNOWN)*

METAMORPHIC ROCKS

▨	*METAMORPHIC ROCKS IN GENERAL (WRITE OUT THE NAME WHERE THE SPECIFIC TYPE IS KNOWN)*



◐	*SHOW OR STAIN*	●	*OIL PRODUCTION*
◑	*HYDROCARBON CUT*	☼	*GAS PRODUCTION*
◕	*FLUORESCENCE*	✹	*CONDENSATE PRODUCTION*
☼	*GAS SHOW*	○	*WATER PRODUCTION*


TOP OF CEMENT
2000'
NUMBER OF CORE C-1
50'
DIP ON CORE 12°
NO CORE RECOVERY
80'
STAGE COLLAR
3000'
PRODUCTION PACKER
TUBING DEPTH 2 7/8"
3550'
OPEN PERFORATIONS 4200'-4300' 2 SPF
TROUGH PERFORATION DST
2
SWAB OR FLOW TEST
II
CEMENT RETAINER 4600'
PERFORATIONS SQUEEZED 4200'-4300' 2 JPF
4 1/2" 4900'
CASING DEPTH 9 5/8" 5000' 300SX
LINER
SLOTTED LINER
FORMATION
FORMATION 5250 (-5000) 280'
6000' 125 SX
UNCONFORMITY
GROUP
GROUP
GROUP
AGE
GROUP
AGE
ABOVE SYMBOLS MAY BE COMBINED
DEVIATED OR SIDETRACKED HOLE
2 OPEN HOLE DST
2 MISRUN
II OPEN HOLE SWAB OR FLOW TEST
WIRE LINE TEST
SWC w/ RECOVERY
SWC w/ NO RECOVERY
PO
SO = SHOT OFF
MF = MISFIRE
PO = PULLED OFF
DB DAMAGED BULLET
SWC WITH SHOW
BLOWOUT OF OIL
BLOWOUT OF GAS
WATER FLOW
V LOSS OF DRILLING FLUID AND PERCENTAGE
V V LOST CIRCULATION COMPLETELY
OEM 9,2 - 8%
MUD TYPE WEIGHT & OIL CONTENT
DEVIATION SURVEY
1°
DIRECTIONAL SURVEY
3° N 50° E
NORMAL FAULT WITH DISPLACEMENT
300'
REVERSE FAULT WITH DISPLACEMENT
300'
DIPMETER SURVEY WITH DIP DIRECTION AND ANGLE
10°
Az 225°
LOG RUNS WITH SCALES
10 mV R-1 20 OHMS 1000 MMHOS
15 mV R-2 50 OHMS 2000 MMHOS
INTERPRETED OIL PRODUCTIVE
INTERPRETED GAS PRODUCTIVE
INTERPRETED WATER BEARING
INTERPRETED CONDENSATE PROD.

Schlumberger

BOREHOLE COMPENSATED SONIC LOG

PLAYBACK
IN FEET.

COUNTY
FIELD or
LOCATION
WELL
COMPANY

COMPANY ELF NORGE

WELL BRIGG-5

FIELD FRIGG

COUNTY NORWAY STATE NORTH SEA

LOCATION: API Serial No.
60°00'25.6''N
02°04'05.0''E
Sec. Twp. Rge.

Other Services:
IES:FDC/CNT:
HDT:CST.

Permanent Datum: MSL ; Elev.: 0'
Log Measured From RKB , 77 Ft. Above Perm. Datum
Drilling Measured From RKB

Elev.: K.B. 77
D.F. 76
G.L -346

Date	15 NOV. 74			
Run No.	ONE			
Depth—Driller	8908			
Depth—Logger	8895			
Btm. Log Interval	8888			
Top Log Interval	423 (GR)			
Casing—Driller	20" @ 2402	@	@	@
Casing - Logger	2405			
Bit Size	17½- 12¼			
Type Fluid in Hole	FCL-LC			
Dens. | Visc.	1.24 | 50			
pH | Fluid Loss	9 | 3 ml	ml	ml	ml
Source of Sample	FLOWLINE			
R_m @ Meas. Temp.	.213 @ 75 °F	@ °F	@ °F	@ °F
R_{mf} @ Meas. Temp.	.160 @ 75 °F	@ °F	@ °F	@ °F
R_{mc} @ Meas. Temp.	.350 @ 75 °F	@ °F	@ °F	@ °F
Source: R_{mf} | R_{mc}	Press | Press			
R_m @ BHT	.087 @ 144 °F	@ °F	@ °F	@
TIME Circulation Stopped	17.00on 14			
TIME Log ran	06.00on 15			
Max. Rec. Temp.	144 °F	°F	°F	°F
Equip. | Location	4001 | NRT			
Recorded By	Mallary/Traonmilin			
Witnessed By	Galy			

FOLD HERE

The well name, location and borehole reference data were furnished by the customer.

Run No.	001				
Service Order No.					
Fluid Level	TOP				

SCALE CHANGES

Type Log	Depth	Scale Up Hole	Scale Down Hole
BHC	6500	90 - 190	40 - 140

GR	2500	0 - 80	0 - 120

EQUIPMENT DATA

Sonic Panel No.	SLP-JF603
Sonic Cart No.	SLC-DB578
Sonic Sonde No.	SLS-H 661
Mem. Panel No.	MMP-B 529
G.R. Cart. No.	ECH-KG143
G.R. Panel No.	CNP-A 100
Caliper No.	
TTR No.	E 1767
Centralizers: No.	
Type	
Standoffs: No.	ONE
Type	1"
Time Const.-Sec.	2
Speed - F.P.M.	30

LOGGING DATA

Porosity Selectors				Depth	
Δt_m	Δt_f	Cp	Ø Scale	From	To

CALIBRATION DATA

GR	BKG. CPS	10
	Source CPS	410
	Tc Sec	6

REMARKS

TTI was not recorded.
Tool eccentralised.
Log played back in feet from digital tape.

Velocity (ft/sec) = 1,000,000 / Interval Transit Time (microseconds per foot)

All interpretations are opinions based on inferences from electrical or other measurements and we cannot, and do not guarantee the accuracy or correctness of any interpretations, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, damages or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees. These interpretations are also subject to Clause 7 of our General Terms and Conditions as set out in our current Price Schedule.

INTERVAL TRANSIT TIME MICROSECONDS PER FOOT T 3' R₁ 2' R₂

DEPTH 1/500

190 140 90

GAMMA RAY API UNITS

0 80

SCHLUMBERGER

INDUCTION LOG

PLAYBACK
IN FEET

COUNTY
FIELD or
LOCATION
WELL
COMPANY

COMPANY ELF NORGE A/S

WELL 30/10-5

FIELD FRIGG

COUNTY NORWAY STATE NORTH SEA

LOCATION 60° 00' 25.6" N
02° 04' 05.0"E
Sec. Twp. Rge.

Other Services:
BHC-GR, HDT
FDC-CNT, CST

Permanent Datum: MSL, Elev. 0
Log Measured From RKB, 77 Ft. Above Perm. Datum
Drilling Measured From RKB

Elev.: K.B. 77'
D.F. 76'
G.L. -346'

Date	16 Nov. 1974	8 Feb 75	14 Feb 75	9 Mar 75
Run No.	ONE 1/200	2	3	4
Depth—Driller	8908'	11421'	12426'	14764'
Depth—Logger	8878'	11415'	12422'	14767'
Btm. Log Interval	8870'	11414'	12408'	14765'
Top Log Interval	2395'	8847'	10971'	12402'
Casing—Driller	20" @ 2402'	13 3/8" @ 8849'	12 1/4" @ 8829'	9 5/8" @ 12400'
Casing—Logger	2395'	8847'	8819'	12402'
Bit Size	17½ - 12¼"	12 3/16"	12 1/4"-12	8 11/32"
Type Fluid in Hole	FCL-LC	Lignosulfonate + Seaw.	FCL-CL 1,68	F.C.L.
Dens. | Visc.	1.24 | 50	1,67 | 43	1,68 | 48	1,99 | 55
pH | Fluid Loss	9 | 3 ml	10 | 4,5 ml	12 | 4.2 ml	10,5 | 2 ml
Source of Sample	FLOWLINE	FLOWLINE	FLOWLINE	FLOWLINE
R_m @ Meas. Temp.	0.213 @ 75 °F	.32 @ 54 °F	0,327 @ 75 °F	0,361 @ 55 °F
R_{mf} @ Meas. Temp.	0.160 @ 75 °F	.18 @ 54 °F	0,167 @ 75 °F	0,195 @ 58 °F
R_{mc} @ Meas. Temp.	0.350 @ 75 °F	.88 @ 54 °F	0,471 @ 75 °F	0,853 @ 58 °F
Source: R_{mf} | R_{mc}	PRESS | PRESS	Press | Press	Press | Press	Press | Press
R_m @ BHT	0.076 @ 165 °F	.108 @ 174 °F	0,128 @ 203 °F	0,08 @ 260 °F
Time Since Circ.	32-35 HRS	12 Hrs	14 Hrs	13 Hrs
Max. Rec. Temp.	165 °F	186 °F	203 °F	266 °F
Equip. | Location	4001 | NRT	4001 | NRT	4001 | NRT	4001 | NRT
Recorded By	MALLARY/TRAONMILIN	M-HOUSEHAM	TRAONMILIN	BROWN
Witnessed By	GALY	VEROLLES	GALY	VEROLLES

FOLD HERE The well name, location and borehole reference data were furnished by the customer.

COUNTRY OFFESHORE NORWAY
FIELD or LOCATION Frigg
WELL 30/10 - 5
COMPANY ELF NORGE A/S

Schlumberger

INDUCTION ELECTRICAL LOG

COMPANY ELF NORGE A/S
WELL 30/10 - 5
FIELD FRIGG
COUNTRY NORWAY STATE NORTH SEA
LOCATION 60° 00' 25.6" N
02° 04' 05.6" E

Other Services:

Permanent Datum: MSL, Elev. 0
Log Measured From RKB, 77 Ft. Above Perm. Datum
Drilling Measured From RKB

Elev.: K.B 77'
D.F 75'
G.L - 346'

Date	28 March 1975	Apr. 7-75		
Run No.	5	6		
Depth—Driller	15853'	17011'		
Depth—Logger	15852'	17004,4'		
Btm. Log Interval	15846'	17003,4'		
Top Log Interval	14758'	15665,8'		
Casing—Driller	7" @ 14761'	7" @ 14760,3'	@	@
Casing—Logger	14758'	14758,7'		
Bit Size	5 27/32"	5 27/32"		
Type Fluid in Hole	FCL-LC	FCL-LC		
Dens. | Visc.	2.09 | 46	2,07 | 60		
pH | Fluid Loss	11 | 4.1 ml	12 | 2,8 ml	ml	ml
Source of Sample	Flow line	FLOWLINE		
R_m @ Meas. Temp.	0.309 @ 75 °F	0,407 @ 75 °F	@ °F	@ °F
R_{mf} @ Meas. Temp.	0.159 @ 75 °F	0,153 @ 75 °F	@ °F	@ °F
R_{mc} @ Meas. Temp.	0.832 @ 75 °F	0,612 @ 75 °F	@ °F	@ °F
Source: R_{mf} | R_{mc}	Press | Press	Press | Press		
R_m @ BHT	0,081 @ 306 °F	0,102 @ 320 °F	@ °F	@ °F
Time Since Circ.	11 Hrs	09,00 Hrs		
Max. Rec. Temp.	306 °F	320 °F	°F	°F
Equip. | Location	4001 | NRT	4001 | NRT		
Recorded By	Traonmilin	Traonmilin		
Witnessed By	GALY	Verolles-Pinet		

FOLD HERE The well name, location and borehole reference data were furnished by the customer.

REMARKS Log played back in feet from digital tape.

Changes in Mud Type or Additional Samples		
Date | Sample No.		
Depth—Driller		
Type Fluid in Hole		
Dens. | Visc.		
ph | Fluid Loss	ml	
Source of Sample		
R_m @ Meas. Temp.	@ °F	@ °F
R_{mf} @ Meas. Temp.	@ °F	@ °F
R_{mc} @ Meas. Temp.	@ °F	@ °F
Source: R_{mf} | R_{mc}		
R_m @ BHT	@ °F	@ °F
R_{mf} @ BHT	@ °F	@ °F
R_{mc} @ BHT	@ °F	@ °F

Scale Changes

Type Log	Depth	Scale Up Hole	Scale Down Hole

Equipment Data

Run No.	Tool Type	Pad Type	Tool Pos.	Other

C.D.: NONE S.O.: 1½
Equip. Used: CART. No. IRC - F 590
PANEL No. IRP 932
SONDE No. IRS - M 690

BIT SIZE TRANSITION : 6844 '

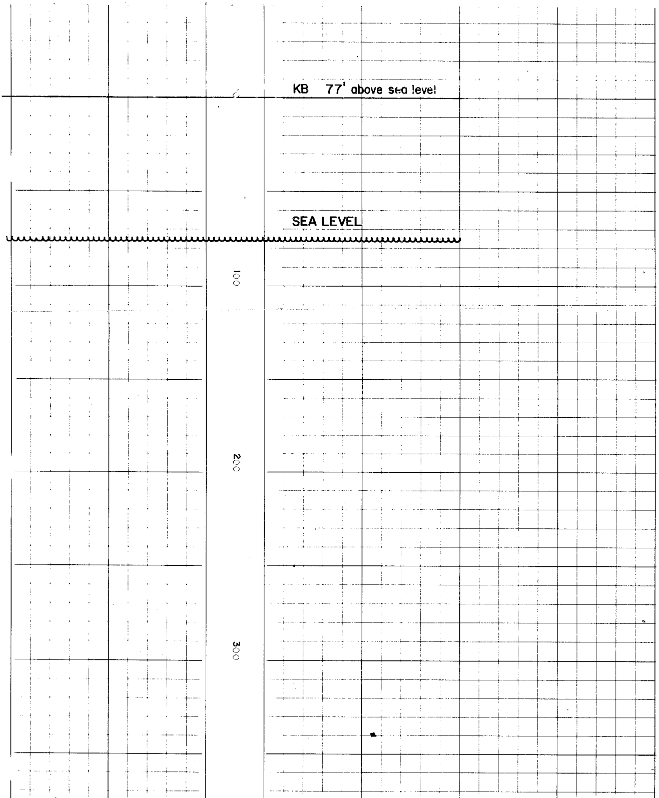
SPONTANEOUS POTENTIAL 10 mV.	DEPTHS	CONDUCTIVITY millimhos/m = 1000 / ohms. m² m
	1/500	6 FF40 INDUCTION

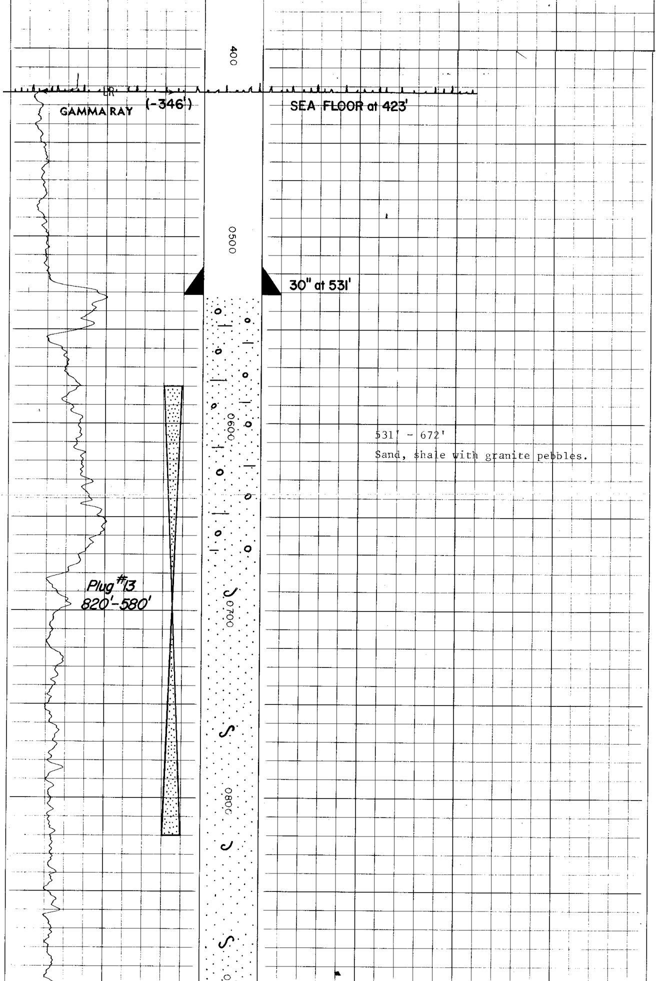
4000 2000

2000 0

RESISTIVITY
– ohms. m^2/m

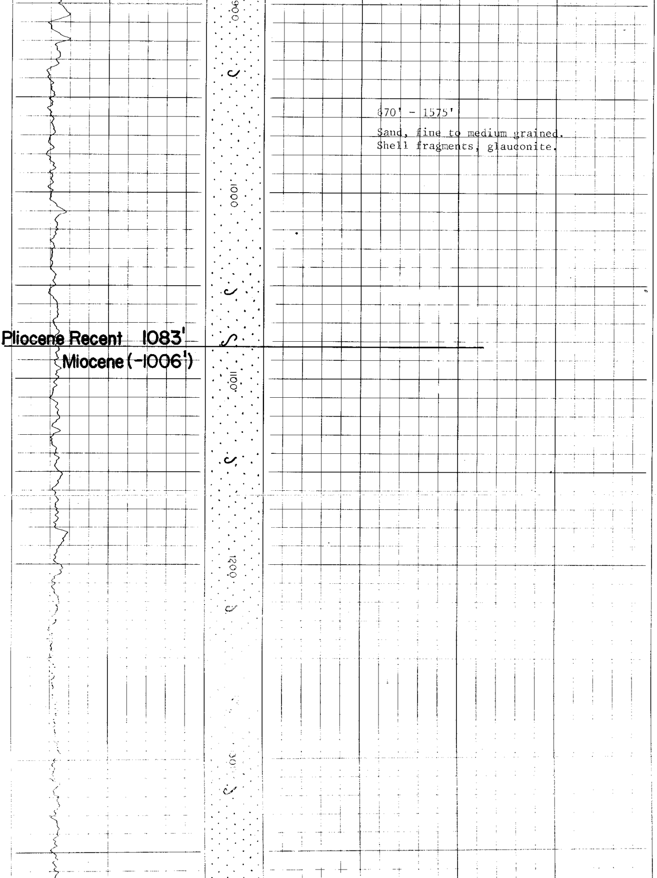
INDUCTION
0 100
0 10
0 SHORT NORMAL 10
0 100





531' - 672'

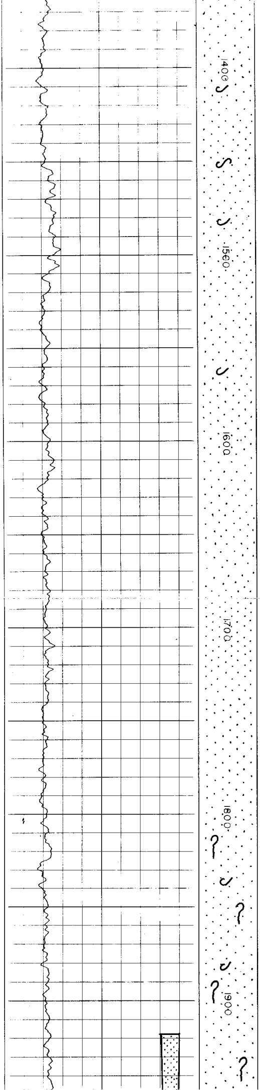
Sand, shale with granite pebbles.



Pliocene Recent 1083'
Miocene (-1006')

870' - 1575'

Sand, fine to medium grained.
Shell fragments, glauconite.

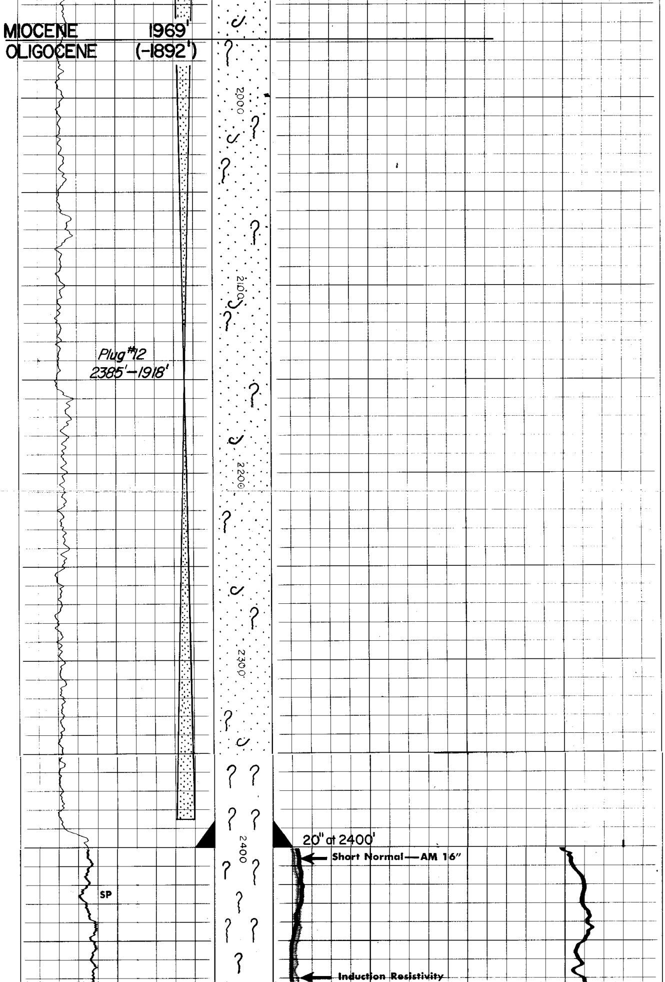


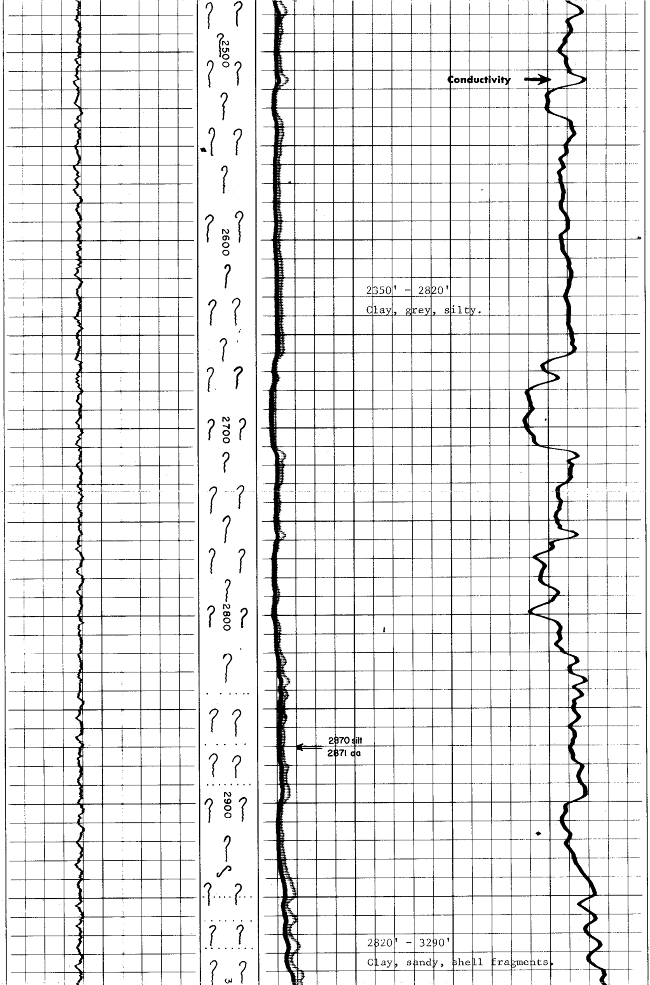
1575' - 1800'

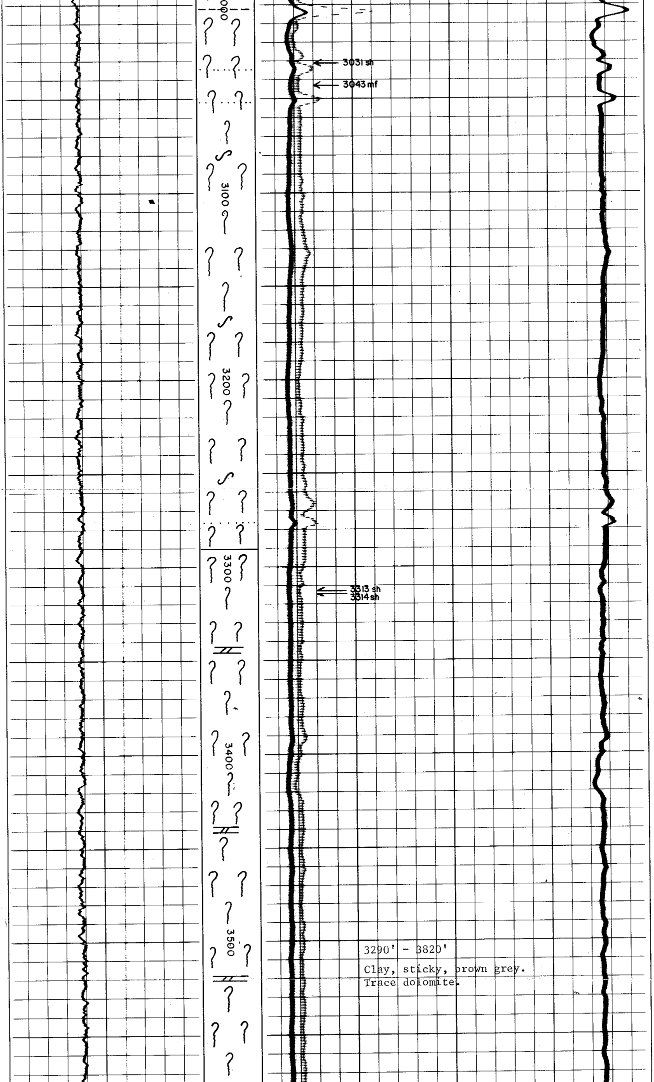
Sand and shell fragments.

1800' - 2350'

Sand, fine to medium grained.
Thin claystone interbedded.
Shell fragments.

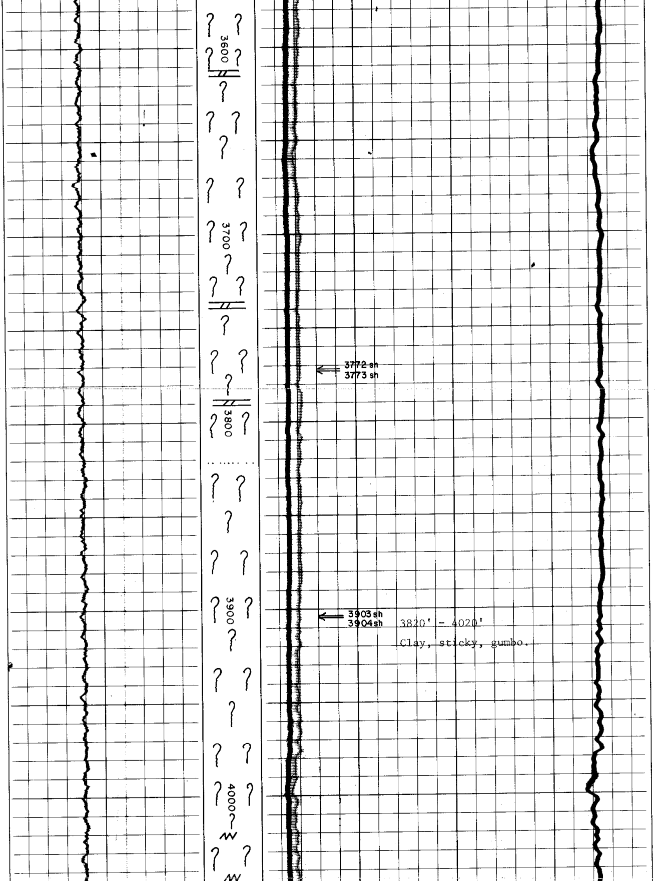




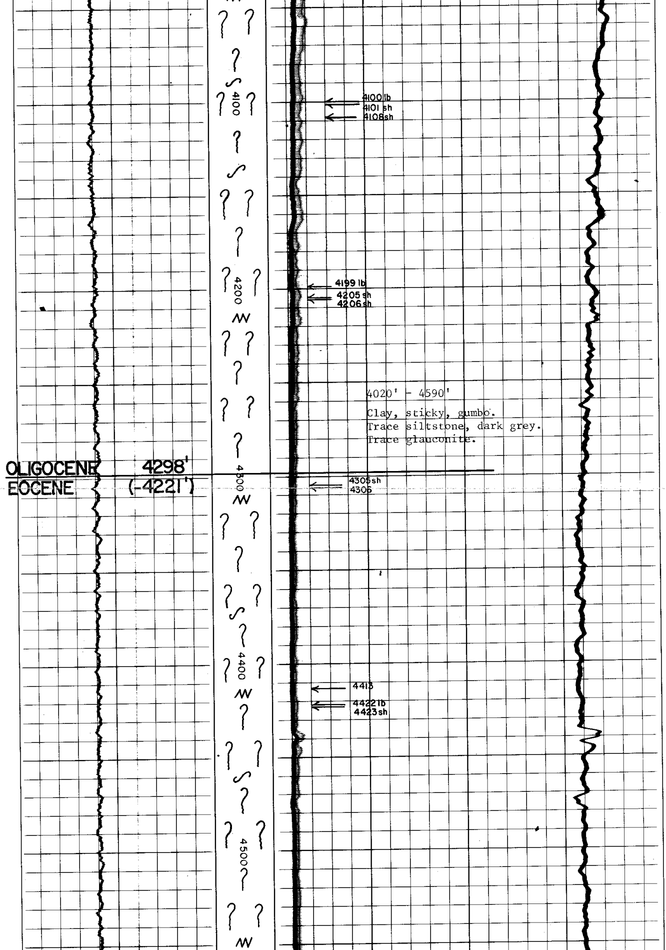


3290' - 3820'

Clay, sticky, brown grey.
Trace dolomite.



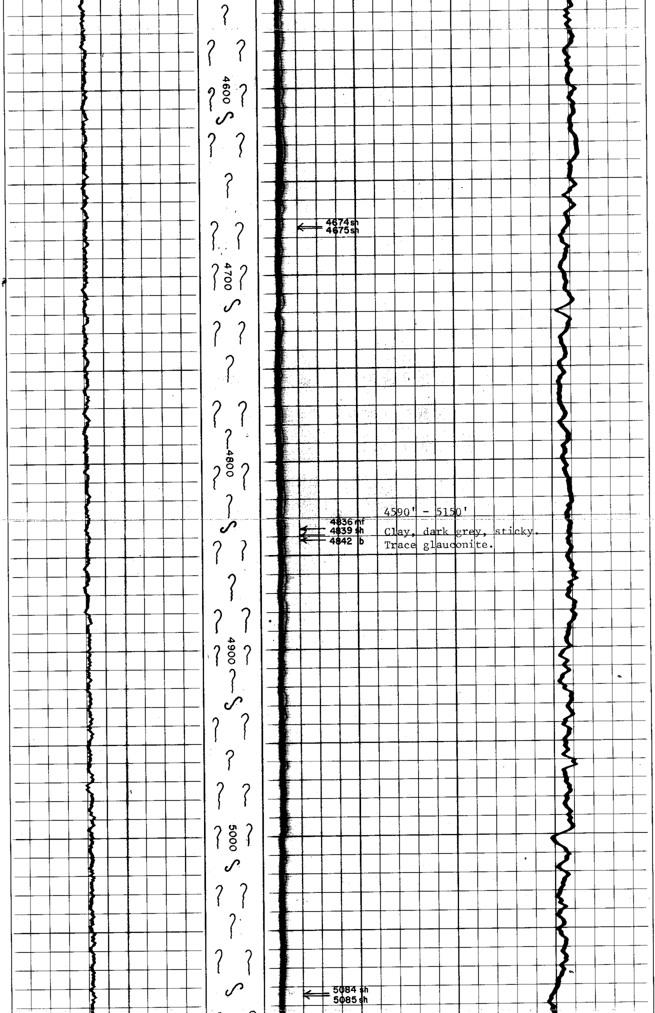
3820' - 4020'
Clay, sticky, gumbo.



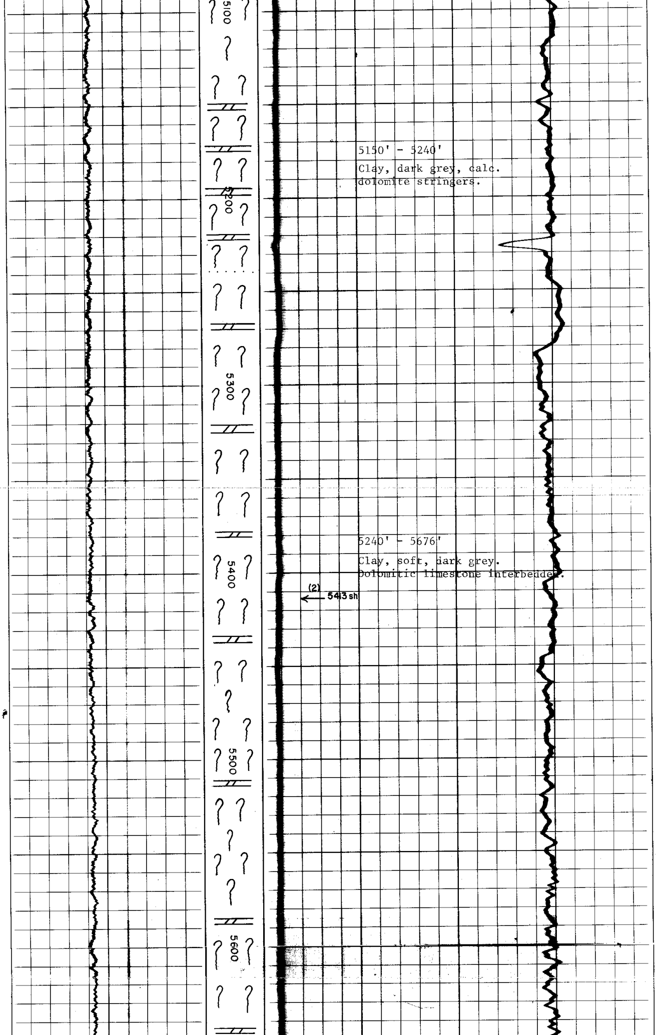
OLIGOCENE 4298'
EOCENE (-4221')

4020' - 4590'

Clay, sticky, gumbo.
Trace siltstone, dark grey.
Trace glauconite.



4590' - 5150'
Clay, dark grey, sticky.
Trace glauconite.

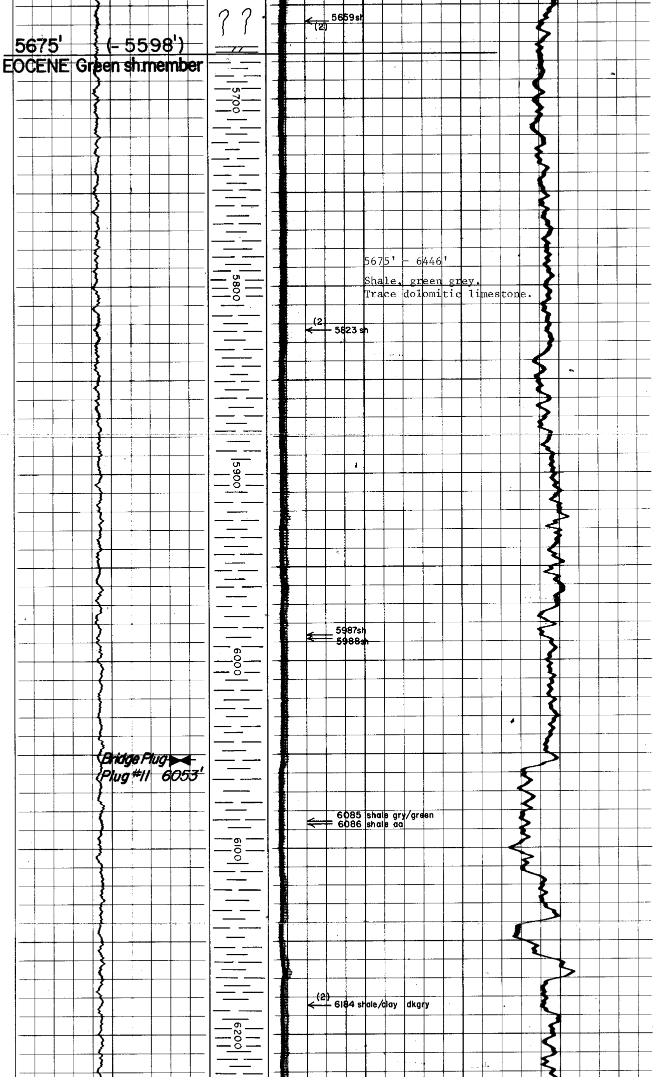


5150' - 5240'

Clay, dark grey, calc. dolomite stringers.

5240' - 5676'

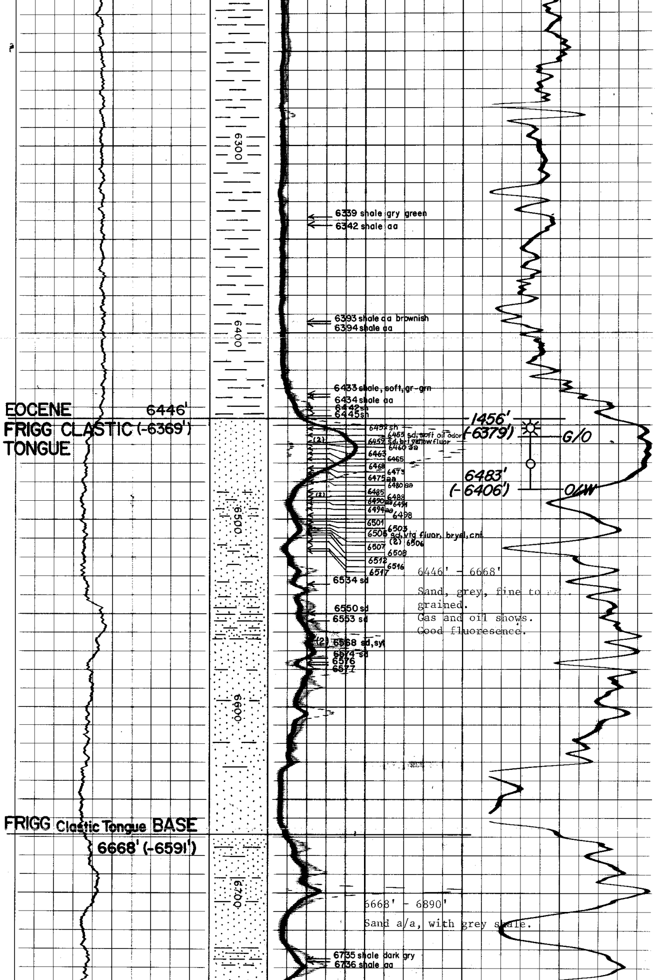
Clay, soft, dark grey. Dolomitic limestone interbedded.



5675' - 6446'

Shale, green grey.
Trace dolomitic limestone.

1964m
(1941m)

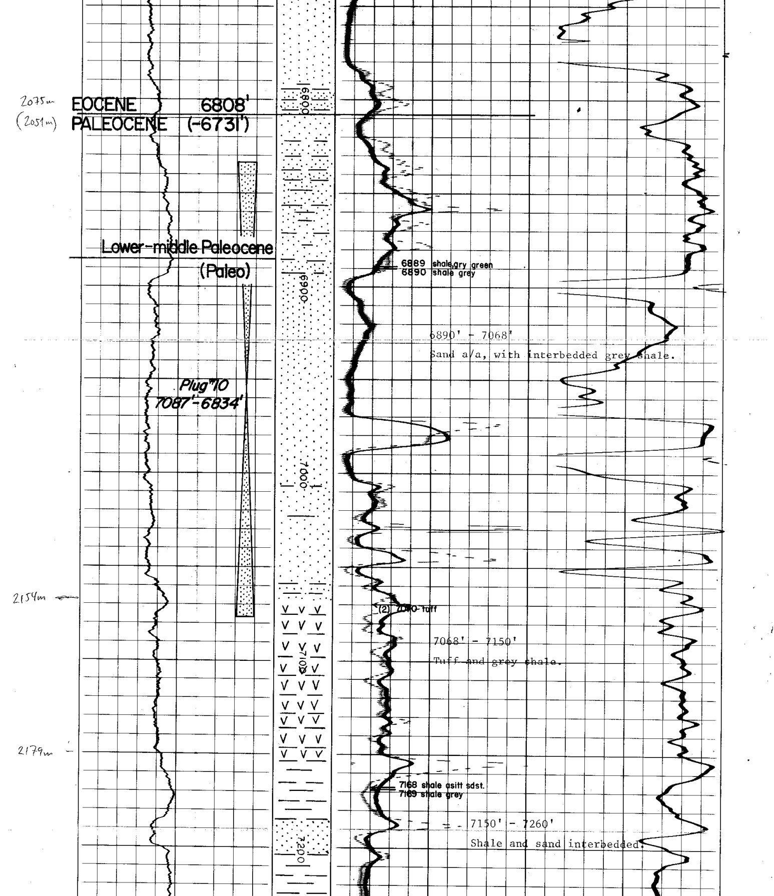


6446' - 6668'

Sand, grey, fine to [illegible] grained.
Gas and oil shows.
Good fluoresence.

6668' - 6890'

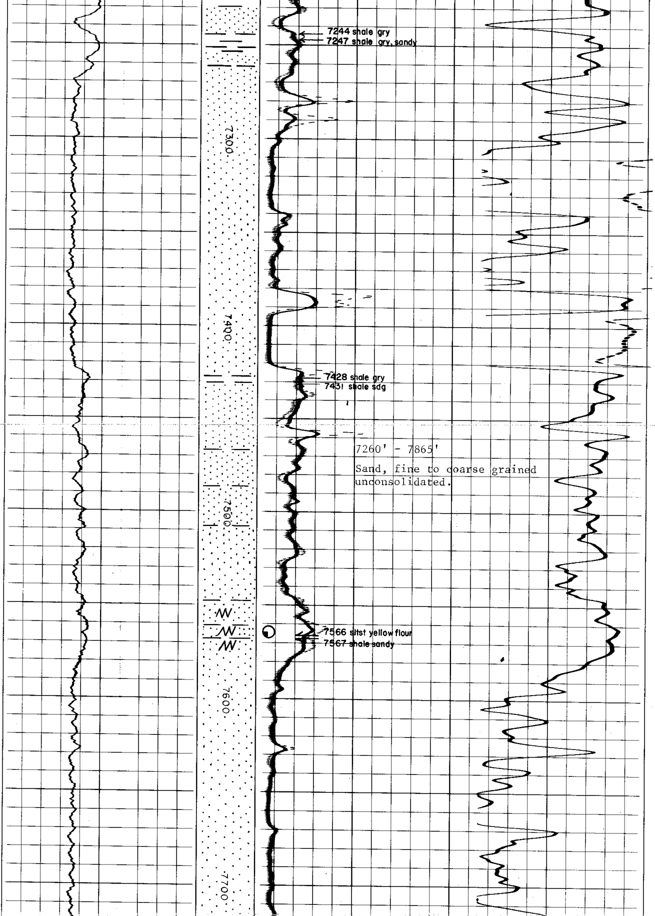
Sand a/a, with grey shale.



6890' - 7068'
Sand a/a, with interbedded grey shale.

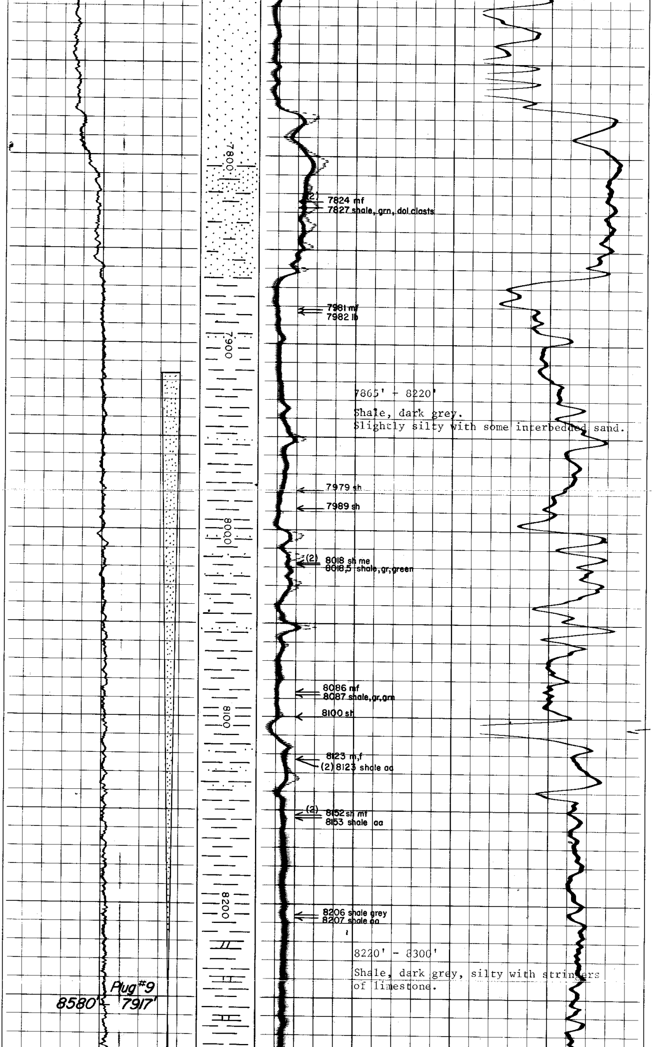
7068' - 7150'
Tuff and grey shale.

7150' - 7260'
Shale and sand interbedded.



7260' - 7865'

Sand, fine to coarse grained unconsolidated.

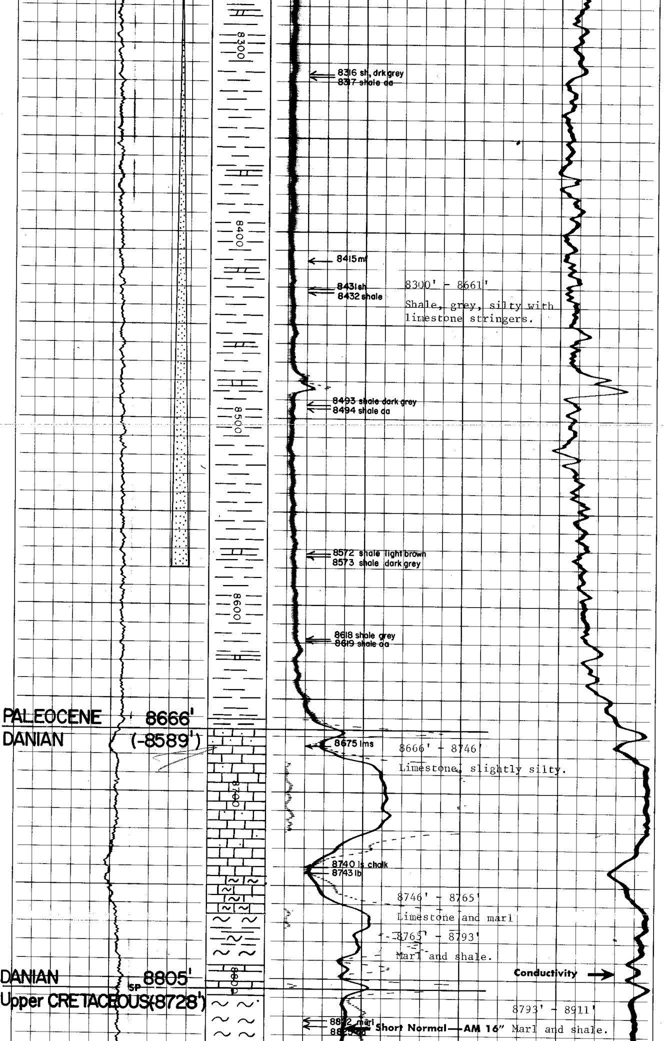


7865' - 8220'

Shale, dark grey.
Slightly silty with some interbedded sand.

8220' - 8300'

Shale, dark grey, silty with stringers
of limestone.



8300' - 8661'

Shale, grey, silty with limestone stringers.

8666' - 8746'

Limestone, slightly silty.

8746' - 8765'

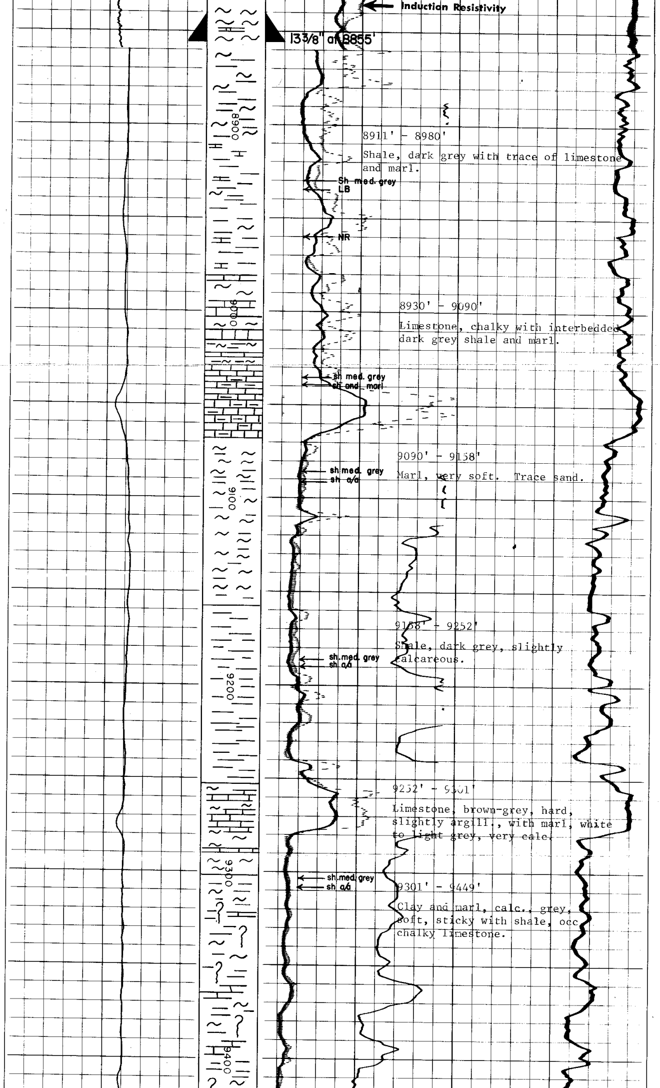
Limestone and marl

8765' - 8793'

Marl and shale.

8793' - 8911'

Marl and shale.



8911' - 8980'

Shale, dark grey with trace of limestone and marl.

8930' - 9090'

Limestone, chalky with interbedded dark grey shale and marl.

9090' - 9158'

Marl, very soft. Trace sand.

9158' - 9252'

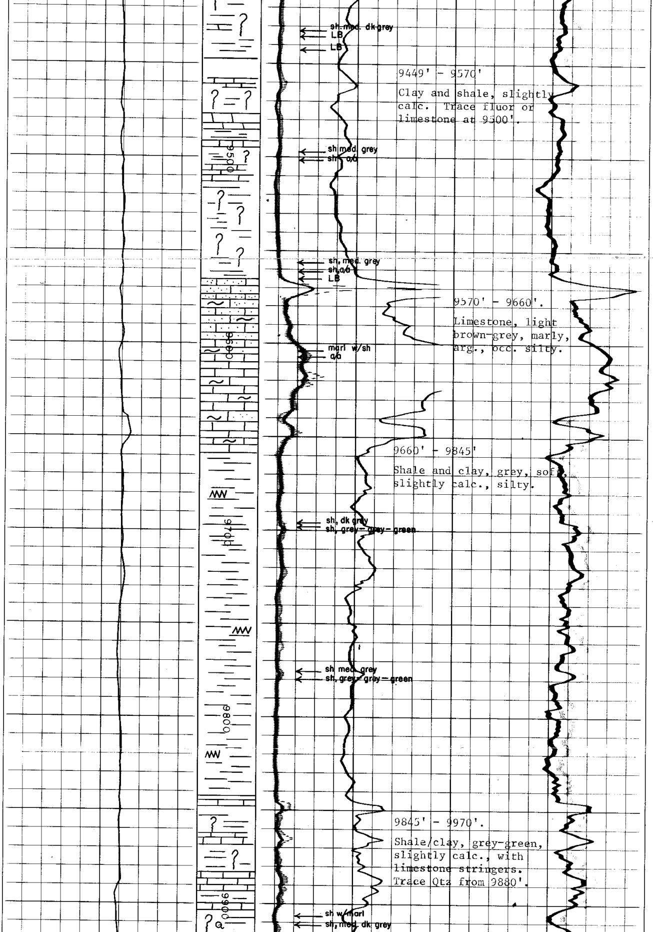
Shale, dark grey, slightly calcareous.

9252' - 9301'

Limestone, brown-grey, hard, slightly argill., with marl, white to light grey, very calc.

9301' - 9449'

Clay and marl, calc., grey, soft, sticky with shale, occ chalky limestone.



9449' - 9570'

Clay and shale, slightly calc. Trace fluor or limestone at 9500'.

9570' - 9660'.

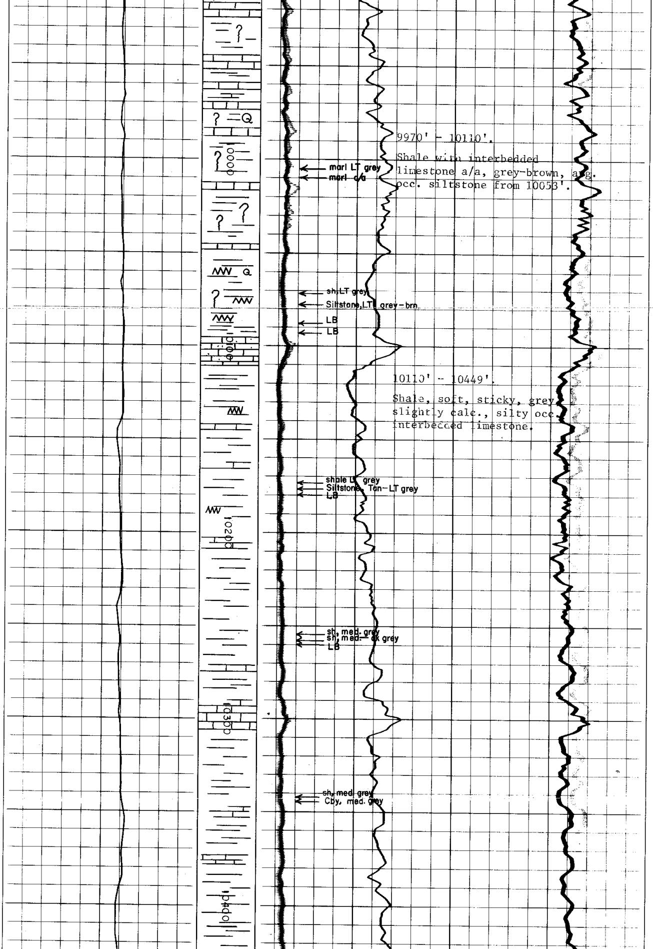
Limestone, light brown-grey, marly, arg., occ. silty.

9660' - 9845'

Shale and clay, grey, soft, slightly calc., silty.

9845' - 9970'.

Shale/clay, grey-green, slightly calc., with limestone stringers. Trace Qtz from 9880'.

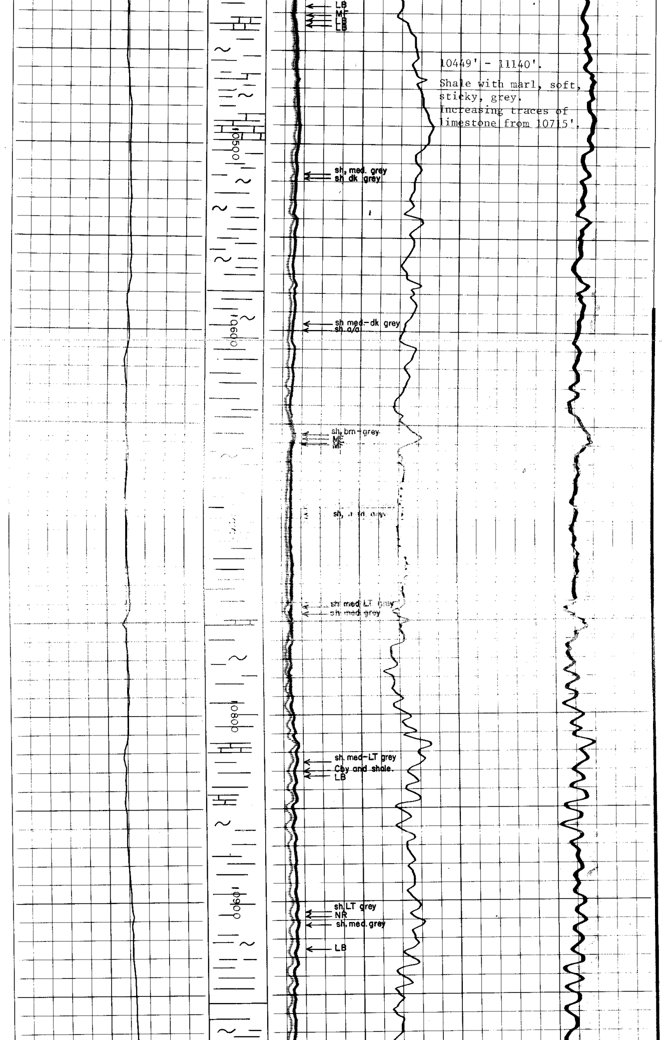


9970' - 10110'.

Shale with interbedded limestone a/a, grey-brown, arg. occ. siltstone from 10053'.

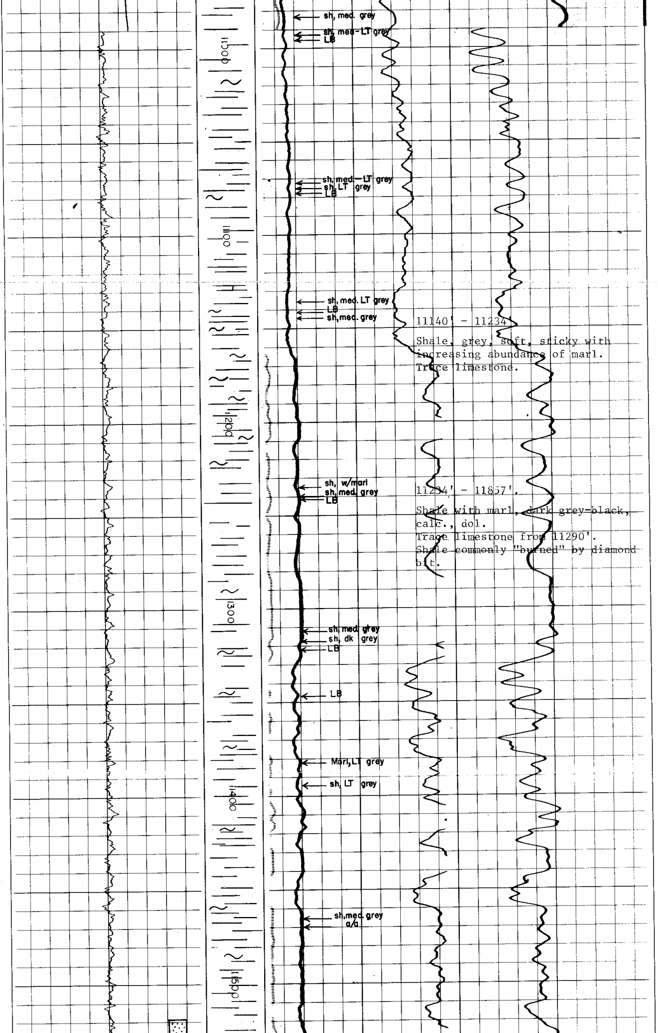
10110' - 10449'.

Shale, soft, sticky, grey, slightly calc., silty occ. interbedded limestone.



10449' - 11140'.

Shale with marl, soft, sticky, grey.
Increasing traces of limestone from 10715'.

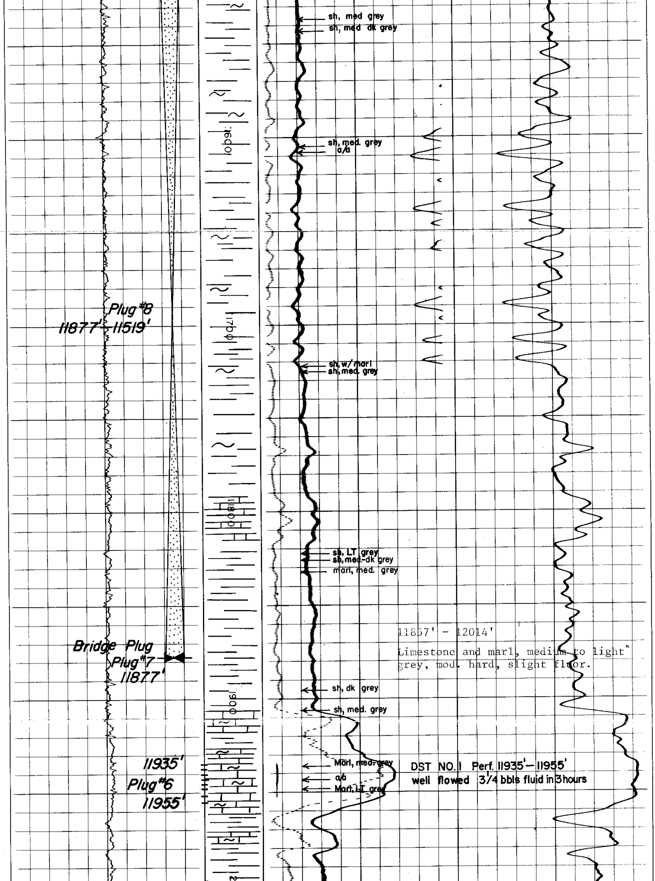


11140' - 11234'

Shale, grey, soft, sticky with increasing abundance of marl. Trace limestone.

11234' - 11857'.

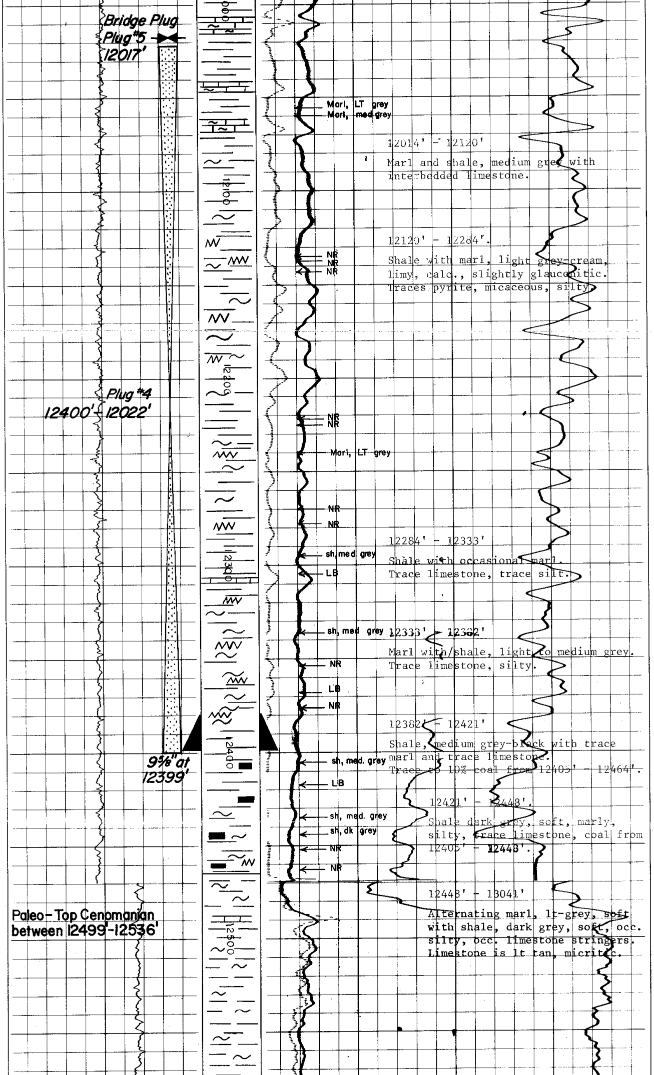
Shale with marl, dark grey-black, calc., dol.
Trace limestone from 11290'.
Shale commonly "burned" by diamond bit.



11857' - 12014'

Limestone and marl, medium to light grey, mod. hard, slight fluor.

DST NO. 1 Perf. 11935'–11955'
well flowed 3/4 bbls fluid in 3 hours



12014' - 12120'

Marl and shale, medium grey with interbedded limestone.

12120' - 12284'.

Shale with marl, light grey-cream, limy, calc., slightly glauconitic. Traces pyrite, micaceous, silty.

12284' - 12333'

Shale with occasional marl. Trace limestone, trace silt.

12333' - 12382'

Marl with/shale, light to medium grey. Trace limestone, silty.

12382' - 12421'

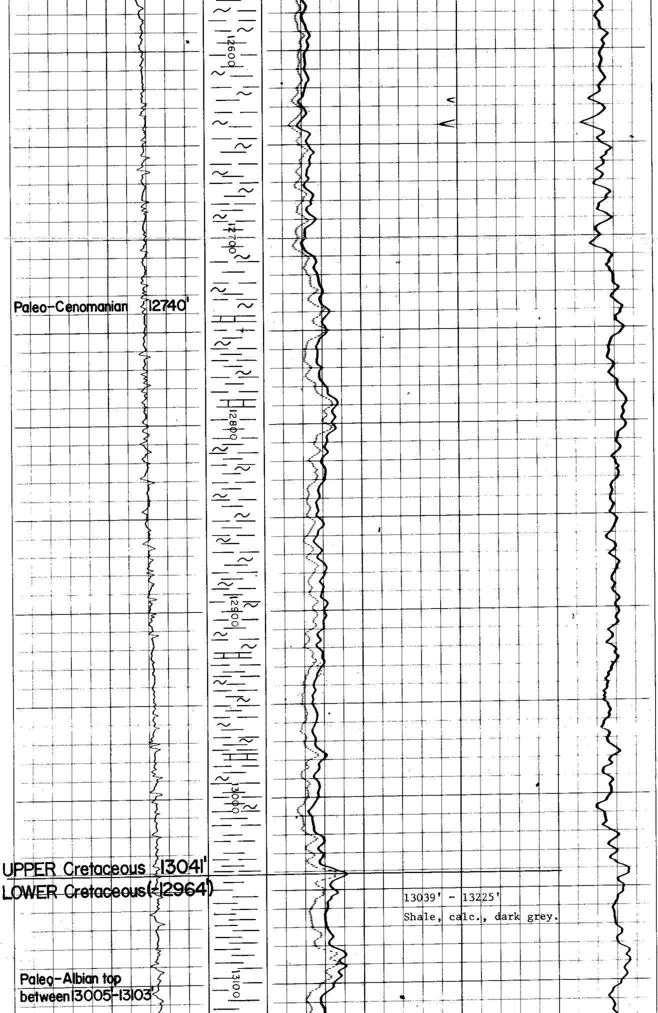
Shale, medium grey-black with trace marl and trace limestone. Trace to 10% coal from 12405' - 12464'.

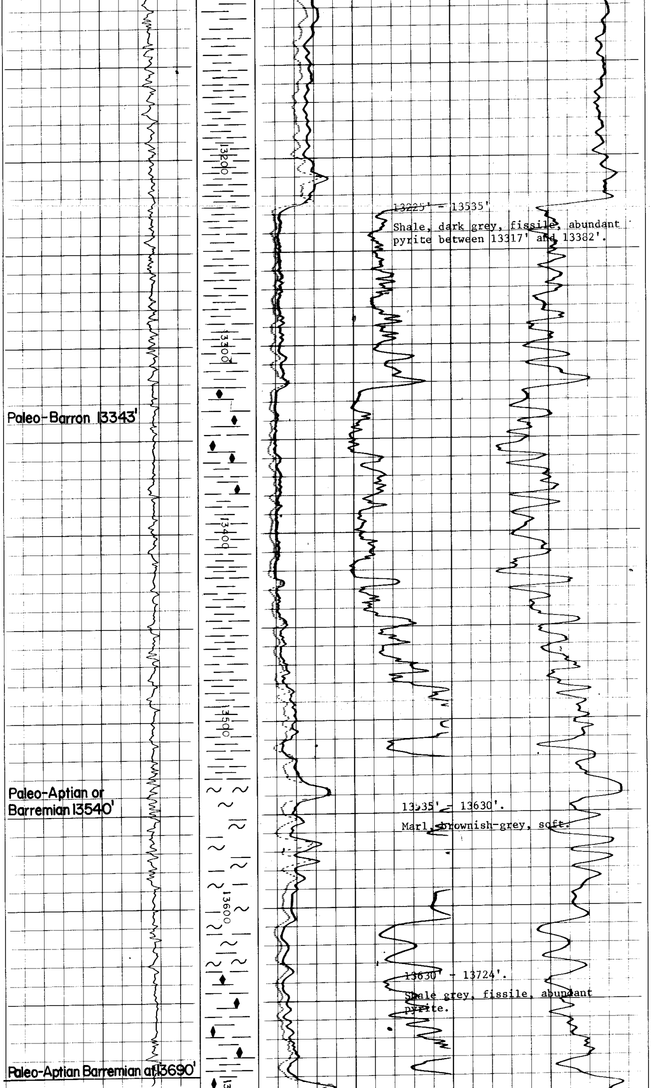
12421' - 12448'.

Shale dark grey, soft, marly, silty, trace limestone, coal from 12405' - 12448'.

12448' - 13041'

Alternating marl, lt-grey, soft with shale, dark grey, soft, occ. silty, occ. limestone stringers. Limestone is lt tan, micritic.





13225' - 13535'

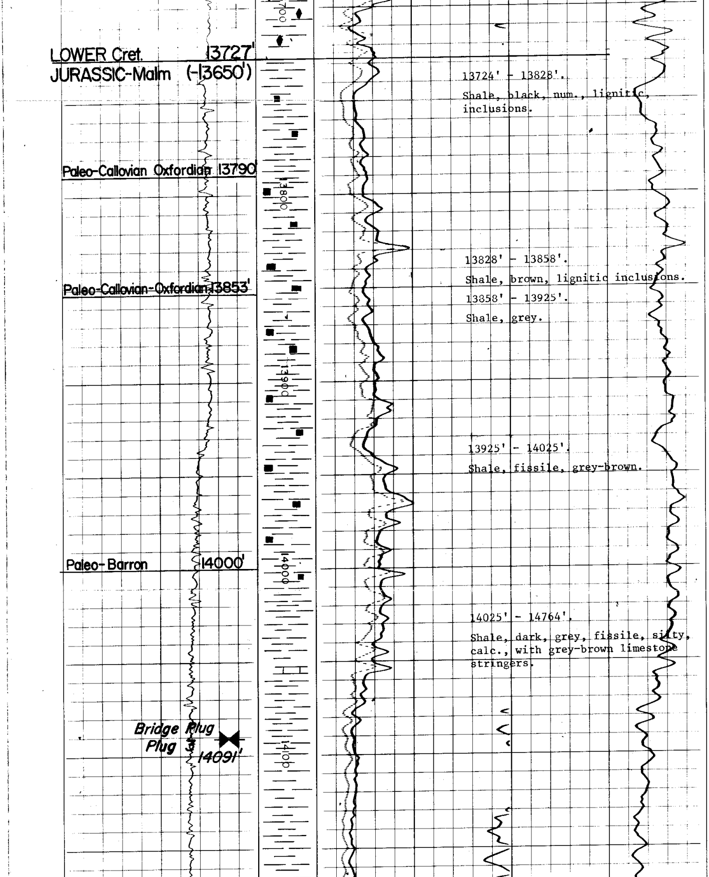
Shale, dark grey, fissile, abundant pyrite between 13317' and 13382'.

13535' - 13630'.

Marl, brownish-grey, soft.

13630' - 13724'.

Shale grey, fissile, abundant pyrite.



13724' - 13828'.

Shale, black, num., lignitic, inclusions.

13828' - 13858'.

Shale, brown, lignitic inclusions.

13858' - 13925'.

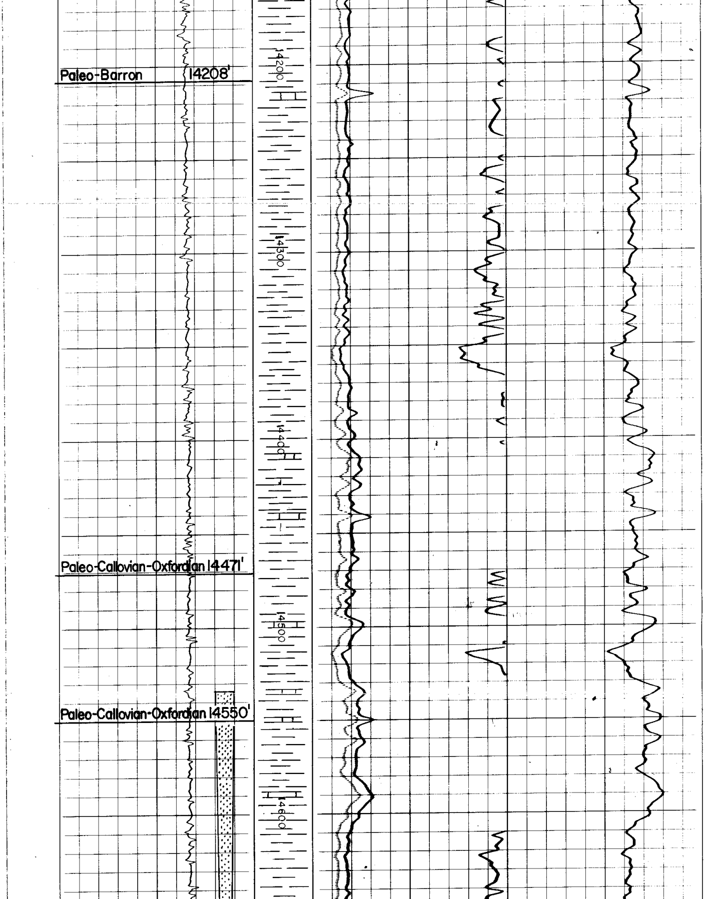
Shale, grey.

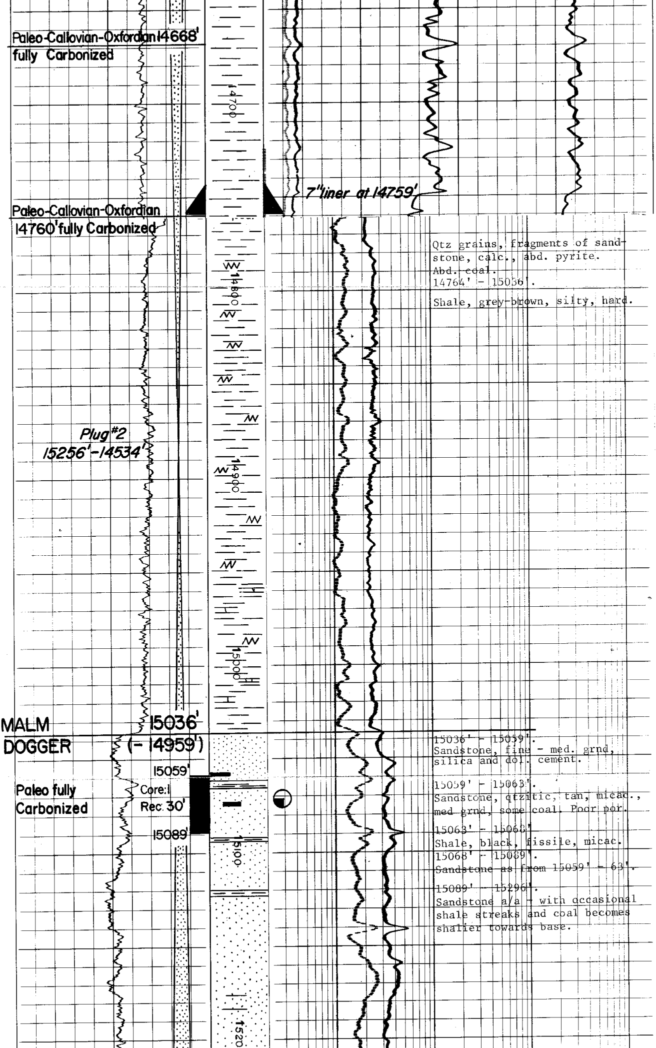
13925' - 14025'.

Shale, fissile, grey-brown.

14025' - 14764'.

Shale, dark, grey, fissile, silty, calc., with grey-brown limestone stringers.





Qtz grains, fragments of sandstone, calc., abd. pyrite.
Abd. coal.
14764' - 15036'.

Shale, grey-brown, silty, hard.

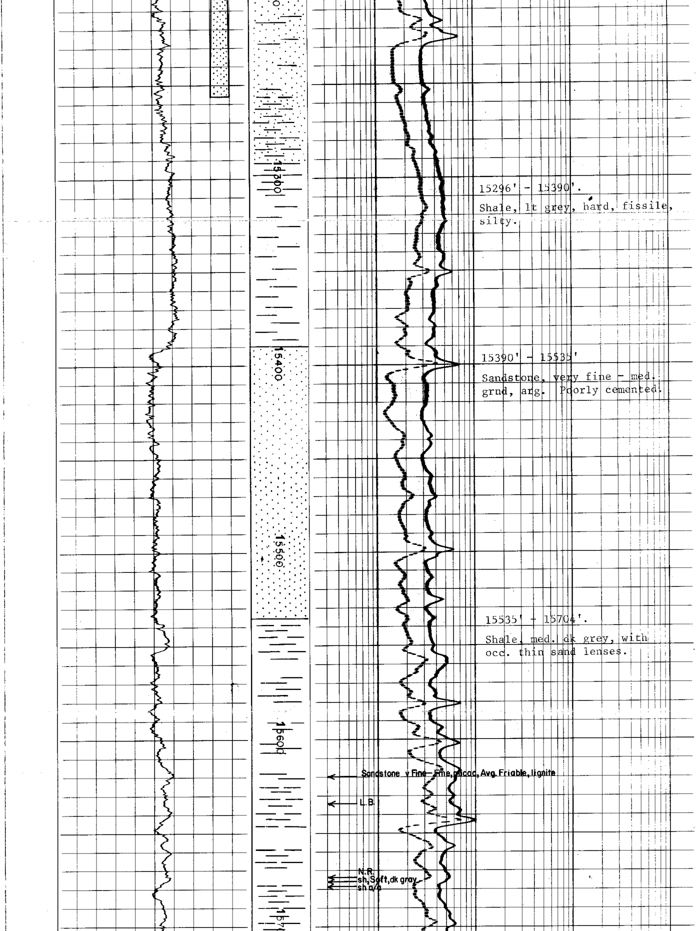
15036' - 15059'.
Sandstone, fine - med. grnd, silica and dol. cement.

15059' - 15063'.
Sandstone, qtzitic, tan, micac., med grnd, some coal. Poor por.

15063' - 15068'.
Shale, black, fissile, micac.

15068' - 15089'.
Sandstone as from 15059' - 63'.

15089' - 15296'.
Sandstone a/a - with occasional shale streaks and coal becomes shalier towards base.



15296' - 15390'.

Shale, lt grey, hard, fissile, silty.

15390' - 15535'

Sandstone, very fine - med. grnd, arg. Poorly cemented.

15535' - 15704'.

Shale, med. dk grey, with occ. thin sand lenses.

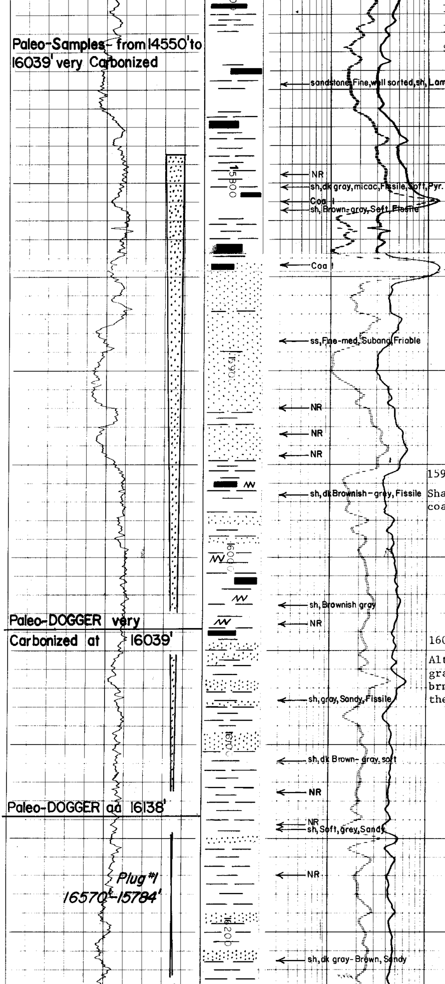
Sandstone v Fine - Fme, micac, Avg. Friable, lignite

L.B.

N.R.

sh, Soft, dk gray

sh a/a



15704 - Shale a/a with coal.

15704' - 15848'

Shale a/a with coal.

15848' - 15948'.

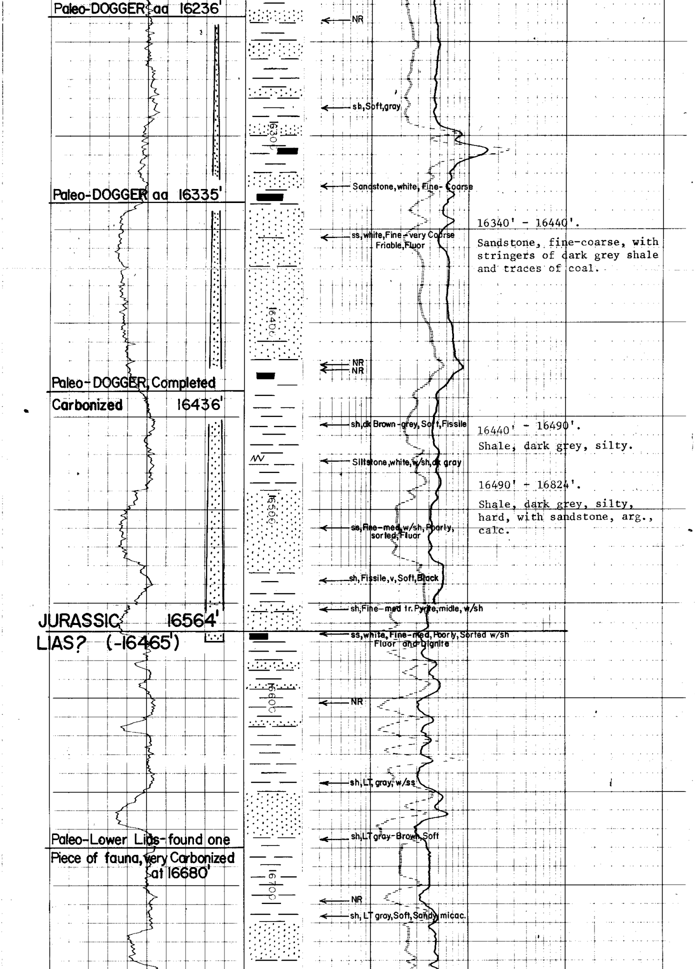
Sandstone - med. - coarse Alt. with grey shale at the base.

15948' - 16045'.

Shale, dark grey, silty, with coal and sandstone stringers.

16045' - 16340'.

Alt. sandstone, fine coarse grained and shale, dark grey-brn, silty, micaceous coal at the base.



16340' - 16440'.

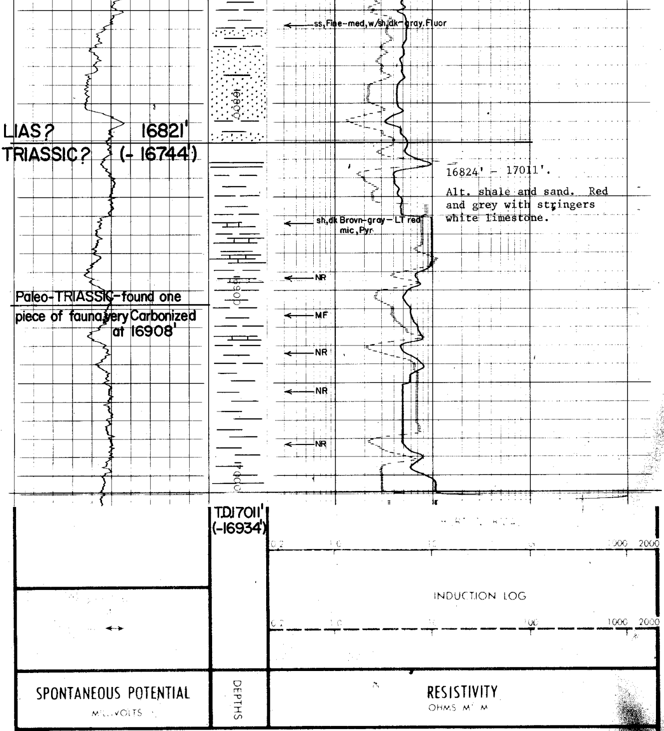
Sandstone, fine-coarse, with stringers of dark grey shale and traces of coal.

16440' - 16490'.

Shale, dark grey, silty.

16490' - 16824'.

Shale, dark grey, silty, hard, with sandstone, arg., calc.



16824' - 17011'.

Alt. shale and sand. Red and grey with stringers white limestone.

COMPANY	ESSO/ELF NORGE A/S			SCHL. FR 17003.4
				SCHL. TD 17004.4
WELL	30/10 - 5			DRLR TD 17011
				Elev:
FIELD	FRIGG			KB 77.1
				DF 75.5
COUNTY	NORWAY	STATE	NORTH SEA	GL -346.1

DRILL STEM TEST NO. 1:

The 9 5/8 inch casing was perforated from 11,935 feet to 11,955 feet. With the packer set at 11,926 feet the tool was open for 3 minutes, then closed for 30 minutes for initial build up, then open for 3 hours. During the 3 hours the well flowed 3 1/4 barrels. Upon completion of flowing the well was shut in for 6 hours and 10 minutes for final pressure build up. Insufficient formation fluid was produced for identification or to give a flow rate. A maximum reservoir pressure could not be determined, but the character of the shut-in build-ups indicates that the reservoir is of high pressure and low permeability.