Mobil

FINAL GEOLOGICAL SUMMARY 33/9-7

FEBRUARY 1977

MOBIL EXPLORATION NORWAY INC.

Mobil Exploration Norway Inc.

WELL RECORD SHEET

WELL NAME .....

COMPANY:		STATUS:	
AREA / BLOCK:		RIG & PICK UP DATE:	
LATITUDE:		SPUDDED:	REACHED T. D.:
LONGITUDE:		RIG RELEASE DATE:	
CLASSIFICATION:		RIG MONTHS:	TRADE DATA:
K. B.:	G. L.:	WATER DEPTH:	
T. D.:	CASING:		
LOGS:			

STRATIGRAPHIC TOPS

UNIT	DEPTH	SUBSEA	THICKNESS / REMARKS

ADDITIONAL INFORMATION:

NOTE: ALL LOG TOPS PICKED ON/OR CORRELATED TO THE IES OR ISF/SONIC LOG UNLESS OTHERWISE NOTED.

Paleontology / Palynology

Interval (meters)	Stage/Substage	Systme/Subsystem
3136-3202	Toarcian	
3208-3286	Domerian	
3292-3316	Carixian-Late Sinemurian	Lower Jurassic
3322-3354	Sinemurian-?Rhaetian	

TEST DATA (INDICATE IF DST, PT, OR FIT) (TIMES IN MINUTES, PRESSURE IN P.S.I.)

NO	INTERVAL	TOTAL FLOW PERIOD	RECOVERY AND REMARKS	MAX. PRESSURE		
				FFP	FSIP	HH

ABBREVIATIONS:

NP	NOT PRESENT	ER	ERODED	SL	SONIC LOG
NL	NOT LOGGED	F	FAULTED	DL	DENSITY LOG
NR	NOT REACHED	GR	GAMMA RAY LOG	NL	NEUTRON LOG
		PT	PALEO TOP	ST	SAMPLE TOP
				SD	SCOUT DATA

BY: .....

DATE: ..... REVISED: .....

PAGE ..... OF .....

Form. MOEX N 75/H-1-76

MOBIL EXPLORATION NORWAY INC.
FILE COPY

MOBIL EXPLORATION NORWAY INC.

FINAL GEOLOGICAL SUMMARY

33/9-7

CONTENTS

WELL DATA ---------- 1

SUMMARY ---------- 2

HYDROCARBON SHOWS AND EVALUATION ---------- 3

STRATIGRAPHY/STRUCTURE ---------- 5

CONCLUSIONS ---------- 7

FIGURES

Figure 1 Comparison - Prognosis vs Actual Depths

Figure 2 Well Record Sheet

ENCLOSURES

Enclosure 1 Paleontological Summary Log (R.R.)

Enclosure 2 Summary Log

Enclosure 3 Final Composite Log

NORWAY OFFSHORE

LICENSE 037

WILDCAT WELL 33/9-7

WELL DATA

WELL NAME:	33/9-7
LOCATION:	61° 20' 12.174" N 01° 59' 12.672" E
CLASSIFICATION:	WILDCAT
SPUDDED:	11 SEPTEMBER 1976
COMPLETED DRILLING:	22 OCTOBER 1976
RIG RELEASED:	8 NOVEMBER 1976
KB ELEVATION:	25.5m
WATER DEPTH:	155m
RIG:	"DYVI ALPHA"
STATUS:	DISCOVERY WELL plugged and abandoned
TOTAL DEPTH	
PLANNED:	3125m
ACTUAL:	3127m
OBJECTIVE:	Middle and Lower Jurassic sands. Discovery in Middle Jurassic Brent Fm.
COST ($)	
PLANNED:	4.864,000
ACTUAL:	4,659,000

SUMMARY

33/9-7 was an oil discovery in the Middle Jurassic Brent Formation. It was drilled on the 9-Alpha prospect, 2.5 kilometers east of the Statfjord Field, and was the 8th and final obligation well in License 037. The wildcat was plugged and abandoned on 8 November 1976, at a total depth of 3127 meters (KB) in the Statfjord Formation.

The Brent and Statfjord Formations were the objectives of 33/9-7. The discovery in the Brent sand established 72 meters of gross oil column. The Brent was successfully tested at the rate of 6971 BOPD through a 3/4" choke. The Statfjord sand was wet although some scattered residual oil was indicated by log analysis. Good oil and gas shows seen in a sandy Lower Paleocene Section tested water with a trace of oil. The water test could be a result of poor isolation of the zone due to excessively caved hole.

9-Alpha was initially mapped as a anticlinal closure on the Kimmerian Unconformity. The closure was bounded on the east by a regional normal fault and on the west by minor faulting and a structural saddle which separates 9-Alpha from the Statfjord Field. Subsequent mapping based on a well defined, Near Top Statfjord reflector indicated that the westward dipping Middle and Lower Jurassic sands were truncated beneath the Unconformity in a structural setting similar to the Statfjord Field. The Statfjord Formation was interpreted to subcrop beneath the Kimmerian Unconformity and to be sealed by Lower Cretaceous shales on the east flank of 9-Alpha. On the crest and on the west flank, the Dunlin and Brent Formations were interpreted to subcrop beneath a thin wedge of Upper/Middle Jurassic shales preserved under the Kimmerian Unconformity.

The results of 33/9-7 have not significantly altered the original structural interpretation.

Brent reserves for 9-Alpha were calculated at 230 MMSTB of which 150 MMSTB are within License 037. Statfjord reserves updip to the well are estimated to range from 150-300 MMSTB of which 50-150 MMSTB are in the License 037 area.

HYDROCARBON SHOWS AND EVALUATION

Three drillstem tests were run in 33/9-7 to evaluate oil and gas shows seen in the Lower Paleocene and in the Middle Jurassic Brent Formations. DST No. 1 successfully tested oil from the Brent, whereas only water and a trace of oil were recovered from the two tests in the Lower Paleocene. No shows were seen in the Statfjord sands and subsequent log analysis confirmed that the formation was wet containing only scattered residual oil.

(Brent Formation)

The Brent sand with good oil and gas shows was encountered at 2461 (-2435.5) meters, 44.5 meters high to prognosis. From 2465-2597 meters 9 cores were cut for reservoir evaluation. Good oil shows in a clean and porous sand persisted down to 2520 meters. Below 2520 meters only poor to fair shows occurred in the remainder of the cored interval which was sand interbedded with claystones and coals. The cores are described in detail on Enclosure 3.

An interpretation of the Schlumberger Coriband Analysis of the Brent is summarized as follows:

33/9-7 Brent Formation

Interval:	2461-2693.5
Thickness:	222.5m
Applied Cutoff Parameters:	12% porosity 40% clay volume
Net Sand	160.0m
Net/Gross Sand Ratio	0.72
Average Net Sand Porosity	27.0%

Applying a Water Saturation Cutoff of 65%:

O/W Contact	2533.0m (inferred)
Gross Pay	72.0m (2461-2533m)
Net Pay	59.0m
Net/Gross Sand Ratio (pay zone)	0.82
Average Net Pay Porosity	30.0%
Average Water Saturation	9.0% (range 6-24%)

The base of the oil column in 33/9-7 is not clearly defined on the electric logs. A section of interbedded claystones, coals and minor sands separate an oil bearing sand at 2520 meters from a water saturated sand at 2533 meters. The o/w contact was inferred at 2533 meters at the top of the first wet sand.

The Brent was drillstem tested through perforations (2489.9-2493 meters) and flowed 6971 BOPD through a 3/4" choke during a 5.36 hour flow period. The WHP was 1890 psi, the GOR was 524, and the gravity of the oil was 37.7° API.

(Lower Paleocene)

Oil and gas shows occured in a 50 meter thick sequence of interbedded sands and claystones in the lower portion of the Paleocene from 1770-1820 meters. The sands although not apparently continuous, were oil stained and had good gas shows throughout the interval. Log evaluation was not practical due to wahing out resulting in excessive hole sizes. Two drillstem tests were run. The first test through perforations from

1780-1800 meters was a misrun. The second test through the same perforations flowed approximately 720 BFPD, consisting of 70% water (17,900 ppm Cl), 27% emulsion, 2% bs, and 1% oil.

STRATIGRAPHY/STRUCTURE

The stratigraphic section in 33/9-7 is similar to those previously described in the Statfjord Field and in particular to 33/9-5.

(Tertiary/Paleocene)

With the exception of the Paleocene section, the Tertiary consists primarily of gray clays and scattered minor sands. The Paleocene is characterized by tuffaceous red and gray claystones with sandy intervals near the base. Good hydrocarbon shows were observed in a 50 meter sand/claystone section from 1770-1820 meters in the lower part of the sequence. Similar sand/clay sequences have been described in other wells in the 037 area: the shows, however, appear to coincide with a broad low relief Paleocene structure that covers most of the Statfjord Field and the 9-Alpha Prospect.

(Upper and Lower Cretaceous)

Gray and green clays and claystones dominate the Upper Cretaceous sequence. The oldest Upper Cretaceous is Coniacian in age and overlies a 5 meter section of marl which is Barremian in age. The Unconformity separating the Upper and Lower Cretaceous is a major hiatus that is recognised throughout the area.

(Middle Jurassic Shale)

The Kimmerian Unconformity is at 2452 (-2426.5) meters, 43.5 meters

higher than our prognosis. Nine meters of Middle Jurassic Shale are preserved below the Unconformity over the west flank of the Alpha Prospect.

(Brent Formation)

Gross Brent thickness is 218.5 meters as compared to an average Brent thickness of 181.7 meters in the Statfjord Field. The only thicken Brent section seen in License 037 was at 33/12-6 which had 312 meters of Brent. The Brent Formation can be divided into three distinctive lithological units: An upper, clean and porous sand section from 2461-2520 meters, a middle unit comprising interbedded sand, clays and coal beds from 2520-2580 meters and a lower clean and porous sand section from 2580-2683.5 meters.

(Dunlin Formation)

The Dunlin Formation was topped at 2683.5 (-2658) meters, 24 meters low to prognosis. The Dunlin is 315 meters thick in 33/9-7 which is 103.5 meters thicker than in 33/9-5 and 70 meters thicker than prognosed. Lithology consisted of gray-brown silty claystones.

(Statfjord Formation)

The Statfjord Formation was topped at 2985.5 (-2960) meters, 85 meters low to prognosis. The sand is coarse grained, Kaolinitic and interbedded with claystones with a net/gross ratio of 0.46. The sand averaged 18% porosity, reaching a maximum of 27%. At total depth, 141.5 meters of the formation had been penetrated.

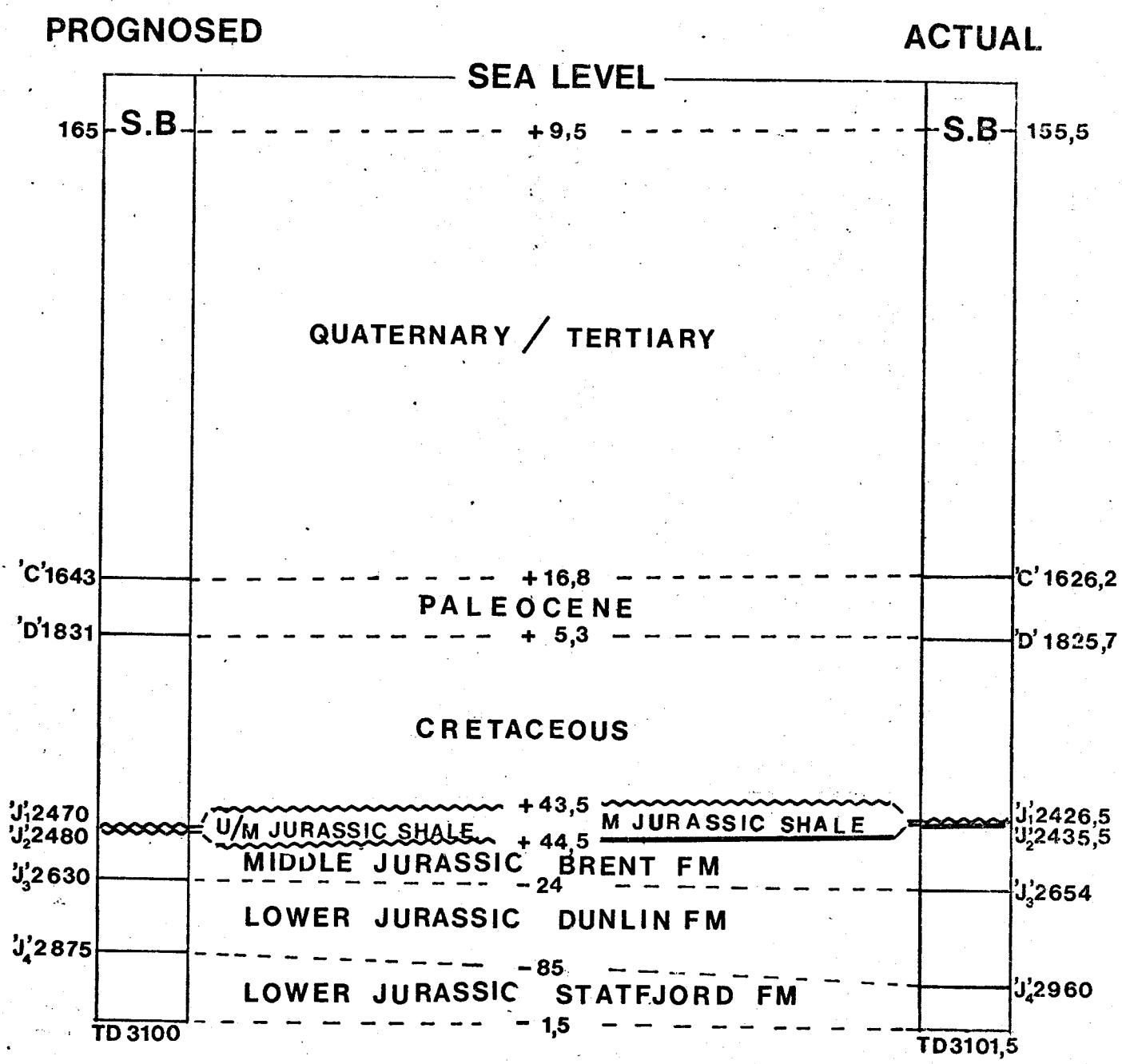
CONCLUSIONS

33/9-7, drilled on the west flank of the 9-Alpha prospect in a optimum position to test the Brent sand, was an oil discovery. Brent reserves were calculated at 230 MMSTB of which 150 MMSTB occur within License 037. At the 33/9-7 location the oil column is almost completely within the Upper Brent sand. Eastward and updip, the Middle and the Lower Brent sands will occur above the oil/water contact and the sand is being truncated from west to east

The Statfjord sand remains an objective along the crest and on the east flank of 9-Alpha were it will occur in a structurally higher position than at 33/9-7. Due to uncertainties in the seismic interpretation the outline of the Statfjord closure is not firmly established. Based on minimum and maximum structural closures, reserves are estimated to range from 150-300 MSTB, 50-150 MMSTB in the License 037 area. The proposed 1977 seismic program in the 9-Alpha area is designed to help resolve closure at the extreme north and south ends of the structure, and to select the optimum location for a Statfjord Formation appraisal well.

The sandy sequence in the lower portion of the Paleocene continues to be a zone of interest. Shows within this interval are widespread and appear to coincide with a broad Paleocene structure in the 037 License area. The water test in 33/9-7 and the apparent discontinuous nature of the sands is not encouraging. Either coring of the interval and/or reducing hole size for the purpose of obtaining usable logs will be recommended in the appraisal well in order to qualify the nature of the reservoir.

WELL 33/9-7 PROGNOSIS VS ACTUAL DEPTHS



ALL DEPTHS IN METER SUBSEA
VERTICAL SCALE: 1:20000

A.L. NOVEMBER 1976

FIGURE 1

Paleontology / Palynology

Interval (meters)	Stage/Substage	System/Sub system
280-292		Recent-Pliocene
298-550		Pliocene
556-562		? Upper Miocene
568-970		Middle Miocene
976-1006		Lower Miocene
1012-1324		Oligocene
1330-1384		Eocene
1390-1652		Lower Eocene-Paleocene
1658-1834		Paleocene
1840-1846	Danian	Paleocene
1852-1864	Late Maastrichtian	Upper Cretaceous
1870-1924	Maastrichtian	" "
1930-2008	Early Maastrichtian	" "
2014-2044	Late Campanian	" "
2050-2386	Early Campanian	" "
2392-2440	Santonian	" "
2443-2446	Coniacian	" "
2446-2449	Barremian	Lower Cretaceous
2452-2476	Bathonian	Middle Jurassic
2477-2692	Early Bathonian-Bajocian	Middle Jurassic
2698-2740	Late Toarcian	Lower Jurassic
2743-2794	?Early Toarcian-Domerian	Lower Jurassic
2800-2884	Domerian	Lower Jurassic
2890-2950	Carixian-Late Sinemurian	Lower Jurassic
2956-3112	Early Sinemurian Hettangian	" "
3118-3127		?Triassic(based on lithology only)

TEST DATA (INDICATE IF DST, PT, OR FIT) (TIMES IN MINUTES, PRESSURE IN P.S.I.)

NO	INTERVAL	TOTAL FLOW PERIOD	RECOVERY AND REMARKS	MAX. PRESSURE FFP	FSIP	HH
DST 1	2489.9-2493m	10hrs 41 min	6791 BOPD through 3/4" choke	5279	5493	5934
	(BRENT FM)		GOR: 524 WHP: 1890			
			Oil Gravity: 37.7° API at 60°F			
			Gas Gravity: 0.69			
DST 2	1780 -1800	Misrun	Perforations plugged			
DST 3	1780 -1800		720 BFPD through ½" choke	70-100	1849	4315
	(L.! PALEOCENE)		Fluid recovery: 70% free water 17900 ppm Cl-			
			27% Emulsion			
			2% BS			
			1% Oil			

ABBREVIATIONS:

NP	NOT PRESENT	ER	ERODED	SL	SONIC LOG
NL	NOT LOGGED	F	FAULTED	DL	DENSITY LOG
NR	NOT REACHED	GR	GAMMA RAY LOG	NL	NEUTRON LOG
		PT	PALEO TOP	ST	SAMPLE TOP
				SD	SCOUT DATA

BY: R. Phares

DATE: 14 Dec. 1976 REVISED: A. Linjordet 7 Feb. 1977

Mobil Exploration Norway Inc.

WELL RECORD SHEET

WELL NAME 33/9-7

COMPANY: Mobil Exploration Norway Inc.		STATUS: Oil Discovery P & A	
AREA / BLOCK: Norway - 33/9		RIG & PICK UP DATE: Dyvi Alpha 3 Sept. 1976	
LATITUDE: 61° 20' 12.174" N		SPUDDED: 6 Sept. 76	REACHED T. D. 22 Oct 76
LONGITUDE: 01° 59' 12.672" E		RIG RELEASE DATE: 8 November 1976	
CLASSIFICATION: Wildcat		RIG MONTHS 67 days/2,2 mo	TRADE DATA:
K. B.: 25.5m	G. L.:	WATER DEPTH: 155.5m	
T. D.: 3127m	CASING: 30" at 268m, 20" at 490m, 13 3/8 at 1830m, 9 5/8" at 3095m		
LOGS: 3 Runs ISF/Sonic(239-494.5, 489-1850m, 1800-3125m) FDC-CNL(1520-1850m, 1800-3125m) DLL(2400-3125m) HDT(1827-3125m) CPI(2450-3125m) Check shots (12 from 400to 3082m			

(Depth/Thickness in meters) **STRATIGRAPHIC TOPS**

UNIT	DEPTH	SUBSEA	THICKNESS / REMARKS
Paleocene	1651.7	-1626.2	(199.5)
U. Cretaceous	1851.2	-1825.7	(595.8)
L. Cretaceous	2447	-2421.5	(5)
Barremian Ls.	2447	-2421.5	(5)
U. Jurassic Hot Sh.	NP	NP	-
U/M Jurassic Cold Sh.	2452	-2426.5	(9)
M Jurassic Brent Fm	2461	-2435.5	(222.5)
L. Jurassic Dunlin Fm	2683.5	-2658	(302.3)
L. Jurassic Statfjord Fm	2985.8	-2960	(132.2)
Triassic	3118/?	3092.5/?	(9 incomplete)
Total Depth	3127	-3101.5	

ADDITIONAL INFORMATION:

Cored 120m, Recovered 103,33m (86%) in Brent Fm

Core 1	From 2465 to 2474m	Recovered: 2465-2465,7m (8%)
~~Core 2~~	~~" 2474 " 2493m~~	~~" 2474-2491,7m (84%)~~
Core 3	" 2493 " 2511.3m	" 2493-2511,3m (100%)
Core 4	" 2511.3 " 2527m	" 2511.3-2526.3m (95%)
~~Core 5~~	~~" 2527 " 2537m~~	~~" 2527-2537m (100%)~~
Core 6	" 2537 " 2550m	" 2537-2547.8m (84%)
Core 7	" 2550 " 2563m	" 2550-2561.75m(90%)
Core 8	" 2575 " 2592m	" 2575-2591.88m(99%)
Core 9	" 2592 " 2597m	" 2592-2595.6m (70%)

NOTE: ALL LOG TOPS PICKED ON/OR CORRELATED TO THE IES OR ISF/SONIC LOG UNLESS OTHERWISE NOTED.

FIG. 2

ROBERTSON RESEARCH INTERNATIONAL LIMITED

SUMMARY LOG : 33/9 - 7

AREA : NORWEGIAN NORTH SEA SPUD DATE : 22 JUNE 1976

COMPANY : MOBIL EXPLORATION NORWAY COMPLETION DATE :

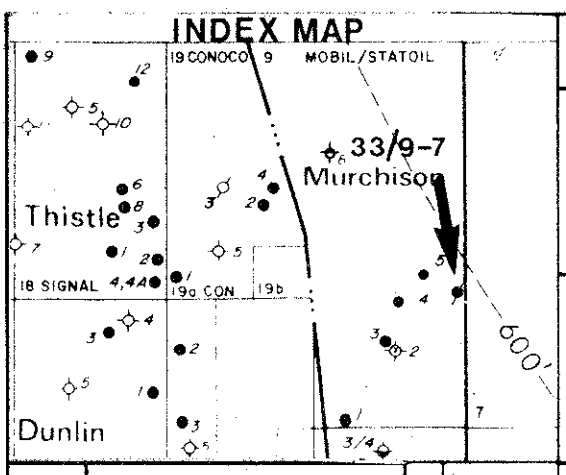
INTERVAL STUDIED : 280m - 3127m T. D. 3127m

Dr. No. 253/1294/3671 SCALE 1 : 5000 Date : 12:1:77

▌ Cored Interval ◣ Casing Shoe

The lithological symbols are a generalisation of those shown on Biostratigraphical Analysis Charts

ENCLOSURE 2



MOBIL EXPLORATION NORWAY INC.

MOBIL/STATOIL/CONOCO/ESSO/SHELL/AMOCO-SAGA

SUMMARY LOG 33/9-7

SCALE: 1:10,000

COORDINATES LAT. 61° 20' 12,174" LONG. 01° 59' 12,672"
ELEVATION KB/ 25.6 m RIG "DYVI ALPHA"
WATER DEPTH 155,5 m SPUDDED 11 SEPTEMBER 1976
TOTAL DEPTH 3127 m COMPLETED 8 NOVEMBER 1976
STATUS DISCOVERY WELL, P & A.

METERS | STRATIGRAPHY (KELLY BUSHING DEPTHS) | SHOWS (GOOD FAIR POOR) | TWO WAY CHECK SHOT TIME (SECS.) CASING CORES | LITHOLOGY - INDICATIONS - TEST RESULTS REMARKS | LOGS: ISF-SON, HDT, FDC/CNL, CPI, DLL, OTHER

MSL

SEA BED

No Samples

30"

292 m

Clay, grey, soft, sticky, w/ interbedded Sand, clear, medium, ranging fine to coarse, subangular moderate sorting, glauc, loose, fair porosity, abundant fossils

500

20"

G

1000

TERTIARY

Sand, clear, medium, ranging fine to coarse, moderate sorting, subrounded, pyrite, abundant shell fragments, good porosity

P

Claystone, silty, grey, soft.

G m

Sand, a.a. w/ Muscovite.

P G P

1500

Calcilutite, white, tan, firm, occasionally grading Calcarenite.

1.636

Paleocene 1651,7

Claystone, light-medium grey, tuffaceous, firm.

13 3/8"

Sandstone, clear, white, fine, occasionally very fine, well sorted, subangular, calcareous cemented, friable, good porosity, light brown oil staining, bright yellow fluoresence, fast white cloudy/streamy cut.
Marl, red, occasionally grey, soft.

1.828

1852 m U. Cretacous 1851,2

2000

U. CRETACOUS

m

G P P

Claystone, grey, occasionally brownish grey, blocky, slight calcareous, firm.

2446 m L. CRET. L. Cret. 2447

2452 m U/M Jurassic Shale 2452

2.317 Cores 1-9 86% recovery

Marl, white, pink, brown, laminated, firm.
Sandstone, clear, greyish brown, fine, ranging very fine to very coarse, good sorted, rounded to sub-angular, very good porosity, oil odor, light brown staining, yellow fluoresnce, light bluish fast cloudy cut, light brown residual colour.
Interbedded Claystone, sandy, medium grey, sub-fissile, hard.

2500

Brent Fm 2461

Dunlin Fm 2683,5

2.478

Claystone, silty, grey, micacous, hard, interbedded minor silt- and sandstones.

3000

JURASSIC

Statfjord Fm 2985,8

2.678

Sandstone, quartz, clear, very fine to coarse, poor sorted, angular, calcareous and siliceous cemented, kaolin matrix, poor porosity, no show. interbedded Claystone, silty, varigated colours, sub-fissile, hard.

9 5/8" TD 3127m

3500

(PALEO. DATA)

(LOG TOPS)

4000

A.L. February 1977

DST No 1:

Perforated interval: 2489.5-2493m (Brent Fm.)

Production Data:

Choke	WHP(psi)	BOPD	GOR	Oil Gravity	Gas Gravity
48/64"	1890	6791	524	37.7°API at 60°F	0.69

DST No 2: (misrun, perforations plugged)

Perforated interval: 1780-1800m (Lower Paleocene)

DST No 3:

Perforated interval: 1780-1800m (Lower Paleocene)
Flow: 7208FPD through 1/2" choke.
Fluid recovery: 70% free water, 17900ppm Cl⁻
27% emulsion
2% BS
1% Oil

Cored 120m, recovered 103.33m (86%)

Core 1	from 2465	to 2474m,	recovered	2465-2465.7m (8%)
Core 2	" 2474	" 2493m,	"	2474-2491.7m (84%)
Core 3	" 2493	" 2511.3m	"	2493-2511.3m 100%
Core 4	" 2511.3"	2527m	"	2511.3-2526.3m (95%)
Core 5	" 2527	" 2537m	"	2527-2537m (100%)
Core 6	" 2537	" 2550m	"	2537-2547.8m (84%)
Core 7	" 2550	" 2563m	"	2550-2561.75m (90%)
Core 8	" 2575	" 2592m	"	2575-2591.88m (99%)
Core 9	" 2592	" 2597m	"	2592-2595.6m (70%)

Box 4177

MOBIL EXPLORATION NORWAY INC.
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MOBIL EXPLORATION NORWAY INC.

WELL 33/9-7

WILDCAT

FINAL COMPOSITE LOG

CO-ORDINATES: 61°20'12,174"N
01°59'12,672"E

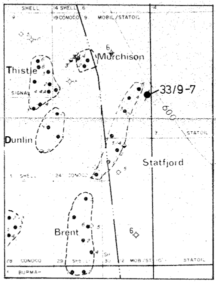
ELEVATION: KB + 25.5 m **SEA FLOOR** -155,5 m

TOTAL DEPTH: 3127 m

RIG: DYVI ALPHA

SPUD DATE: 11 SEPTEMBER 1976 **RIG RELEASE:** 8 NOVEMBER 1976

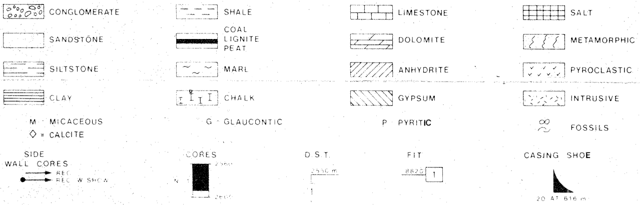
WELL STATUS: DISCOVERY WELL, P&A

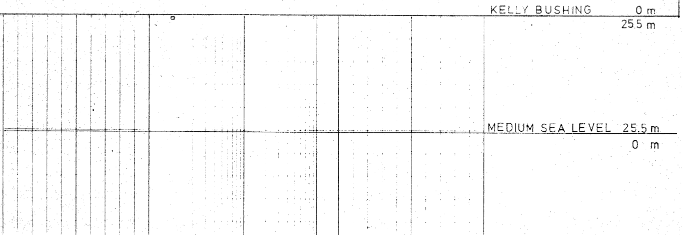

SHELL
4 SHELL
6
19 CONOCO
9
MOBIL/STATOIL
4
Murchison
Thistle
SIGNAL
33/9-7
600
Dunlin
7
STATOIL
Statfjord
SHELL
24 CONOCO
Brent
28 CONOCO
29 SHELL
30
12 MOB/STATOIL
STATOIL
BURMAH

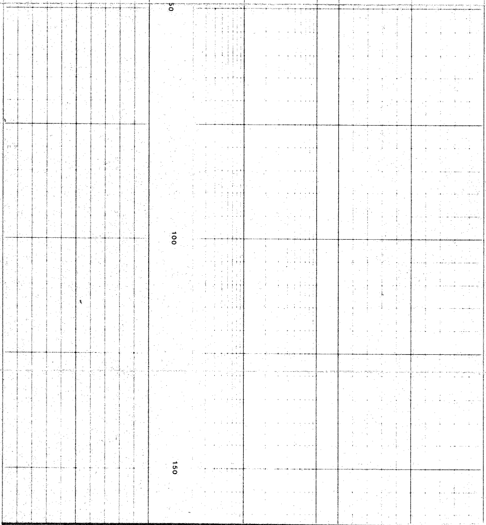
Scale: 1:500,000

0 10 20 km

LITHOLOGY SYMBOLS


CONGLOMERATE
SHALE
LIMESTONE
SALT
SANDSTONE
COAL
LIGNITE
PEAT
DOLOMITE
METAMORPHIC
SILTSTONE
MARL
ANHYDRITE
PYROCLASTIC
CLAY
CHALK
GYPSUM
INTRUSIVE
M - MICACEOUS
◇ = CALCITE
G - GLAUCONTIC
P - PYRITIC
FOSSILS
SIDE WALL CORES
REC
REC W SHOW
CORES
2560
N
2605
D.S.T.
2550 m
1
FIT
8820
1
CASING SHOE
20 AT 616 m





SPONTANEOUS POTENTIAL
millivolts

10
5 (run2

Depths

1/500

TIME MARKER(Run3)
X=LOGGING SPEED
m/min

GAMMA RAY
api units

0 100

RESISTIVITY
ohms - m^2/m

DEEP INDUCTION R_{ILD}

0.2 1.0 10 100 1000 2000

FOCUSED RESITIVITY R_{SFL}

0.2 1.0 10 100 1000 2000

CONDUCTIVITY

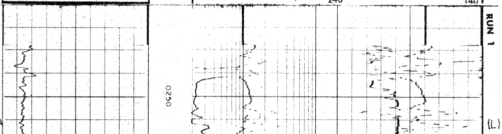
2000 0

INTERVAL TRANSIT TIME Δt
microsecond per foot

INTEGRATED TRANSIT TIME TTI
1 Millisecond
10 Milliseconds

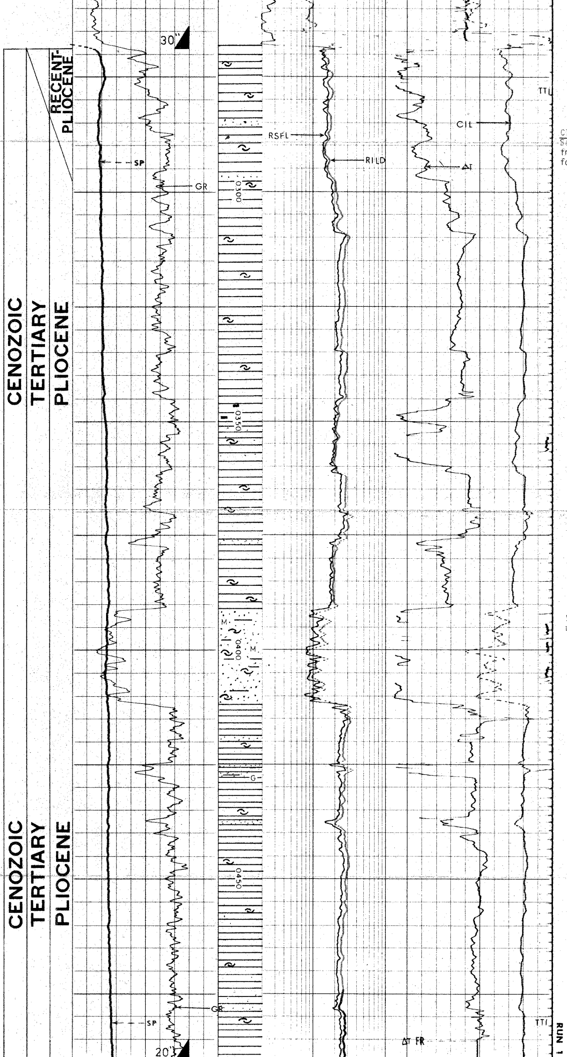
140 40
240 140

SEA BOTTOM 181m
-155.5m



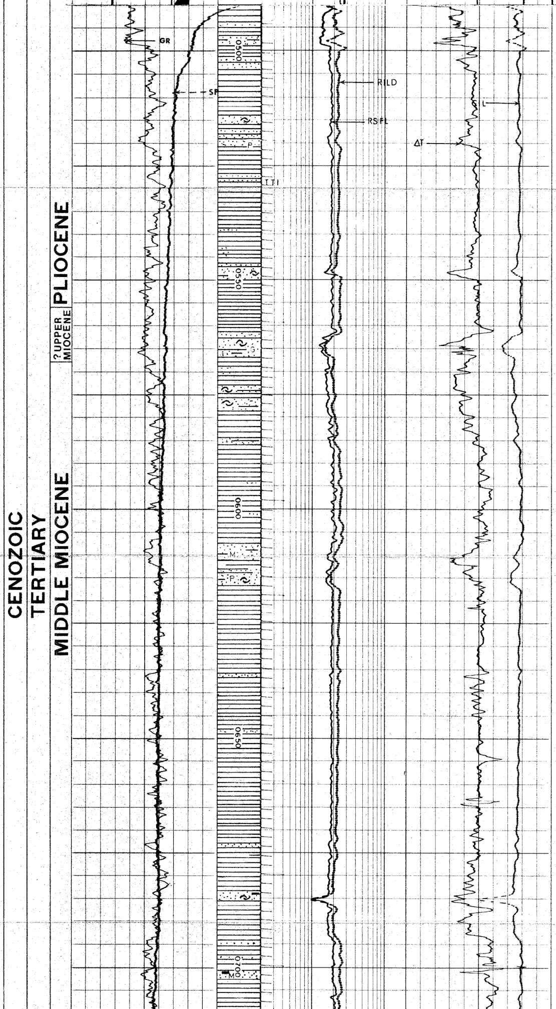
PALEO DATA

(L)=LOG PICK



Clay, gy, sft, stcky w/minor Sand, clr, wh, crse, occ m-fn, mod srtd, SA, lse, gd por, foss

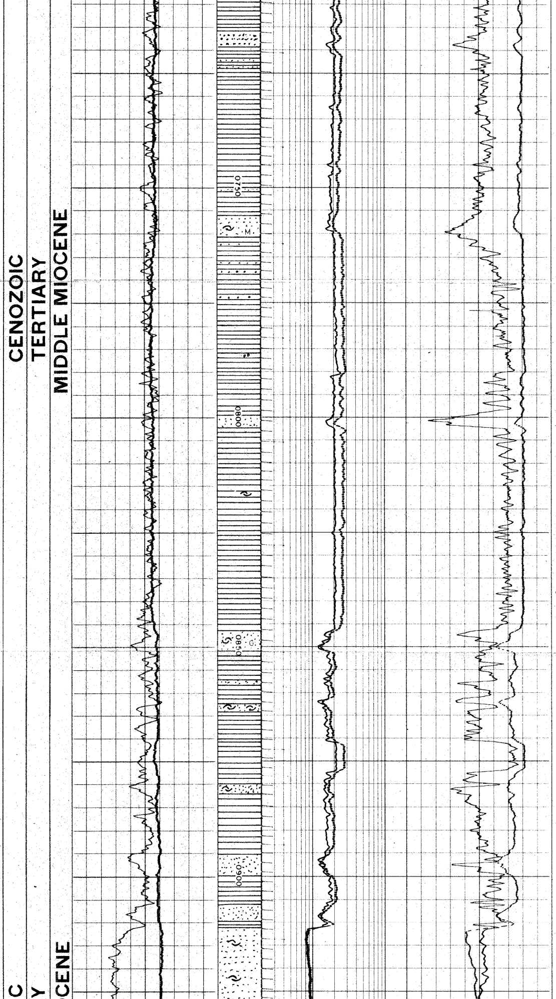
Sand, clr, m, m. srtd, A, mic, lse, gd por.



Clay, gy, sft intbdd Sand, clr, m, occ fn, mod srtd, SA, gd por

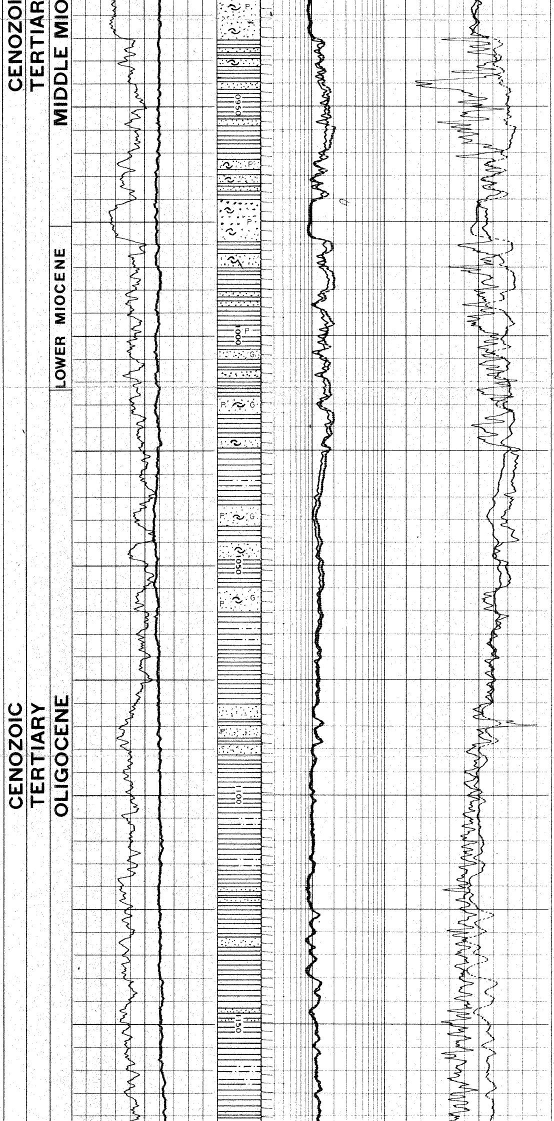
tr glauc, carb.

tr Pyr.



tr biotite

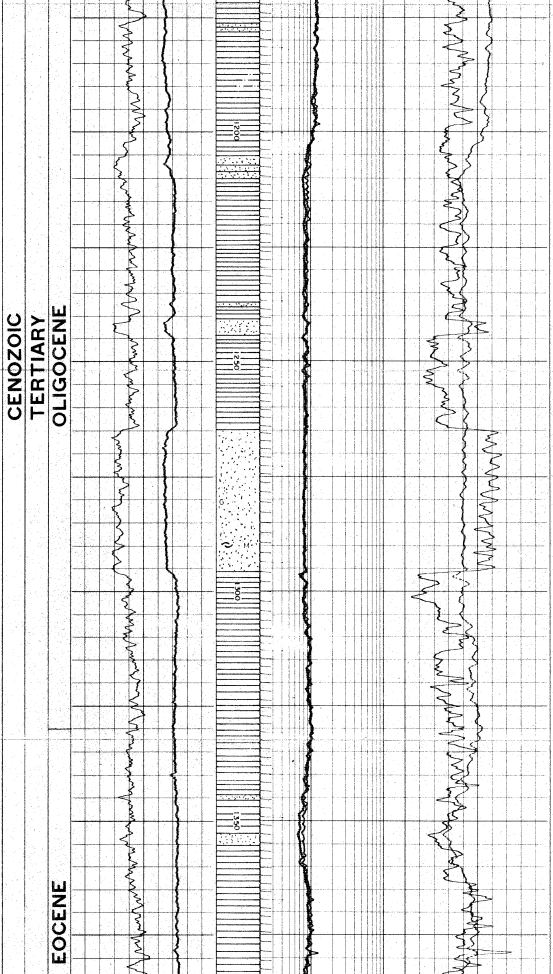
Clay c/a
occ sl calc



Clay gy, sft. intbdd minor Sand, clr. m grnd, fn-c, mod srtd, SR, pyr, abd shell frags, V gd D.

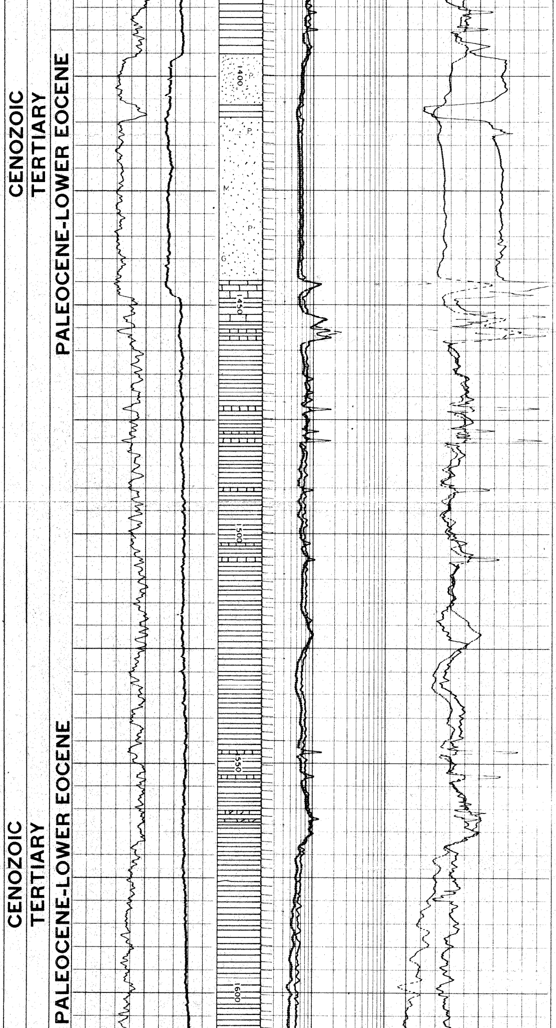
Clay, slty, gy, lt brn, yel, sft, occ r hd.
Interbedd minor Sand a/a, occ grn

Claystone sl slty, lt gy brn, sft



Sand, clr, f, SR, mod srtd,
lse. fr por
Clystone sl. slty, olive gy
grn, sft

Sand, clr, m, fn-c, SR occ R,
mod srtd, gd tr Muskovite, tr
glauc, sl tr Shell frags, gd
Ø



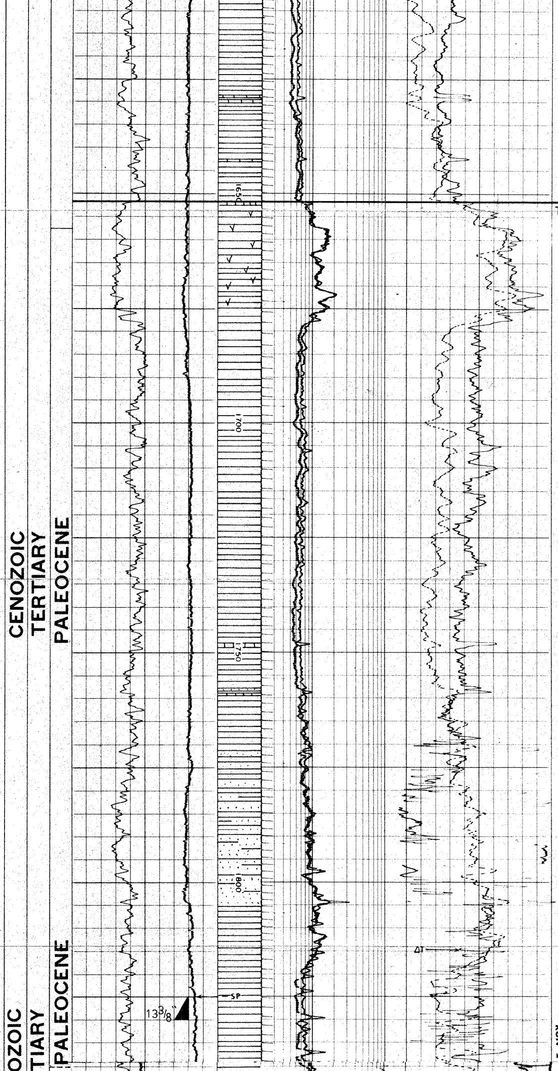
Sand a/a

Calcilutite: wh,tan,firm,hd when tan,tight,occ grdg Calcarenite

Claystone a/a

Claystone, lt brn, sft

Calcilutite, wh-yel-gy,firm, occ hd,minor sft & chky, generally tight,tr Dololutite,tan,hd,v tight

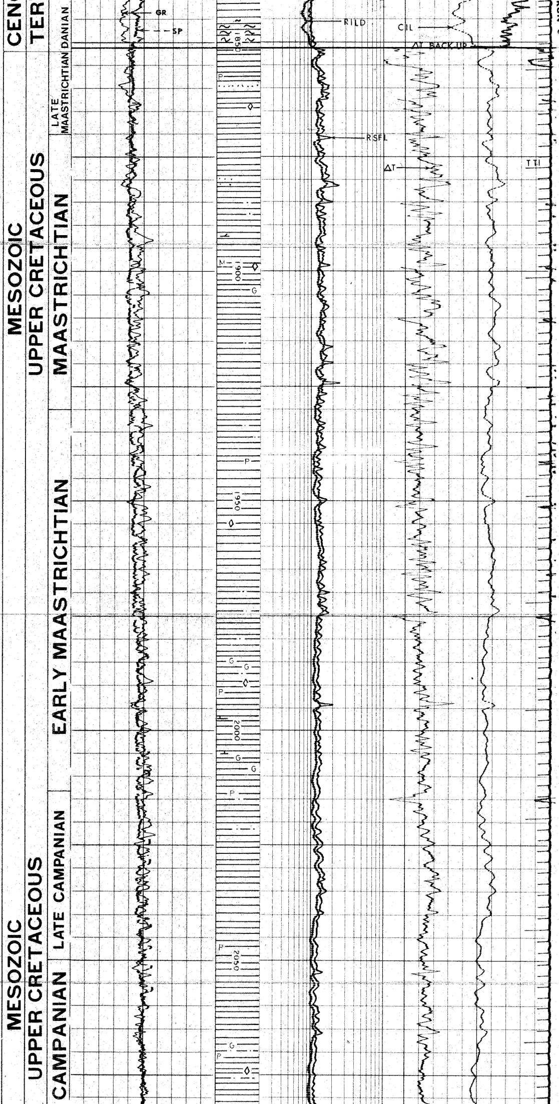


1651.7m

TOP PALEOCENE (L) 1626.2m

Clay, tuffaceous, lt-m gy, mottled w/wh specks, firm

Sandstone, clr, wh, fn, occ vfn, SA, well srtd, occ calc cmtd, fr-gd por, lt brn oil stn, bri yel flor, fast wh flash cut, wh streamy cut, intbdd Claystone a.a.

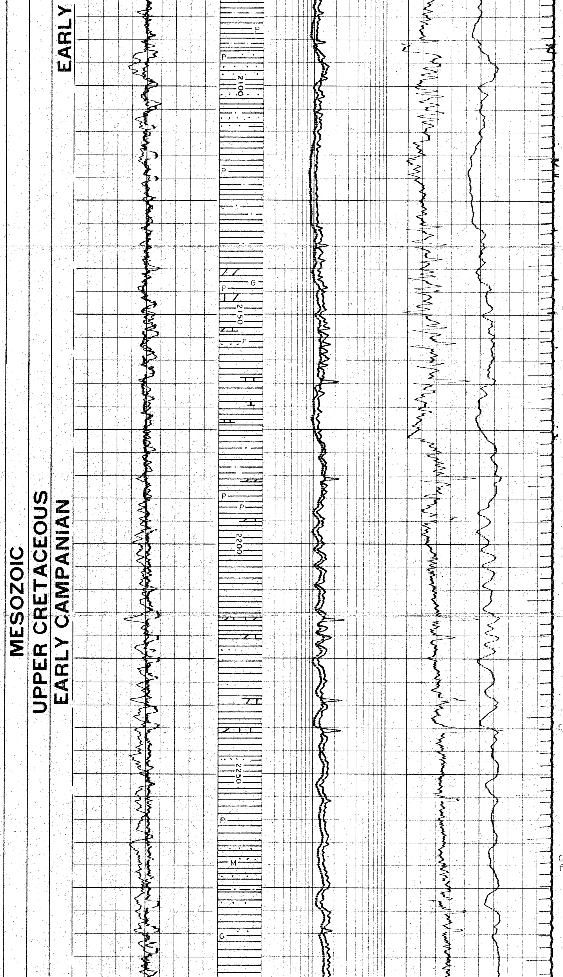


Marl, rd,occ gy,sft 1851.2 m

TOP UPPER CRETACEOUS(L)-1825.7m

Clay, gy occ brn, grn, blky,
firm, sl calc

tr glauc



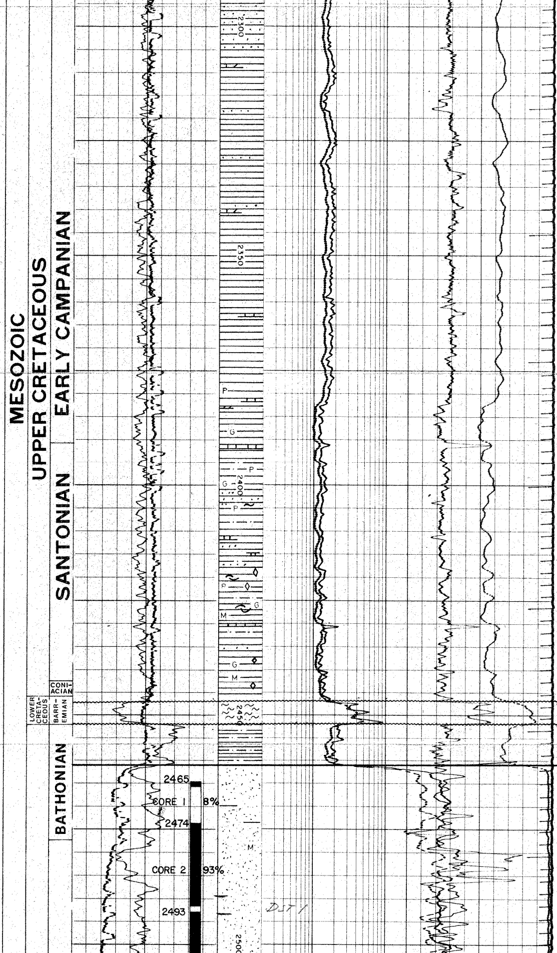
Sandstone, gy, v fr, p srtd R, pyr, carb, fri, fair - p por

Dololutite, tan, hd

Calcilutite, tan occ gy, hd

Clay, dk gy, sft

Claystone, slty, gy, gy grn, firm



Sandstone, gy. vfn. p srtd
R, p por. pale brn stn, pale
yl fluor, slow oozing cut,
fast wh crush cut

Claystone, m-dk gy

Calcilutite, arg, tan, hd

Claystone, slty, gy, firm.
tr claystone, rd, glauc
Sandstone, lt gy, v f . SR,
fr srtd, occ calc c td. mic
glauc, fr por, no show.

Calcilutite, lt gy, sft. pyr
tr calcirudite, clr, hd.

Foss.

2447m

TOP LOWER CRETACEOUS -2421.5m

Marl. wh.pink.brn.lam.firm 2452m

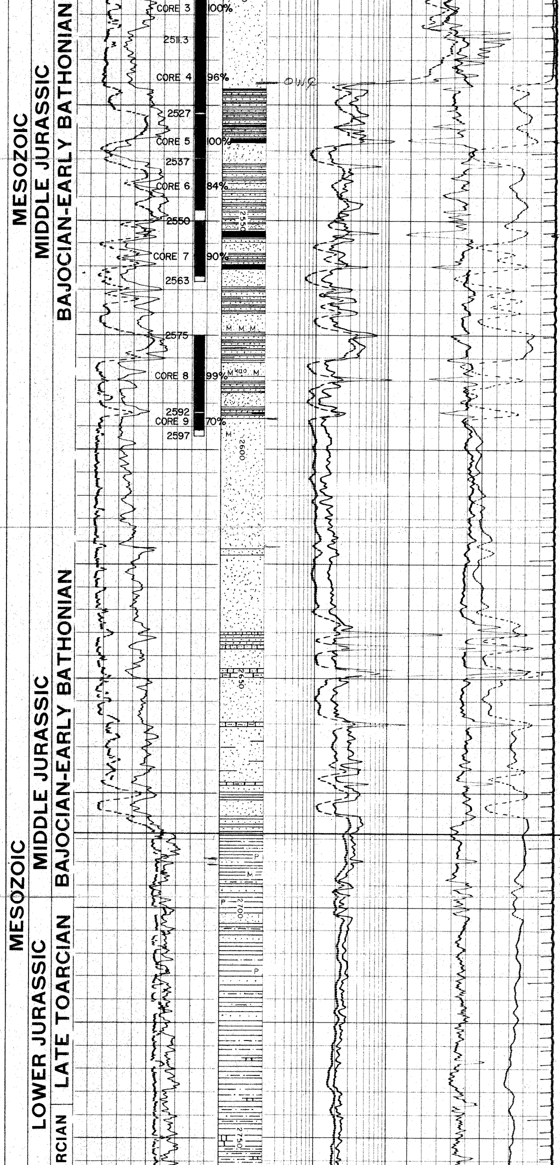
TOP JURASSIC COLD SHALE -2426.5m

Claystone, slty. m gy. firm

2461m

TOP BRENT FORMATION -2435.5m

Sandstone, clr. gy brn, fri,
ranging vfn - v crse, max 2mm
grn size. R-SA, fair srtd,
mic, pyr, fri-lse, v gd por.
good oil show: oil odor, lt
brn stn. yl fluor, lt bl fast
cldy cut, lt brn res colour
good oil in mud



Coal, blk. conch frac. brit
Claystone, gy. mic, occ wxy surf, sb fiss. pyr, intbdd & interlam Sandstone, slty, lt brn clr, v fn. fair srtd SA, fri. g por. fair oil show: weak oil odor. lt brn str, dull yl-yl fluor lt bl cloudy fn fast cut. tr lt brn res colour.

Sandstone. lt gy brn, fn. grdg m, w srtd. SA-SR. fri -lse v gd por. poor oil show vy weak oil odor, dull yl fluor w/yl spots, lt bl streamy cut

Sandstone, lt brn. gy. fn-m fr srtd, SA, mic. kaoline, hd, occ fri. g por. dull yel gold fluor, slow strmy cut

Sandstone a.a. no show

Calcilutite, slty, bl gy, hd

Calcilutite, slty, aren, wh firm

2683.5m

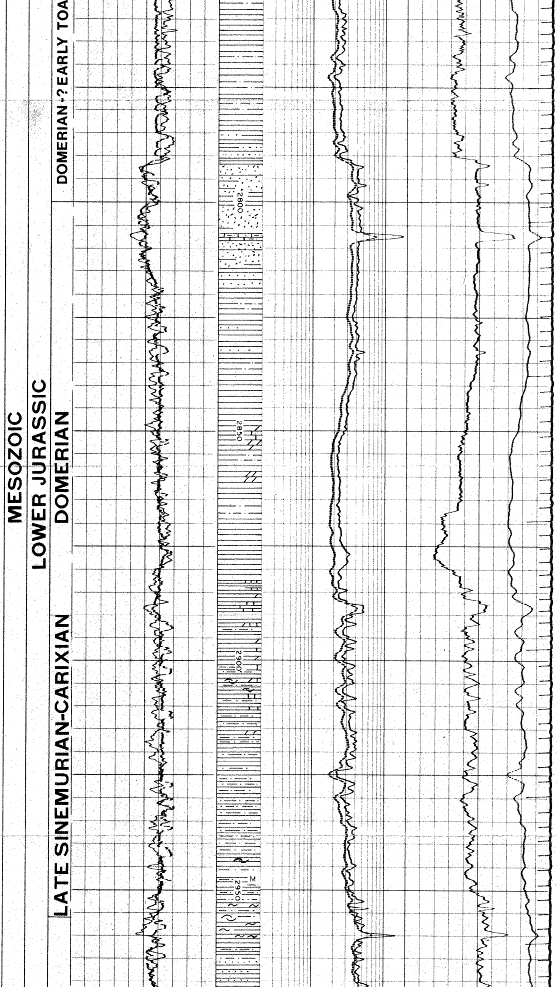
TOP DUNLIN - 2658.0m

Claystone, slty, gy, mic, minor

Siltstone, gy, occ brn, mic calc firm. pyr.

tr interbd sandstone, clr gy. fn, SA, m srtd, calc cem lse, fair por

Calcilutite, slty, aren, gy-tan, hd



Claystone. slty. dk gy. sb
fiss. firm

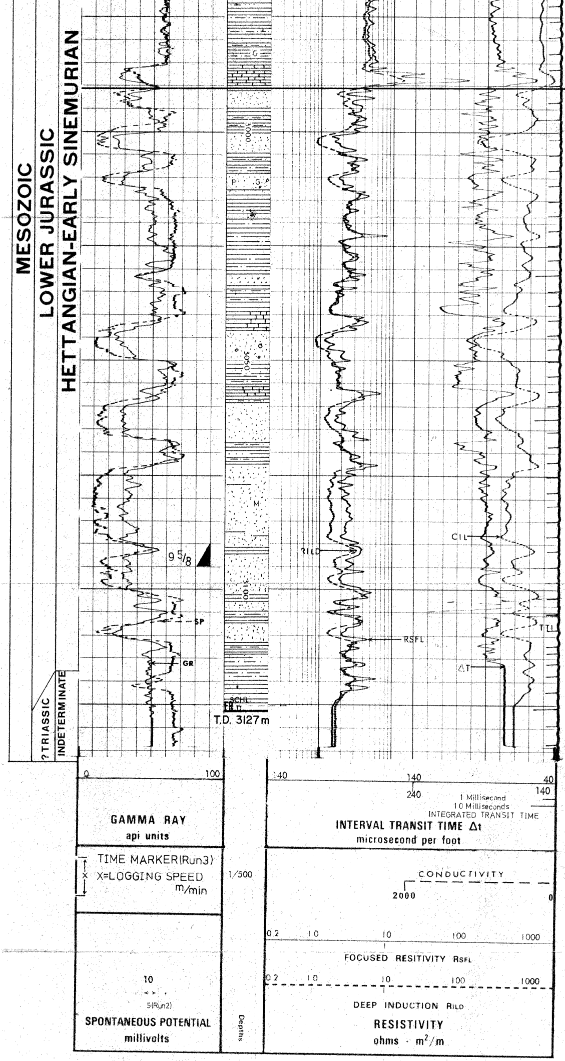
Sandstone, arg. gy. lt
brn. v fn, occ fn, SA,
w srtd,calc cmtd ,hd,
occ fri, fr-p por. no show

Dololutite, dk brn, tan,
v hd

Calcilutite, occ calcarenite
slty, tan, cream, hd, tr
dololutite, tan, hd occ chalky, calcilutite, wh,firm

Siltstone, blk, carb, mic,
blocky, firm,tr forams
and chrinoids

tr Marl, slty. lt gy, sft.



Claystone, slty, dk gy. mic
fiss firm
Calcilutite, wh-lt gy, firm
Calcarenite, tan, m hd - fri
no por, Pyr, glauc

2985.8m

TOP STATFJORD FM(L) -2960m

Sandstone. qtz, clr, v fn -
crse. p srtd,
A-SA, calc cmtd. hd, p por ,
no show

Claystone, slty,vgt col,subfiss,hd

Sandstone, cong,wh,clr,m-v crse,A,
p srtd,sil cmtd,glauc,pyr,kao mtx,
fr por,no show

Claystone dk brn-dk gy, sb
fiss. hd.

Claystone. scy, vgt col,
m hd.

tr Siltstone, sdy. lt [illegible]
glauc, kao, mic fri - m hd,
no vis por

Claystone, occ sdy, rd, gt
col, firm

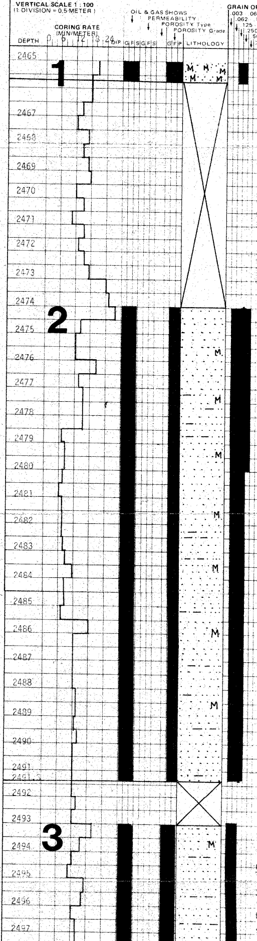
Mobil Exploration Norway Inc. GRAPHIC CORE LOG

COMPANY Mobil WELL 33/9-7 FIELD Wildcat

CORE NO 1 through 7 FROM 2465 M TO 2563 M RECOVERED 82.9 M 84% %

FORMATION Brent DATE 7 - 11 October 1976

DESCRIBED BY A.L.



VERTICAL SCALE 1 : 100
(1 DIVISION = 0.5 METER)
DEPTH
CORING RATE (MIN/METER)
0 6 12 18 24
DIP
OIL & GAS SHOWS
PERMEABILITY
POROSITY Type
POROSITY Grade
G F S G F S G F P
LITHOLOGY
GRAIN OR CRYSTAL SIZE
.003 .062 MM MICRO
.062 .125 MM Vy FN
.125 .250 MM FINE
.250 .500 MM MED
.500 1.00 MM CRSE
>1.00 MM Vy CRSE
2465
1
2467
2468
2469
2470
2471
2472
2473
2474
2
2475
2476
2477
2478
2479
2480
2481
2482
2483
2484
2485
2486
2487
2488
2489
2490
2491
2491.3
2492
2493
3
2494
2495
2496
2497
M

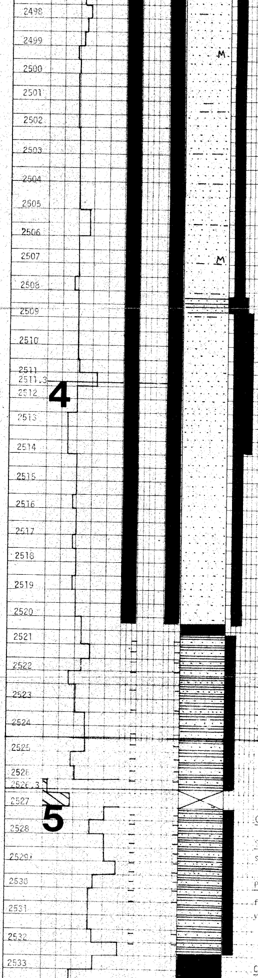
REMARKS

Sand/Sandstone. lt brn, clr, m, SA, fr srtd, v mic, lse - fri, fr - good por. lt brn staining, yl fluor, lt bl cloudy slow cut. lt brn res ring

Sandstone, occ slty, lt brn (staining), clr, m, ranging v fine-crse, SA-SR, fair srtd, mic, fri, fair porosity, good oil show throughout core: yl flour, lt bl fast cloudy cut, lt brn res colour, strong oil smell

Sandstone, occ slty, lt brn, clr, v fn, tr mic, A, well srtd good-ex por.

Good oil show:
lt brn stnc
yl fluor
lt bl fast cloudy cut
brown res colour
strong oil smell



Sandstone aa, intbdd.

Claystone, dk-mgy, sb fiss, mic,firm.

Sandstone, lt brn, clr, m, SA-SR, fr srtd, tr mic, fri, tr mic, ex por Good show A.A.

Sandstone, lt brn, clr, m,SA. well srtd, tr mic. lse-fri, ex por. Good oil show: strong oil odor, lt brn str, yl fluor, lt bl fast cloudy cut, brown res colour

Sandstone, lt brn, clr, fine grained, well srtd, SA. some thin layers w/bigger mica flakes, fri-lse, good-ex por Good oil show A.A.

Coal, blk, conch frac, brit.

Sandstone, slty, v. fn,fair srtd, SA, mic, fri, fair-por, intbdd

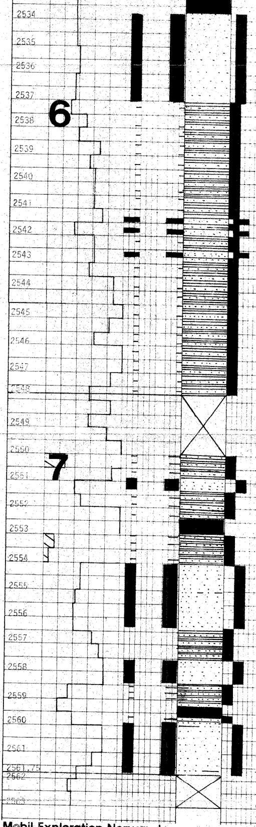
Claystone: gy mic,pyr,firm-hd nice crossbeddings averages 15°
fair-poor oil show: weak oil odor, dark yl-lt brn fluor, lt bl cloudy medium fast cut, tr lt brn res colour

Claystone, gy, mic, carb, fiss, hd intbdd

Sandstone, slty, dk gy brn, v fn, poor srtd, SA-A, v mic, carb, hd, poor, por.

Poor oil show: weak oil odor, dk-yl-lt brn fluor, bl wh slow strmy-cloudy cut, lt yl crush cut, very weak lt brn res ring

Coal, blk, conchoidial frac, brit



Sandstone, lt brn, clr, vfn, occ fn, well srtd, SA, tr mic, lse-fri, good-ex por, fair-poor oil show: oil odor, occ weak brown fluor spotted with dk yl fluor, bl wh sl strmy-cloudy cut, lt yl crush cut, lt brn res colour.

Claystone, sdy, gy-dk gy, mic, carb, fiss hd, interlaminated
Sandstone, slty, lt brn, clr, v fn, A, poor srtd, poor por, poor oil show: yl - dk yl brn fluor, wh bl m fast strmy cut leaves white ring in spot plate, tr lt brn res colour

Sandstone, lt brn, clr, v fn-m, fair srtd SA, tr mic, lse, good por, fair-good oil show: oil odor, lt brn stng, weak yl brn fluor, weak lt bl slow strmy cut, turns lt yl when crushed. lt brn res colour.

Claystone, gy, mic, carb, fiss, hd occ wxy surf, intbdd thin lamina of Sandstone, slty, clr-wh-lt brn, v fn, fair srtd, A, mic, tr carb, hd (fri) fair por. poor oil show: dull yl fluor, lt bl slow strmy cut Coal, blk, plant foss brit

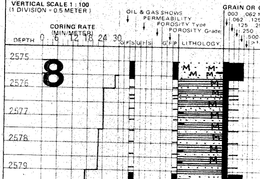
Sandstone, clr-lt gy brn, m grdg .n, well srtd, SA-SR, fri, ex por, fair oil show: irregular lt brn staining, yl brn fluor w/yl spots, lt bl fast strmy cut

Sandstone, lt gy brn, clr, fn grdg m, well srtd, SA-SR, fri-lse, ex por, poor -fair oil show: oil odor close to nose, resembles water odor at 10 cm distance, yl brn fluor w/yl spots, lt bl strmy cloudy cut, which turns white when crushed, leaves white ring in uv light.

Mobil Exploration Norway Inc.

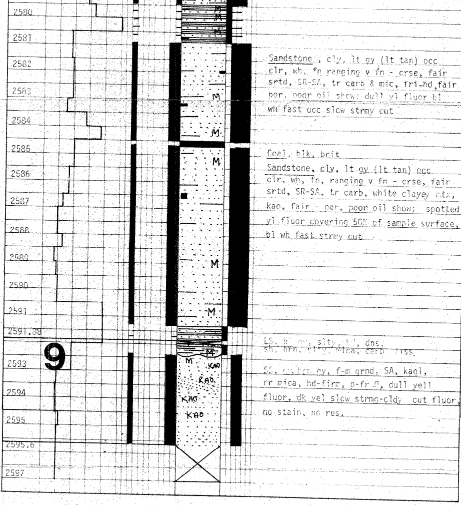
GRAPHIC CORE LOG

COMPANY Mobil
WELL 33/9-7
FIELD Wildcat
CORE NO 8 & 9
FROM 2575 M TO 2597 M
RECOVERED 20.5 M 93 %
FORMATION Brent
DATE 13 Oct. 1976
DESCRIBED BY N.T & A.L.



REMARKS

Sandstone, lt gy-blk, fn, poor srtd, SA, extremely micaceous & carb poor show, some spots w yl fluo. weak bl wh slow strmy cut
Claystone, sdy, dk gy, very mic & carb bd, fissile, interlam fine streaks of Sandstone, wh clr, fn, SA, poor srtd poor - no por, the sand streaks have dull yl fluor, bl wh, slow strmy cut


2580
2581
2582
2583
2584
2585
2586
2587
2588
2589
2590
2591
2591.88
9
2593
2594
2595
2595.6
2597
M
KAO

Sandstone, cly, lt gy (lt tan) occ clr, wh, fn ranging v fn - crse, fair srtd, SR-SA, tr carb & mic, fri-hd, fair por, poor oil show: dull yl fluor bl wh fast occ slow strmy cut

Coal, blk, brit

Sandstone, cly, lt gy (lt tan) occ clr, wh, fn, ranging v fn - crse, fair srtd, SR-SA, tr carb, white clayey mtx, kao, fair - por, poor oil show: spotted yl fluor covering 50% of sample surface, bl wh fast strmy cut

LS, bl [illegible], slty, [illegible], dns,
sh, brn, slty, mica, carb fiss.

SS, [illegible] brn gy, f-m grnd, SA, kaol, rr mica, hd-firm, p-fr Ø, dull yell fluor, dk yel slow strmg-cldy cut fluor, no stain, no res.

SUMMARY OF TESTING OPERATIONS
WELL 33/9-7

DST No I

Formation:	Middle Jurassic Brent Fm
Perforated interval:	2489.9 - 2493m
Bottom choke size:	2"
Cushion:	Fresh water to surface
Gas to surface:	37 mins
Oil to surface:	42 mins

Production Data:

Choke	WHP(psi)	BOPD	GOR	Oil Gravity	Gas Gravity
48/64"	1890	6791	524	37.7° API at 60°F	0.69

DST No 2 (Misrun)

Formation:	Lower Paleocene
Perforated interval:	1780 - 1800m
Result:	The test did not flow formation fluid to surface. (Perforations plugged)

DST No 3

Formation:	Lower Paleocene
Perforated interval:	1780 - 1800m
Bottom choke size:	2"
Cushion:	Diesel to surface
Mud to surface:	8hrs 18mins
Oil to surface:	10hrs 28mins (trace only)
Production Data:	720 BFPD through ½" choke

Pressure Data:

Initial shut-in pressure after circulating test string full of diesel (7 lb per gal.) and pumping 10 barrels into formation.	2360 psig
First flowing period 8/64" choke (5mins).	1770 psig
First shut-in period (26mins).	1849 psig
Second flowing period 14 hrs.	70-100 psig

Comments:

Open ended test string with RTTS packer was run for this test. Flow was through an 8/64" surface choke until mud appeared at the surface. The choke then plugged off and it was changed several times to various sizes with final flow through 32/64" choke.

Fluid recovery:	70% free water, 17,900 ppm cl 27% emulsion 2% BS 1% Oil

33/9-7