PL 038

STATOIL/ESSO

COMPLETION REPORT

WELL 15/12-3

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REPORT RESPONSIBILITY:
BOR: M. Florvåg
UND: J. Kristensen

I GENERAL INFORMATION

GENERAL INFORMATION

1. Well data record:

a)	Well designation:	15/12-3
b)	Well classification:	Wildcat
c)	Well location:	15/12-Delta structure
	i) Country:	Norway, North Sea
	ii) Licence:	PL 038
	iii) Latitude:	58° 14' 36.59" N
	Longitude:	1° 52' 45.67" E
	iv) Seismic location:	Shotpoint no. 1720
		Line no. 511- 324
	v) Water depth:	86 m

d) Rig data

i) Rig name:	Neptuno Nordraug
ii) RKB-MSL:	25 m

2. Purpose of the well

The well was designed to test possible hydrocarbons on the 15/12-Delta structure and to get more information about the Jurassic and Rotliegendes in this area.

3. Results of the well

In well 15/12-3 the primary objective, a Jurassic sandstone, was only a few meter thick. The sand was found deeper and was thinner than expected.

The well proved no sand in Palecoene which was one of the secondary objective. The other secondary objective the Rotliegendes sandstone, was highly interbedded with shale.

Non of the sands had shows of hydrocarbons.

4. Well history:

a) General:

i) Spud date:	20th June 1980
ii) Rig released:	24 December 1980
iii) Status:	Plugged and abandoned

b) Contractors:

i)	Drilling platform:	"Nordraug"
ii)	Drilling Contractor:	Ross Drilling Co. A/S
iii)	Cementing:	B.J.
iv)	Casing:	Stavanger Casing Crew
v)	Well testing:	Flopetrol
vi)	Electric logging:	Schlumberger
vii)	Mud logging:	Baroid
viii)	Mud contractor:	Macobar
ix)	Supply boats:	Supply boat pool
x)	Helicopters:	Helikopter Service A/S
xi)	Rig position contractor:	Decca/Geoteam
xii)	Diving:	Scan Dive
xiii)	Turbo drilling:	Hunting
xiv)	Conventional coring:	Diamond Boat
xv)	Core analysis:	Geco
xvi)	Paleodating:	Robertson Research

c) Casing:

i) 30" at 171 m
20" at 552 m
13 3/8" at 2151 m
9 5/8" at 3351 m

d) Coring:

1) Conventional coring (description attached)

CORE NO.	INTERVAL (m)	RECOVERED (m)	REC. (%)
1	3256 - 3263.3	7.3	100
2	4424 - 4433	8.93	100

2) Sidewall coring:

30 samples of 120 shots were recovered.
(Description attached).

7. Logging

1) The Baroid S-1000 unit include the following data:

i) Drilling rate (ROP)
ii) Lithology
iii) Cutting gas
iv) Mud gas
v) Chromatograph
vi) H_2 detector
vii) Shale density and 20 other parameters

g) Schlumberger:

Type of log	Run no.	Interval (m KB)
ISF/BHC-GR	1	171 - 565
	2	565 - 2165
	3	2165 - 2554
	4	2150 - 3361
FDC/CNL-GR	1	565 - 2165
	2	2165 - 2554
	3	2150 - 3361
	4	3350 - 4448.5
HDT-WSS, CST, CBL	1	2150 - 3361
DIL-BHC-GR	1	3350 - 4448.5
CNL-BHC-GR	1	3350 - 4448.5

g) Velocity Survey:

The velocity survey was conducted by SSL.
42 checkshots with levels from 325.5 - 4450 m KB

II GEOLOGICAL REPORT

GEOLOGICAL REPORT

1. Stratigraphy

a) Table of Chronostratigraphy (all depth in meters)

CHRONOSTRATIGRAPHIC TOPS	DEPTHS (KB)	DEPTH (MSL)
QUATERNARY		
Pleistocene	180	- 155
TERTIARY		
Pliocene	670	(- 645)
Miocene	860	(- 835)
Oligocene	1315	(- 1290)
Eocene	1690	(- 1665)
? Paleocene	2348	
CRETACEOUS		
Maastrichtian-Turonian	2480	(- 2455)
? Cenomanian	2803	(- 2778)
? Albian	2830	(- 2805)
Early Albian-Aptian	2845	(- 2820)
Early Aptian	2863	(- 2838)
Barremian-Late Ryazonian	2866	(- 2841)
Late Ryazonian	2998	(- 2973)
Early Ryazonian	3005	(- 2980)
JURASSIC		
Late Volgian	3007	(- 2982)
Middle Volgian	3034	(- 3009)
Early Volgian-Kimmeridgian	3067	(- 3042)
Early Kimmeridgian-Late Oxfordian	3233	(- 3208)
Late Permian	3238	(- 3213)
Early Permian	4392	(- 4367)
TD	4450	(- 4425)

b) Table of Lithostratigrpahy (all depth in meters)

LITHOSTRATIGRAPHIC TOPS	DEPTH (KB)	DEPTH (MSL)	THICKNESS
Nordland Group	86	(- 61)	1229
Utsira Formation	908	(- 883)	223
Hordaland Group	1315	(- 1297)	970
Frigg Formation	2075	(- 2050)	25
Rogaland Group	2285	(- 2260)	187
Balder Formation	2285	(- 2260)	63
Sele Formation	2348	(- 2323)	53
Lista Formation	2401	(- 2376)	71
Chalk Group			
Ekofisk Formation	2472	(- 2447)	8
Tor Formation	2480	(- 2455)	193
Hod Formation	2673	(- 2648)	79
Plenus Marl Formation	2752	(- 2727)	39
Cromer Knoll Group	2791	(- 2766)	
Rødby Formation	2791	(- 2766)	39
Sola Formation	2830	(- 2805)	36
Valhall Formation	2866	(- 2841)	111
Utvik Formation	2977	(- 2952)	21
Humber Group			
Kimmeridge Clay Fm.	2998	(- 2973)	144
Heater Formation	3142	(- 3117)	96
Zechstein Group	3238	(- 3213)	1154
Kupferschiefer Fm	4382	(- 4357)	
Rotliegendes Group	4392	(- 4367)	
TD	4450	(- 4425)	

2. LITHOLOGICAL DESCRIPTION

a) General information:

Period
Epoche } are partly based on log interpretation/correlation
Age } and partly on biostratigrahic report

Lithology- Description based on the samples and core desciption from the wellsite geologist on the rig

Depositional environment
- Based partly on earlier regional interpretation and partly on biostratigraphical report and core analysis.

b) Summary

NORDLAND GROUP (180 - 1315 m KB)

The Nordland Group extends from sea bottom to 1315 m at the base of Miocene. To 290 m the dominant lithology is loose sand, fine to coarse well rounded but poorly sorted with abundant shell fragments and traces of fossils and forams. Occasionally thin beds of claystone occure within the sand. The rest of the section with exception of the Utsira Formation, consist mainly of medium to dark grey clay and claystone locally grading into siltstone occasionally sandy. The sediments become more glauconitic and micaceous to the base. From about 720 m to about 820 m the sediments have an abundant content of multicolored mostly metamorphic rock fragments.

Utsira Formation (908 - 1131 m KB)

The Utsira Formation is composed of sand with beds of clay of variable thickness. The sand is very coarse to fine grained becoming finer downwards. Near the base the sand is glauconitic. Traces of shell fragments and microfossils are recognized. Clay and claystone are as described for the rest of the Nordland Group.

Depositional environment:
Open marine conditions. The Utsira formation indicates inner Shelf environment.

HORDALAND GROUP (1315 - 2285 m KB)

The Hordaland Group consists mainly of claystone and shale with the exception of the Frigg Formation which is dominantly sand. The claystone are dark brown to light brown, micromicaceous and sligthly calcareous. The shale are light brown to dark brown, firm to hard, slightly silty and calcareous and occasionally microromicaceous. Downward the colour changes and the shale becomes more grey to green. Thin limestone and dolomite stringers occure. The limestone are white to tan and firm to hard. The dolomite is generally light brown to red brown and hard. Just above the boundary to Rogaland Group traces of tuff are recognized. These are light grey with black patches, silty and slightly calcareous.

Frigg Formation (2075 - 2105 m KB)

The Frigg Formation is a more sandy development in the lower part of the Hordaland Group. The sand is mainly fine to very fine to silt grained, subrounded to well rounded and moderate sorted.

Depositional environment:
Open marine conditions; submarine fan.

ROGALAND GROUP (2285 - 2472 m KB)

The Rogaland Group consists mainly of shale with traces of tuff, dolomite and anhydrite. The shale is pyritic and glauconitic throughout the lower most part of the group.

Balder Formation (2285 - 2348 m KB)

The shale of this formation is light green to blue grey to medium grey occasionally brown, firm to hard, non calcareous, occasionally slightly silty. There are also traces of hard to very hard argillaceous dolomite and light grey to white occasionally buff and slightly calcareous tuff.

Depositional environment:
Open marine conditions:

Sele Formation (2348 - 2401 m KB)

The Sele Formation is mainly composed of light green to blue grey to medium grey shale as in the above formation with traces of dolomite and limestone.

Depositional environment:
Open marine conditions:

Lista Formation (2401 - 2472 m KB)

The dominant sediments of this formation are medium to dark grey occasionally brown to red, firm and slightly calcareous shale with traces of clear, fabular, medium hard and crystaline anhydrite. The shale is pyritic throughout the whole formation. To the base of the formation a marked white to grey, soft marl horizon occure.

Depositional environment:
Open marine conditions:

CHALK GROUP (2472 - 2791 m KB)

Ekofisk Formation (2472 - 2480 m KB)

The Ekofisk Formation is composed of white, soft to hard, chalky limestone interbedded with white to grey marl, medium grey, greenish grey or brown shale and yellow greenish, moderate to hard dolomite. The top of the formation can be seen by an incrase in the Gamma Ray response and a decrease in sonic velocity.

Depositional environment:
Open marine pelagic:

Tor Formation (2480 - 2673 m KB)

The Tor Formation consists primarily of limestone with streaks of marl and traces of non calcareous shale. The limestone is mainly chalky but may be hard and occasionally crystalline. The colour is white to light tan and locally the limestone is argillaceous. The marl and shale are medium grey to dark grey, becoming brown to red downwards and soft to firm. Top of the Tor Formation is shown by a decrease in sonic velocity.

Depositional environment:
Open marine pelagic:

Hod Formation (2673 - 2752 m KB)

Limestones of the Hod Formation are characteristically more marly than the Tor Formation above. They are generally chalky but can be hard and crystalline. Commonly they are white to light tan but become more light brown occasionally pinky downwards. The limestones are interbedded with light grey to medium grey soft to firm marl. Occasionally light green to grey coloured and non calcareous shale occures. Traces of glauconitic siltstone are also present.

Depositional environment:
Open marine pelagic:

Plenus Marl Formation (2752 - 2791 m KB)

The Plenus Marl Formation consists of brown to light tan, soft and silty marl becoming more brownish at base. The marl is interbedded with light tan to light brown limestone. Traces of shales are common. The top of the Plenus Marl Formation is shown by a decrease in Gamma Ray response and on increase in the sonic velocity.

Depositional environment:
Open marine pelagic:

CROMER KNOLL GROUP (2791 - 2998 m KB)

The Cromer Knoll Group consists of marl, shale, siltstone and limestone of Lower Cretaceous age.

Rødby Formation (2791 - 2830 m KB)

Lithologically the Rødby Formation is almost similar to the overlying Plenus Marl Formation. Dark grey to grey occasionally brown marl with traces of limestone and shale are dominant. The top is distinquished by an increase in Gamma Ray Response and a decrease in Sonic Velocity.

Depositional environment:
Marine: inner to outer shelf.

Sola Formation (2830 - 2866 m KB)

The Sola Formation consists dominantly of siltstone interbedded with marl, limestone and shale. The siltstone is light grey to green to red brown with patches of green glauconite, very argillaceous and micromicaceous. The marl and limestone are mainly as described above. The top of the formation is distinquished by a decrease in Gamma Ray response and an increase in Sonic Velocity.

Depositional environment:
Marine: inner to outer shelf, strong open marine influence.

Valhall Formation (2866 - 2977 m KB)

The Valhall Formation consists dominantly of marl interbedded with limestone and some shale. The marl is light grey to medium grey occasionally red to brown, soft to firm, very argillaceous occasionally slightly silty. The limestone is white to light grey, soft to moderate hard occasionally hard and occasionally argillaceous. The shale is dark grey to green occasionally black, soft to hard, and non to very calcareous. Traces of siltstone occure especially at the top of the formation. A slightly decrease in Gamma Ray response and a decrease in Sonic Velocity defined the top of the formation.

Depositional environment:
Marine: inner shelf, low energy conditions.

Utvik Formation (2977 - 2998 m KB)

The Utvik Formation consists of marl and limestone interbedded with shale. The limestone is white, often chalky, soft to hard and occasionally crystaline. Usually the marl is light grey to grey, occasionally reddish often silty and argillaceous. The shale is light to dark grey coloured, firm to hard and non calcareous. An increase in Gamma Ray response and decrease in Sonic Velocity defines the top of the formation.

Depositional environment:
Marine: inner shelf, low energy conditions.

HUMBER GROUP (2998 - 3238 m KB)

The rocks of the Humber Group are characterized by high Gamma Ray readings due to a high carbon content of shale and claystone.

Kimmeridge Clay Formation (2998 - 3142 m KB)

The Kimmeridge Clay Formation consists of shale with traces of limestone and siltstone. The shale is grey to brown to dark often coaly, soft to hard, occasionally silty and non to slightly calcareous. Usually the limestone is white to tan

occasionally buff and firm to hard. Sonic Velocity is generally fairly low through this interval.

Depositional environment:
Marine; restricted inner shelf, stratified water column.

Heather Formation (3142 - 3238 m KB)

The Heather Formation consists of shale and claystone similar to the Kimmeridge Clay Formation above. The sequence is divided from the Kimmeridge Clay Formation on log response characteristics, prinsipally an incrase in Sonic Velocity.

Depositional environment:
Marine: Shelf seas, more nearshore conditions, possibly stratified water column.

ZECHSTEIN GROUP (3238 - 4392 m KB)

This group consists dominantly of halite interbedded with some K and Mg salt, shale and anhydrite. The halite is clear to light buff occasionall pink, translucent, opaque, hard, brittle and crystalline. The K and Mg salt is pink to dark red, clear, translucent, brittle, crystalline and often associated with shale. The anhydrite is grey to white, massive and soft with a chalky texture. The shale is brown, dark grey to black, hard and dense. At the top of the group a more complex lithology occurs. In the uppermost part limestone and dolomite interbedded with sand and shale are dominating. The limestone/dolomite is white to buff, hard to very hard and pyritic. The shale is brick red, occationally grey-greenish, occationally very silty, firm. to hard.

Depositional environment:
Marginal marine, hypersaline.

KUPFERSCHIEFER FORMATION (4382 - 4392 m KB)

The dominat sediment of this formation is a dark brown to black dolomitic shale usually laminated and fissile.

ROTLIEGENDES GROUP (4392 - 4450 m KB)

This group consists of interbedded sandstone and shale. The sandstone is red to red grey, very fine to fine, subangular, fair sorted, dolomite cemented and slightly micaceous. The shale is red to red grey, moderate hard to hard occasionally silty, slightly calcareous and dolomitic.

Depositional environment.
Possibly non-marine.

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WELLSITE SAMPLE DESCRIPTION

COUNTRY: NORWAY | AREA: NORTH SEA | FIELD: 15/12-Delta

WELL NO.: 15/12-3

COORDINATES: 58 ° 14 ' 36.59" N ; 01 ° 52 ' 45.67" E

K.B.E.: 25 meters | COMPANY: STATOIL/ESSO

HOLE SIZE: 17 1/2" | GEOLOGIST: Jakobsson | DATE: 23.06.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
200	70	sst, clr qtz, lse, f-crs, well rnd, pr srtd	NO SHOWS
	20	clyst, med gy, occ dk gy, sft	
	10	shell frags	
	tr	forams	
	tr	ls, wh, hd, chky	
210	70	sst a/a	
	10	clyst a/a	
	10	ls a/a	
	10	shell frag	
220	90	sst a/a	
	10	clyst a/a	
	tr	ls , shell frag	
	tr	pyr	
230	95	sst a/a	
	5	clyst a/a	
	tr	shell frag, forams	
240	100	sst a/a	
	tr	clyst a/a, forams, shell frags	
250	90	sst a/a	
	10	clyst a/a	
	tr	a/a	
260	80	sst a/a	
	20	clyst a/a	
	tr	a/a	
270	90	sst a/a	
	10	clyst a/a	
	tr	ls, foss, forams	
280	100	sst a/a	
	tr	clyst, ls, shell a/a	
	tr	coal, dull, friable, woody	
290	50	clyst, med gy, sft, stky	
	40	sst, clr qtz, vf-f, occ med, well rnd, well srtd	
	10	coal a/a	
	tr	sltst, clr qtz, lse, well rnd	
300	50	clyst a/a	
	30	sltst a/a	
	20	sst a/a	
	tr	coal a/a	
	tr	shell	

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WELLSITE SAMPLE DESCRIPTION

COUNTRY: NORWAY | AREA: NORTH SEA | FIELD: 15/12-Delta

WELL NO.: 15/12-3

COORDINATES: 58 ° 14 ' 36.59" N ; 01 ° 52 ' 45,67 " E

K.B.E.: 25 meters | COMPANY: STATOIL/ESSO

HOLE SIZE: 17 1/2" | GEOLOGIST: Jakobsson | DATE: 24.06.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
310	60	clyst, med gy, sft, stky, slty	
	30	sltst, clr qtz, lse, well rnd, well srtd	
	10	sst, clr qtz, lse, f-med, well rnd, mod srtd	
320	80	clyst a/a	
	20	sltst a/a	
330	100	clyst a/a	
	tr	abd sltst	
340	100	clyst	
	tr	a/a	
350	100	clyst a/a	
	tr	sltst a/a	
360	100	clyst a/a	
	tr	sltst a/a	
370	100	clyst a/a	
380	100	"	
390	100	"	
400	100	"	
410	100	"	
420	100	"	
430	100	"	
440	100	"	
450	100	"	
460	100	"	
470	100	"	
480	100	"	
490	100	"	
500	100	"	
510	100	"	

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WELLSITE SAMPLE DESCRIPTION

COUNTRY: NORWAY | AREA: NORTH SEA | FIELD: 15/12-Delta

WELL NO.: 15/12-3

COORDINATES: 58 ° 14 '36.59" N ; 01 ° 52 ' 45.67 " E

K.B.E.: 25 meters | COMPANY: STATOIL/ESSO

HOLE SIZE: 17 1/2" | GEOLOGIST: Jakobsson | DATE: 24.06.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
520	100	clyst, med gy, occ dk gy, sft-stky, slty	
	tr	abd slt	
530	100	clyst a/a	
540	100	clyst a/a	
550	100	clyst a/a	
560	100	clyst a/a	20"csg

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WELLSITE SAMPLE DESCRIPTION

COUNTRY: NORWAY | AREA: NORTH SEA | FIELD: 15/12-Delta

WELL NO.: 15/12-3

COORDINATES: 58 ° 14 '36,59" N ; 01 ° 52 '45,67 " E

K.B.E.: 25 meters | COMPANY: STATOIL/ESSO

HOLE SIZE: 17 1/2" | GEOLOGIST: Nygård | DATE: 30.06.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
570	100	clyst, med gy, sft, stky, slty	
	tr	sd, clr qtz, vf-f, subrnd-rnd	NO SHOWS, NO GAS
580	100	clyst a/a	
	tr	a/a	
590	100	clyst a/a	
	tr	a/a	
600	100	clyst a/a	
	tr	a/a	
610	100	clyst a/a	
	tr	a/a	
620	100	clyst a/a	
	tr	a/a	
630	100	clyst a/a	
	tr	a/a	
640	100	clyst a/a	
	tr	a/a	
650	100	clyst a/a	
	tr	a/a	
660	100	clyst a/a	
	tr	a/a	
670	100	clyst a/a	
	tr	a/a	
680	100	clyst a/a	
	tr	a/a	
690	100	clyst a/a	
	tr	a/a	
700	100	clyst a/a	
	tr	sd, shell frags, microfoss	
710	100	clyst a/a	
	tr	sd, shell frags, microfoss	
720	50	rockfrags, gavel- v crs, multicolored,	
		mostly metamorfic; mica-schist, qtz, gneiss	drill. break
		some volcanic; gabbro, some sst (lt brn),	
		some chert, siderite	
	40	sd, clr qtz, occ yel contam w/mica, v crs-vf,	
		ang-subrnd, occ rnd, grdg to gravel	
	10	clyst a/a	
	tr	pyr, shell frags, microfoss	
730	40	sd a/a	
	40	rock frags a/a	
	20	clyst a/a	
	tr	a/a	
740	50	sd a/a	
	30	rock frags a/a	
	20	clyst a/a	
	tr	a/a	

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WELLSITE SAMPLE DESCRIPTION

COUNTRY: NORWAY | AREA: NORTH SEA | FIELD: 15/12-Delta

WELL NO.: 15/12-3

CO ORDINATES: 58 ° 14 ' 36.59" N ; 01 ° 52 ' 45.67 " E

K.B.E.: 25 meters | COMPANY: STATOIL/ESSO

HOLE SIZE: 17 1/2" | GEOLOGIST: Nygård | DATE: 30.06.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
750	50	clyst, med gy, sft, stky, slty	
	30	sd, clr qtz, occ yel, occ v contam w/mica, v crs-vf,	
		ang-subrnd, occ rnd, grdg to gravel	
	20	rock frags, multicolored, gravel-v crs,	
		mostly metamorfic, vocanic, sst, chert, siderite	
	tr	pyr, shell frags, microfoss	
760	50	clyst a/a	
	30	sd a/a	
	20	rock frags	
	tr	a/a	
770	50	clyst a/a	
	30	sd a/a	
	20	rock frags	
	tr	a/a	
780	80	clyst a/a	
	10	rock frags a/a	
	10	sd a/a	
	tr	a/a	
790	80	clyst a/a	
	10	rock frags a/a	
	10	sd a/a	
	tr	a/a	
800	80	clyst a/a	
	10	rock frags a/a	
	10	sd a/a	
	tr	a/a	
810	60	clyst a/a	
	30	sd a/a	
	10	rock frags	
	tr	a/a	
820	60	clyst a/a	
	20	sd a/a	
	20	rock frags a/a	
	tr	pyr, shell frags, microfoss, garnet x-ls	
830	50	clyst a/a	
	40	sd a/a	
	10	pyr	
	tr	rock frags, shell frags, microfoss	
840	50	clyst, med gy, occ gy-grn, sft, stky, slty	clyst, occ gy-grn
	40	sd a/a	driller had drill
	10	pyr	break
	tr	microfoss, rock frags	
850	50	sd a/a	
	40	clyst a/a	
	10	pyr	

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WELLSITE SAMPLE DESCRIPTION

COUNTRY: NORWAY | AREA: NORTH SEA | FIELD: 15/12-Delta
WELL NO.: 15/12-3
COORDINATES: 58 ° 14 ' 36.59" N ; 01 ° 52 ' 45.67 " E
K.B.E.: 25 meters | COMPANY: STATOIL/ESSO
HOLE SIZE: 17 1/2" | GEOLOGIST: Nygård | DATE: 01.07.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
860	50	sd, clr qtz, occ yel, v crs-vf, ang-subrnd, occ rnd grdg to gravel	
	40	clyst, med gy, occ gy-grn, sft, stky, slty	
	10	pyr	
	tr	rock frags, shell frags, microfoss	
870	50	sd a/a	
	40	clyst, med gy, med-lt gy, sft, occ firm-sft, stky, occ waxy, slty	
	10	pyr	
	tr	a/a	
880	40	sd a/a	
	40	clyst a/a	
	20	pyr	
	tr	a/a	
890	40	sd, occ pink, else a/a	
	40	clyst a/a	
	20	pyr	
	tr	a/a	
900	70	clyst a/a	
	30	sd a/a	
	tr	pyr	
	tr	rock frags, mica	
920	60	sd a/a	
	30	clyst a/a	
	10	rock frags a/a	
	tr	pyr, mica, shell frags	
930	60	clyst, more firm, more waxy, else a/a	
	30	sd a/a	
	10	rock frags	
	tr	a/a	
940	40	sd a/a	
	20	clyst a/a	
	20	rock frags	
	10	shell frags (1 - 8mm)	
	10	pyr	
950	70	clyst a/a	
	30	sd a/a	
	tr	pyr, rock frags, shell frags	
960	40	clyst a/a	
	40	sd a/a	
	20	rock frags	
	tr	pyr, shell frags	

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Den norske stats oljeselskap a.s
Postboks 300, 4001 Stavanger

WELLSITE SAMPLE DESCRIPTION

COUNTRY: NORWAY | AREA: NORTH SEA | FIELD: 15/12-Delta
WELL NO.: 15/12-3
COORDINATES: 58 ° 14 ' 36,59" N ; 01 ° 52 ' 45,67" E
K.B.E.: 25 meters | COMPANY: STATOIL/ESSO
HOLE SIZE: 17 1/2" | GEOLOGIST: Nygård | DATE: 02.07.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
970	70	clyst, med gy, med-lt gy, sft, occ firm, stky, occ waxy, slty	
	30	sd, clr qtz, occ yel, occ pink, v crs-vf, ang-subrnd, occ rnd, occ grdg to gravel	
980	30	clyst a/a	
	30	sd a/a	
	20	rock frags, multicolored, gravel-v crs, mostly metamorfic; volcanic, sst, chert, quartsite, qtz, siderite	
	10	shell frags	
	10	pyr	
990	40	sd a/a	
	30	clyst, med gy, sft, firm, stky, waxy, slty, mica	
	10	rock frags a/a	
	10	shell frags & microfoss	
	10	pyr	
1000	50	clyst, mostly firm, waxy, else a/a	
	40	sd a/a	
	10	pyr	
	tr	rock frags, shell frags, microfoss (tuff? lt gy, blk spots)	
1010	60	clyst a/a	
	40	sd a/a	drill had drill bre
	tr	pyr	
	tr	rock frags, shell frags, microfoss	
1020	60	sd, mostly f, else a/a	
	40	clyst a/a	
	tr	shell frags	
	tr	pyr, rock frags	
1030	50	sd a/a	
	50	clyst a/a	
	tr	sltst- med brn, lse	
	tr	pyr, microfoss, rock frags, shell frags	
1040	60	sd a/a	
	40	clyst , occ subfiss, else a/a	
	tr	shell frags, pyr, microfoss	
	tr	bone (of animal)	
1050	50	sd a/a	
	50	clyst a/a	
	tr	a/a	

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Den norske stats oljeselskap a.s
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WELLSITE SAMPLE DESCRIPTION

COUNTRY: NORWAY | AREA: NORTH SEA | FIELD: 15/12-Delta

WELL NO.: 15/12-3

CO ORDINATES: 58 ° 14 ' 36.59" N ; 01 ° 52 ' 45.67 " E

K.B.E.: 25 meters | COMPANY: STATOIL/ESSO

HOLE SIZE: 17 1/2" | GEOLOGIST: O.Greiner | DATE: 03.07.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
1060	90	sd, clr qtz, occ yel, vf-med, occ crs, subrnd-subang, occ rnd	lots of sd
	10	clyst, med-lt gy, sft, occ firm, stky slty, occ micromicac	on shaker
	tr	shell frags, glauc, pyr, forams	and desander
1070	80	sd a/a	
	20	clyst a/a	
	tr	a/a	
1080	80	sd, occ pink, else a/a	
	20	clyst a/a	
	tr	rock frags, multicoloured, gravel-v crs, mostly metam;chert, quartzite else a/a	"
1090	50	sd a/a	
	50	clyst, occ grn gy, then firm, else a/a	
	tr	shell frags, forams, glauc	
1100	80	sd a/a	
	20	clyst, med- lt gy, occ lt grn gy, sft-firm, slty occ micromic, blky	"
	tr	shell frags, glauc, pyr, forams	
1110	60	clyst, med-lt gy, occ lt grn-gy, occ brn-gy, else a/a	
	40	sd, vf-f, subrnd, occ crs, then ang	
	tr	clr qtz, occ wh shell frags, forams, glauc, pyr	
1120	80	sd, clr qtz, occ wh, f-med, subrnd-subang, occ crs, then ang	
	20	clyst a/a	
	tr	shell frags, glauc	
1130	70	sd a/a	
	30	clyst a/a	
	tr	mica, pyr, shell frags, forams, glauc	

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WELLSITE SAMPLE DESCRIPTION

COUNTRY: NORWAY | AREA: NORTH SEA | FIELD: 15/12-Delta
WELL NO.: 15/12-3
COORDINATES: 58 ° 14 ' 36,59" N ; 01 ° 52 ' 45,67" E
K.B.E.: 25 meters | COMPANY: STATOIL/ESSO
HOLE SIZE: 17 1/2" | GEOLOGIST: O.Greiner | DATE: 03.07.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
1140	70	sd, clr qtz, occ wh, vf-med, subrnd-subang, occ crs, then ang	
	20	clyst, med-lt gy, sft-firm, slty, subfiss, micromic, blky, occ sft & stky	
	10	sltst, lt brn-gy, firm	
	tr	shell frags, forams, glauc, pyr, mica	
	tr	rock frags (quartzite)	
1150	70	clyst, mostly firm, else a/a	
	20	sd a/a	
	10	glauc, f-med size lse grns	
	tr	pyr, shell frags, microfoss	
1160	90	clyst, lt-med gy a/a	
	10	glauc a/a	
	tr	sd, vf-crs, subrnd-subang	
	tr	microfoss, pyr	
1170	95	clyst, occ lt brn gy, slty, subfiss else a/a	mineral fluor
	5	sst, vf, well cmtd, clr qtz, subrns, well srtd	from sst
	tr	sd a/a	
	tr	pyr, glauc, ls?	
1180	90	clyst a/a	
	10	sst a/a	
	tr	sd a/a	
	tr	glauc, pyr, ls?	
1190	90	clyst a/a	
	10	sst a/a	
	tr	sd a/a, glauc, pyr	
1200	100	clyst a/a	
	tr	sst a/a	
	tr	sd, v crs, subang, else a/a	
	tr	glauc	

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Den norske stats oljeselskap a.s
Postboks 300, 4001 Stavanger

WELLSITE SAMPLE DESCRIPTION

COUNTRY: NORWAY | AREA: NORTH SEA | FIELD: 15/12-Delta
WELL NO.: 15/12-3
COORDINATES: 58 ° 14 ' 36.59" N ; 01 ° 52 ' 45.67 " E
K.B.E.: 25 meters | COMPANY: STATOIL/ESSO
HOLE SIZE: 17 1/2" | GEOLOGIST: O. Griener | DATE: 04.07.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
1210	100	clyst, lt brn gy, med gy, slty, subfiss, firm, occ sft, occ micromic	
	tr	sst, vf, well cmtd, clr qtz, subrnd, clr-wh qtz	wh-yel dull
	tr	pyr	(mineral fluor fro: sst)
1220	100	clyst, mostly, lt brn, brn-gy else a/a	
	tr	pyr, microfoss	vf sd on desander
1230	90	clyst a/a	
	10	sst a/a occ tan, wh matrix	
	tr	sd, clr qtz, f-med, subrnd-subang	
	tr	glauc, ls, wh-buff, hd, cryptoxln, ang	
1240	80	clyst, subfiss-fiss, else a/a	
	20	sst, clr qtz, occ tan occ lt gy-wh, wh matrix, well cmtd, subrnd, vf-f	
	tr	pyr, shell frags, glauc	
1250	50	clyst a/a	
	45	sltst, lt gy, firm, occ brn, then firm-hd, subfiss-fiss	
	5	sst, vf a/a	
	tr	glauc, sd a/a	
1260	70	sltst, lt gy-med gy, firm-hd, occ firm, occ micromic, subfiss, occ blky	
	30	clyst, brn, slty, firm-hd, subfiss-fiss	
	tr	sd, vf-med, clr qtz, subang	
	tr	pyr, glauc, shell frags	
1270	60	clyst brn a/a	
	40	sltst, lt gy-med gy a/a	
	tr	a/a	
1280	90	clyst a/a becoming hder, shaly	
	10	sltst a/a	
	tr	a/a	

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WELLSITE SAMPLE DESCRIPTION

COUNTRY: NORWAY | AREA: NORTH SEA | FIELD: 15/12-Delta
WELL NO.: 15/12-3
COORDINATES: 58 ° 14 ' 36,59" N ; 01 ° 52 ' 45,67 " E
K.B.E.: 25 meters | COMPANY: STATOIL/ESSO
HOLE SIZE: 17 1/2" | GEOLOGIST: O. Greiner | DATE: 04.07.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
1290	50	clyst, brn, slty, firm-hd, subfiss, occ	
		blky, loc shaly, micromic	
	50	sltst, lt-med gy, firm-hd, occ firm,	
		occ glauc, micromic, blky, occ subfiss	
	tr	pyr, glauc, micromic, lign	
1300	60	sltst a/a	sst, wh dull
	40	clyst, subfiss-fiss, loc shaly, else a/a	fluor,?mineral fluo
	tr	sst, clr qtz, occ lt gy, vf, hd, silic	
		cmtd, mica	
	tr	pyr, glauc, lign	
1310	60	sltst a/a	
	40	clyst a/a	
	tr	sd, clr occ wh qtz, f-med, subang, lse	ls dull yel fluor
		grns	
	tr	glauc, microfoss, pyr	
	tr	? ls, lt brn, hd, cryptoxln, blky	
1320	50	sltst a/a	"
	50	clyst/sh dk brn-brn, else a/a	
	tr	a/a	
1330	70	clyst/sh a/a	"
	30	sltst a/a	
	tr	a/a	
1340	80	clyst/sh a/a	"
	20	sltst a/a	
	tr	a/a	
1350	95	sh, lt brn-dk brn, sl slty, firm-hd,	
		subfiss-fiss, occ micromic, sl calc-calc	
	5	sltst, lt gy, firm, micromic, blky calc	
	tr	ls, gy, lt brn, hd, ang, cryptoxln	
Remark		tested samples from 1150m dow w,w/HCL, seems that	
		sltst and lt-med gy clyst are calc,	
		brn clyst and sh are sl calc-calc,	
		sst matrix is ptly calc, and ls is true.	

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WELLSITE SAMPLE DESCRIPTION

COUNTRY: NORWAY | AREA: NORTH SEA | FIELD: 15/12-Delta
WELL NO.: 15/12-3
COORDINATES: 58 ° 14 ' 36,59" N ; 01 ° 52 ' 45,67" E
K.B.E.: 25 meters | COMPANY: STATOIL/ESSO
HOLE SIZE: 17 1/2" | GEOLOGIST: O. Greiner | DATE: 05.07.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
1360	80	sh, lt brn-dk brn, sl slty, firm-hd	ls,yel dull
		subfiss-fiss, occ micromic, non	(min.) fluor
		calc when dk brn, else sl calc-calc	
	10	sltst, lt gy, firm, micromic, blky	
		calc	
	10	ls, med gy, occ lt brn-gy, hd, ang, arg, cryptoxln	
	tr	sd, clr qtz, f-med, subang, lse grns	
	tr	glauc, shell frags	
1370	100	sh, occ sl calc else a/a	
	tr	sltst, occ sl calc else a/a	
	tr	glauc, pyr, sd a/a	
1380	100	sh, non calc else a/a	
	tr	sltst, loc calc else a/a	
	tr	ls a/a	"
	tr	glauc, pyr	
1390	100	sh/clyst, dk brn-blk, brn-lt brn, else a/a	
	tr	sltst a/a	
	tr	ls, occ orange else a/a	
	tr	glauc	
1400	100	clyst, dk brn-brn, occ lt brn, firm, occ	
		firm-hd, subfiss, occ subfiss-fiss, occ blky	
		micromic, non-sl calc, occ lt brn-grn gy	
		then sl calc	
	tr	ls a/a	
	tr	glauc, shell frags	
1410	90	clyst, brn-lt brn, firm, subfiss, occ blky	
		micromic, non-sl calc	
	10	clyst, lt gy-lt grn gy, firm, occ hd, calc	
		sl slty, glauc, micromic	
	tr	ls a/a	
	tr	glauc, shell frags	

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Postboks 300, 4001 Stavanger

WELLSITE SAMPLE DESCRIPTION

COUNTRY: NORWAY | AREA: NORTH SEA | FIELD: 15/12-Delta
WELL NO.: 15/12-3
COORDINATES: 58 ° 14 ' 36,59" N ; 01 ° 52 ' 45,67 " E
K.B.E.: 25 meters | COMPANY: STATOIL/ESSO
HOLE SIZE: 17 1/2" | GEOLOGIST: O. Greiner | DATE: 05.07.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
1420	95	clyst, brn-lt brn, sft-firm, occ firm, occ subfiss	
		loc slty, micromic, non-sl calc, blky	
	5	clyst, lt gy-lt grn gy, firm-hd, occ firm,	
		calc, slty, micromic, occ glauc, occ shaly	
1430	95	clyst brn a/a	
	5	clyst, lt gy-lt grn gy a/a	
	tr	sd, clr qtz, f-med, subang, lse grns	
	tr	glauc, shell frags, microfoss	
1440	50	clyst brn a/a	approx.sample.
	40	clyst lt gy a/a	did a short trip
	tr	ls, gy-lt brn, hd, ang, cryptoxln	without pump.
		ang, occ clr orange xln	bottm. up.
1450	90	clyst brn a/a	
	10	clyst lt gy a/a	
	tr	sd a/a	
	tr	pyr, glauc, shell frags, microfoss	
1460	80	clyst, lt brn-dk brn (blk) else a/a	
	20	ls, wh-lt gy, sft-firm, sl arg	
	tr	glauc, forams, shell frags	
	tr	ls a/a	
1470	100	clyst a/a	
	tr	ls, lt brn, occ tan, med hd, occ hd, ang, cryptoxln, arg	
	tr	glauc, pyr, shell frags, forams	
	tr	sd, clr qtz, f-med, subang-subrnd, lse grns	
1480	100	clyst, sft, stky, occ firm, loc calc, else a/a	
	tr	ls a/a	
	tr	sd a/a	
	tr	glauc, pyr, shell frags, microfoss	
1490	100	clyst, occ lt grn gy, else a/a	
	tr	a/a	

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WELLSITE SAMPLE DESCRIPTION

COUNTRY: NORWAY | AREA: NORTH SEA | FIELD: 15/12-Delta
WELL NO.: 15/12-3
COORDINATES: 58 ° 14 ' 36,59" N ; 01 ° 52 ' 45,67" E
K.B.E.: 25 meters | COMPANY: STATOIL/ESSO
HOLE SIZE: 17 1/2" | GEOLOGIST: O. Greiner | DATE: 07.07.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
1500	90	clyst, lt brn-dk brn, occ grn gy, sft, stky occ	
		sft-firm, micromic, non-sl calc, blky, occ subfiss	
	10	ls, lt brn-brn, med hd, arg, ang, cryptoxln	
	tr	glauc, pyr, shell frags, microfoss, lign	
1510	80	clyst, sft-firm, non stky else a/a	
	10	ls, occ brn red, occ tan, when tan sft, else a/a	
	5	glauc	
	5	pyr	
	tr	shell frags, microfoss	
	tr	sst, vf, lt brn-clr qtz, calc matrix, firm, subang-subrnd	
1520	90	clyst, tan-brn, else a/a	
	5	ls, occ wh-tan, then sft, else a/a	
	5	glauc	
	tr	sst a/a	
	tr	pyr, shell frags, microfoss, dol, wh, blky, hd	
1530	100	clyst, lt brn-brn, occ lt brn, else a/a	
	tr	sst a/a, pyr, glauc, shell frags	
1540	100	clyst, lt brn, occ brn-dk brn, sft, stky else a/a	
	tr	glauc, shell frags, ls; brn-brn a/a	
1550	100	clyst, lt brn-tan, dk brn else a/a	
	tr	ls, tan,occ brn gy, med hd a/a	
	tr	glauc, pyr, sst a/a	
1560	80	clyst, tan-lt brn, dk brn-brn, loc stky	
		else a/a	
	15	ls, wh-tan, sft, occ brn gy then med hd a/a	
	5	glauc	
	tr	sst a/a, shell frags, dol a/a	
1570	100	clyst a/a non stky	ls show yel dull
	tr	ls a/a	fluor
	tr	pyr, glauc, sst a/a	
	tr	sd, vf-med, clr qtz, lse grns	

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Den norske stats oljeselskap a.s
Postboks 300, 4001 Stavanger

WELLSITE SAMPLE DESCRIPTION

COUNTRY: NORWAY | AREA: NORTH SEA | FIELD: 15/12-Delta

WELL NO.: 15/12-3

COORDINATES: 58 ° 14 ' 36,59" N ; 01 ° 52 ' 45,67 " E

K.B.E.: 25 meters | COMPANY: STATOIL/ESSO

HOLE SIZE: 17 1/2" | GEOLOGIST: O. Greiner | DATE: 07.07.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
1580	100	clyst, tan-dk brn, sft-firm, occ sft,	
		occ stky, micromic, non-sl calc,	
		blky occ subfiss, loc sl slty	ls show yel dull
	tr	ls, wh-tan, sft-firm, arg	fluor
	tr	sd, clr qtz, f-med, firm-hd, subang, lse grns	
	tr	glauc, pyr, shell frags	
	tr	sst, vf, lr brn, clr qtz, calc matrix, subang-subrnd	
1590	100	clyst a/a	
	tr	a/a	
1600	100	clyst, occ brn-blk, else a/a	
	tr	ls a/a	
	tr	glauc, pyr, shell frags, microfoss	
1610	100	clyst, sft-firm, occ firm else a/a	
	tr	glauc, pyr, lign, mica	
1620	100	clyst a/a	
	tr	glauc, mica, lign, sd a/a	
1630	100	clyst, lt brn, firm, occ sft-firm,	
		sl calc, micromic, blky, loc	
		subfiss-fiss	
	tr	glauc, pyr, ls a/a, shell frags	
1640	100	clyst a/a	
	tr	a/a	
1650	100	clyst a/a	
	tr	glauc, pyr, sd a/a	
1660	100	clyst a/a stky, sl calc	
	tr	glauc, pyr, sd a/a, ls brn, hd, cryptoxln,	
		shell frags, microfoss	

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Postboks 300, 4001 Stavanger

WELLSITE SAMPLE DESCRIPTION

COUNTRY: NORWAY | AREA: NORTH SEA | FIELD: 15/12-Delta
WELL NO.: 15/12-3
COORDINATES: 58 ° 14 ' 36,59" N ; 01 ° 52 ' 45,67" E
K.B.E.: 25 meters | COMPANY: STATOIL/ESSO
HOLE SIZE: 17 1/2" | GEOLOGIST: O. Greiner | DATE: 08.07.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
1670	100	clyst, tan-lt brn, occ dk brn, firm,	
		occ sft, occ stky, micromic, non-sl calc, blky, occ subfiss-fiss, loc slty	
	tr	sd, vf-crs, clr qtz, subang-subrnd, lse grns	
	tr	glauc, pyr, shell frags, microfoss	
1680	100	clyst a/a	
	tr	a/a	
1690	95	clyst a/a	
	5	sst, grn gy-wh, vf-, glauc, subang, firm, clr qtz, non calc matrix, occ sft-firm	
	tr	glauc, sd a/a	
	tr	ls, wh-tan, sft, stky	
1700	100	clyst, loc shaly else a/a	
	tr	glauc, sd a/a, pyr, ls a/a	
1710	85	clyst, when dk brn, firm-hd else a/a	
	10	ls, wh-tan, sft, stky, arg	
	5	sst/sltst, vf, lt grn gy else a/a	
	tr	glauc, lign, blk, arg	
1730	100	clyst a/a mostly tan lt brn	
	tr	ls, occ firm-hd, then ang else a/a	
	tr	glauc, lign, sst a/a	
1730	100	clyst a/a	
	tr	ls a/a, glauc, pyr, lign	
1740	100	clyst, becoming more shaly else a/a	
	tr	ls a/a	
	tr	pyr, glauc, microfoss	
1750	95	clyst, tan-lt brn, a/a	
	5	ls, wh-tan, sl arg, blky hd	
	tr	lign a/a, glauc, sd a/a	

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WELLSITE SAMPLE DESCRIPTION

COUNTRY: NORWAY | AREA: NORTH SEA | FIELD: 15/12- Delta
WELL NO.: 15/12-3
COORDINATES: 58 ° 14 ' 36,59" N ; 01 ° 52 ' 45,67" E
K.B.E.: 25 meters | COMPANY: STATOIL/ESSO
HOLE SIZE: 17 1/2" | GEOLOGIST: O. Greiner | DATE: 08.07.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
1760	100	clyst, lt brn gy-tan, lt grn gy, firm, occ	
		sft-firm, non-sl calc, loc slty, blky, occ subfiss-fiss, shaly in pts	
	tr	ls, wh-tan, firm-hd, sl arg, blky, occ cryptoxln	
	tr	glauc, lign, blk, arg	
1770	95	sh, lt brn gy, lt grn gy, firm, sl calc,	
		loc slty, loc blky, subfiss-fiss, occ micromic	
	5	ls a/a occ sft-firm	
	tr	sltst, lt grn gy, firm, sl calc, glauc	
1780	100	sh, mostly lt brn-med brn else a/a, occ stky	
	tr	ls, occ red brn, else a/a	
	tr	glauc, lign a/a	
1790	100	sh, occ form-hd, else a/a	
	tr	ls, wh-tan a/a	
1800	100	sh a/a	
	tr	ls, occ red brn, hd, cryptoxln arg else wh-tan a/a	
	tr	sltst a/a, pyr, lign a/a, microfoss	
1810	100	sh a/a	
	tr	lign a/a, ls a/a, microfoss, shell frags	
1820	100	sh, mostly med brn else a/a	
	tr	sltst a/a, shell frags	
	tr	ls, tan-wh a/a, lt brn a/a, lign a/a, glauc a/a	
1830	100	sh a/a	
	tr	a/a + sd, clr qtz, f-med, subrnd-subang lse grns	
1840	95	sh a/a	
	5	ls, wh-tan, firm-hd, occ sft-firm, sl arg, blky	
	tr	shell frags, lign, blk, arg, microfoss glauc, pyr	

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WELLSITE SAMPLE DESCRIPTION

COUNTRY: NORWAY | AREA: NORTH SEA | FIELD: 15/12- Delta

WELL NO.: 15/12-3

COORDINATES: 58 ° 14 ' 36,59" N ; 01 ° 52 ' 45,67" E

K.B.E.: 25 meters | COMPANY: STATOIL/ESSO

HOLE SIZE: 17 1/2" | GEOLOGIST: O. Greiner | DATE: 09.07.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
1850	100	sh, lt brn gy-brn, occ lt grn gy, firm,	
		occ firm-sft, occ firm-hd, subfiss- fiss, non-sl calc, loc micromic, loc slty, occ blky	
	tr	glauc, pyr, shell frags	
	tr	sd, clr qtz, f-med, subrnd-subang, lse grns	
1860	100	sh a/a	
	tr	sd a/a, ls, wh-tan, sft-firm, arg	
	tr	glauc, pyr	
1870	100	sh, brn, sft-firm, non calc, mostly blky, loc stky	sh/clyst?
		else a/a	
	tr	ls, wh-tan, occ lt brn, firm-hd,	
		arg, cryptoxln, blky	
	tr	glauc, pyr, shell frags, lign, blk, arg	
1880	95	sh a/a	
	5	ls, wh-tan, arg, aft-firm, frim-hd	
		occ red brn then hd, xln arg,	
		occ lt brn then hd cryptoxln arg blky	
	tr	pyr, lign	
1890	100	sh a/a	
	tr	ls a/a, pyr	
1900	100	sh a/a	
	tr	ls a/a	
	tr	pyr, glauc, sd a/a	
1910	90	sh a/a	
	10	ls, wh-tan, sl arg, blky med hd, occ sft-firm,	
		red-brn, hd, xln	
	tr	pyr, shell frags, dol, brn, hd, arg (ca.5%)	
1920	90	sh, med gy-brn gy occ lt grn gy else a/a	
	5	ls a/a	
	5	dol a/a	
	tr	pyr	
1930	75	sh a/a	
	20	dol a/a, w/pyr, inclusions, 5% ls a/a else a/a	

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Den norske stats oljeselskap a.s
Postboks 300, 4001 Stavanger

WELLSITE SAMPLE DESCRIPTION

COUNTRY: NORWAY | AREA: NORTH SEA | FIELD: 15/12-Delta

WELL NO.: 15/12-3

CO ORDINATES: 58 ° 14 ' 36.59" N ; 01 ° 52 ' 45.67" E

K.B.E.: 25 meters | COMPANY: STATOIL/ESSO

HOLE SIZE: 17 1/2" | GEOLOGIST: O. Greiner | DATE: 10.07.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
1940	50	sh, lt-med gy, occ lt grn gy, occ lt brn-	ls show
		gy, non calc, occ micromic, occ slty	wh fluor
		firm , occ firm-hd, subfiss-fiss	
	40	dol, lt brn-red brn, arg, hd, cryptoxln blky	
		occ tan, then firm, blky, arg	
	5	ls, wh-tan, sft-firm, arg	
	5	pyr	
	tr	sd, clr qtz, subrnd, f-med	
	tr	microfoss	
1950	80	sh, occ fiss else a/a	"
	15	dol a/a	
	5	pyr	
	tr	ls a/a	
	tr	glauc	

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WELLSITE SAMPLE DESCRIPTION

COUNTRY: NORWAY | AREA: NORTH SEA | FIELD: 15/12-Dleta

WELL NO.: 15/12-3

CO ORDINATES: 58 ° 14 ' 36,59" N ; 01 ° 52 ' 45,67 " E

K.B.E.: 25 meters | COMPANY: STATOIL/ESSO

HOLE SIZE: 17 1/2" | GEOLOGIST: K.J. Skaar | DATE: 12.07.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
1960	95	sh/clyst, lt gy-med gy, occ lt brn, non-sl calc, micromic, firm-mod hd, occ sft,	
	5	subfiss-fiss, occ sl slty dol, lt brn yel brn, hd-v hd, arg, cryptoxln	
	tr	glauc, pyr, foss frags	
1970	95	sh/clyst a/a, sft clyst becoming more stky, occ slty	
	5	ls, tan-lt brn, mod hd-hd, arg, dol	
	tr	pyr, foss frags	
1980	100	a/a	
1990	95	sh/clyst a/a occ lt grn-gy and sl calc	
	5	dol a/a	
	tr	pyr, glauc	
2000	50	sh, lt gy-grn gy, non calc, micromic, firm-mod hd, subfiss-fiss	
	50	sh/clyst, lt brn-dk brn, non calc, micromic, occ v pyr, firm-mod	
		hd, occ sft and stky	
	tr	dol a/a	
	tr	pyr	
2010	100	sh, med gy-dk gy, occ lt gyish grn, non calc, micromic, firm-mod hs,	
		fiss, occ grdg to clyst, sft stky	
	tr	dol a/a	
2020	60	sh a/a	
	40	sh, lt gy-gyish grn, occ grn, non calc,	
		micromic, firm, subfiss, occ blky	
	tr	dol a/a	
2030	60	sh, lt gy-gyish grn, occ grn a/a	
	40	sh, med gy-dk gy-dk brn a/a	
	tr	pyr, glauc, dol a/a	
2040	100	a/a	
2050	70	sh, lt gy-grnish gy a/a	
	30	sh, dk gy-dk brn	
	tr	dol a/a	

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WELLSITE SAMPLE DESCRIPTION

COUNTRY: NORWAY | AREA: NORTH SEA | FIELD: 15/12-Delta
WELL NO.: 15/12-3
COORDINATES: 58 ° 14 ' 36,59" N ; 01 ° 52 ' 45,67 " E
K.B.E.: 25 meters | COMPANY: STATOIL/ESSO
HOLE SIZE: 17 1/2" | GEOLOGIST: K.J. Skaar | DATE: 13.07.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
2060	70	sh, grnish gy, occ lt gy, non calc, micromic, firm-mod hd, fiss,	
	30	sh, lt brn-dk brn, micromic, occ slty non calc, firm, occ sft, subfiss	
	tr	ls, tan-lt brn, arg, mod hd-v hd	
2070	80	sh, lt gy-grnish gy a/a	
	20	sh, med-dk brn a/a	
	tr	dol, lt brn, arg, hd	
	tr	ls, wh, arg, sft-mod hd, detrital	
	tr	lign	
2080	90	sh, lt gy-grnish gy a/a	
	10	sh, med-dk brn a/a	
	tr	ls, do. a/a	
2090	85	sh, lt gy- grnish gy a/a	
	10	sh, mod-dk brn a/a	
	5	sd, clr qtz, subrnd-well rnd, f-vf grdg to slt, mod sort	
	tr	glauc	
2100	75	sh, lt gy-grnish gy a/a occ glauc	
	20	sh, med-dk brn a/a	
	5	sd a/a	
	tr	pyr	
	tr	ls, wh, arg, sft	
2110	65	sh, lt gy-grnish gy a/a	
	30	sh, med-dk brn a/a	
	5	sd a/a occ med	
	tr	ls, wh, arg, sft-mod hd	
	tr	dol, tan, arg, hd, cryptoxln	
2120	90	sh, lt gy-grnish gy a/a	
	10	sh, med-dk brn a/a	
	tr	sd, clr qtz a/a	
2130	80	sh, lt gy-grnish gy a/a	
	20	sh, med-dk brn a/a	
	tr	dol, lt brn, arg, hd, cryptoxln(?)	
	tr	ls, lt gy, arg, med hd	
	tr	sltst, wh, hd, well cmt w/silic cmt	
	tr	tuff?, wh, sft, spotted	

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WELLSITE SAMPLE DESCRIPTION

COUNTRY: NORWAY | AREA: NORTH SEA | FIELD: 15/12-Delta

WELL NO.: 15/12-3

CO ORDINATES: 58 ° 14 ' 36,59" N ; 01 ° 52 ' 45,67 " E

K.B.E.: 25 meters | COMPANY: STATOIL/ESSO

HOLE SIZE: 17 1/2" | GEOLOGIST: K.J. Skaar | DATE: 14.07.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
2140	70	sh, lt gy-grnish gy, occ grn, micromic, firm-hd, fiss-subfiss, non calc	
	30	sh, med-dk brn, micromic, occ sl slty, non calc, firm, subfiss,	
	tr	sltst, wh, glauc, calc cmt, v hd	
	tr	pyr	
	tr	dol, yel brn-red brn, arg, v hd	
2150	80	sh, lt gy-med gy, occ dk gy, occ gyish grn, micromic, firm-mod hd, subfiss-fiss, non calc	
	20	sh, med-dk brn a/a	
	tr	glauc	
	tr	ls, lt brn- golden brn, arg, hd	
2160	95	sh, lt gy-med gy, occ gy, occ gyish grn a/a	
	5	sh, med-dk brn a/a	
	tr	pyr	
2165	100	a/a	

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WELLSITE SAMPLE DESCRIPTION

COUNTRY: NORWAY | AREA: NORTH SEA | FIELD: 15/12-Delta

WELL NO.: 15/12-3

COORDINATES: 58 ° 14 ' 36.59" N ; 01 ° 52 ' 45.67 " E

K.B.E.: 25 meters | COMPANY: STATOIL/ESSO

HOLE SIZE: 8 1/2" | GEOLOGIST: Jakobsson/Nygård | DATE: 19.08.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
2170	100	sh, lt-med gy, occ grn gy, occ brn gy, firm-hd, fiss-subfiss, micromic, non calc	NO SHOWS
	tr	sltst, wh, buff, firable-hd, calc cmt	
	tr	dol, dk yel brn, v hd, arg	
	tr	pyr	
2175	100	sh a/a	
	tr	a/a	mostly cmt
2180	100	sh a/a	in samples
	tr	a/a	
2185	100	sh a/a	
	tr	a/a	circ. bt. up
2188	100	sh , lt-med gy, occ grn-gy, occ brn gy, firm-hs, fiss-subfiss, non calc, occ micrmic	
	tr	dol, yel-brn, v dh, arg	
	tr	sd, clr qtz, vf-f, ang-subang (occ subrnd)	
2191	100	sh a/a	
	tr	a/a	
2194	100	sh a/a	
	tr	pyr, else a/a	
2197	100	sh a/a	
	tr	a/a	
2200	100	a/a	
2203	100	sh a/a	
	tr	dol a/a, ls;wh-lt buff, firm-hd, arg, pyr	
	tr	pyr	
	tr	sltst, as in 2170	
2206	100	a/a	
2209	100	sh a/a	
	tr	dol a/a, ls a/a, pyr	
2212	100	a/a	
2215	100	a/a	
2218	100	a/a	
2221	100	a/a	

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WELLSITE SAMPLE DESCRIPTION

COUNTRY: NORWAY | AREA: NORTH SEA | FIELD: 15/12-Delta

WELL NO.: 15/12-3

COORDINATES: 58 ° 14 ' 36,59' N ; 01 ° 52 ' 45,67" E

K.B.E.: 25 meters | COMPANY: STATOIL/ESSO

HOLE SIZE: 8 1/2" | GEOLOGIST: Jakobsson/Nygård | DATE: 19.08.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
2224	100	sh, med gy, firm-hd, fiss, non calc, occ grn-gy	
	tr	tuff, lt gy, firm-friable, slty w/blk patches,	NO SHOWS
		sltly calc	
	tr	dol, sl, buff, brn-gy, hd, micritic	
2227	100	sh a/a	
2230	100	a/a	
2233	100	a/a	
2236	100	a/a	
2239	100	a/a	
2242	100	a/a	
2245	100	a/a	
2248	100	a/a	
2250	100	a/a	
2255	100	sh, med gy, gy, grn gy, occ grn-blue, occ brn, firm	
		-hd, fiss-subfiss, non calc, occ sl slty,occ micromic	
	tr	dol a/a	
2260	100	a/a	
2265	100	sh, occ more lt grn-blue, else a/a	
	tr	a/a	
2270	100	sh, lt grn-blue, med gy, occ brn, occ lt brn, firm-hd,	
		fiss-subfiss, non calc, occ sl slty,occ micromic	some more dol
	tr	dol a/a	
	tr	tuff	
2275	100	a/a	
2280	100	sh a/a	
	tr	a/a	
2285	100	a/a	
2290	100	a/a	
	tr	abd tuff	
2295	100	a/a	

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WELLSITE SAMPLE DESCRIPTION

COUNTRY: NORWAY | AREA: NORTH SEA | FIELD: 15/12-Delta

WELL NO.: 15/12-3

COORDINATES: 58 ° 14 '36,59 " N ; 01 ° 52 '45,67 " E

K.B.E.: 25 meters | COMPANY: STATOIL/ESSO

HOLE SIZE: 8 1/2" | GEOLOGIST: Jakobsson/Nygård | DATE: 19.08.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
2300	100	sh, lt-med gy, firm, occ hd, fiss-subfiss, non calc	
	tr	sh, red brn, gy-brn, a/a	NO SHOWS
	tr	tuff, lt gy-wh, occ buff, sl calc, blk patches	
	tr	dol, brn-yel brn, hd-v hd, arg, micritic	
2305	100	sh a/a	
	tr		
2310	100	sh a/a	
	tr		
2315	100	sh a/a	
	tr	a/a	
2320	100	a/a	
	tr	"	
2325	100	a/a	
	tr	"	
2330	100	sh a/a	
	tr		
2335	100	sh , lt gy a/a	
	tr	dol a/a	
2340	100	sh a/a	
2345	100	sh a/a	
	tr	pyr, dol	
2350	100	sh a/a	circ. bt. up stk. pipe. w.tr.
2353	100	sh, lt-med gy, firm,fiss-subfiss, occ calc (lt blue and brn)	
	tr	tuff, pyr, dol	
	tr	sh, brick red, lt brn-gy, red brn, a/a	
	tr	sltst, lt gy, fri, non calc	
2356	100	sh, gy, lt gy, occ lt blue, occ brn-red, firm, subfiss-fiss, occ calc (lt blue & brn-red)	
	tr	sltst, lt gy, fri, non calc	
	tr	dol a/a	
2359	100	sh a/a	
	tr	sltst a/a	
	tr	glauc, dk blue, hd	tr glauc
	tr	dol, a/a	
2362		a/a	
2365	100	sh a/a	
	tr	sltst	
2368		a/a	
2371		a/a	

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Den norske stats oljeselskap a.s
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WELLSITE SAMPLE DESCRIPTION

COUNTRY: NORWAY | AREA: NORTH SEA | FIELD: 15/12-Delta

WELL NO.: 15/12-3

COORDINATES: 58 ° 14 '36,59" N ; 01 " 52 ' 45,67" E

K.B.E.: 25 meters | COMPANY: STATOIL/ESSO

HOLE SIZE: 8 1/2" | GEOLOGIST: Jakobsson/Nygård | DATE: 20.08.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
2374	100	sh, med-dk gy, occ lt gy, occ lt blue, occ brn-red firm, subfiss-fiss, occ calc (lt blue & brn), occ sl slty	
	tr	dol, lt buff-buff, hd, arg (occ lt gy-grn)	
2377	100	sh a/a	
	tr	sltst, lt gy, hd, non calc	
	tr	dol a/a	
	tr	ls, wh, firm	
2380	100	sh a/a	
	tr	tuff, wh, firm, blk spots	
	tr	ls a/a	
	tr	dol	
2383	100	sh a/a	
	tr	dol a/a	
2386		a/a	
2389		a/a	
2392	100	sh, med-dk gy, firm, subfiss, non calc, sl stky	
	tr	sl, wh, firm	sl stky
	tr	sltst, lt gy, hd, non calc	
	tr	pyr	
2395	100	sh, med-dk gy, occ lt gy, occ lt grn, occ brn-red, firm, subfiss-fiss, non calc	
	tr	pyr	
	tr	dol, lt buff-buff, hd, arg	
2398	100	sh a/a	
	tr	dol a/a	
	tr	ls, wh, firm	
	tr	sltst, lt gy, hd-lse, occ calc	
2401		a/a	
(2403)		a/a	circ. btm. up. pipe got stuck
			change bit

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WELLSITE SAMPLE DESCRIPTION

COUNTRY: NORWAY | AREA NORTH SEA | FIELD: 15/12-Delta
WELL NO.: 15/12-3
CO ORDINATES: 58 ° 14 ' 36,59" N ; 01 ° 52 ' 45,67 " E
K.B.E.: 25 meters | COMPANY: STATOIL/ESSO
HOLE SIZE: 12 1/4" | GEOLOGIST: O. Greiner | DATE: 22.08.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
2404	100	sh, med-dk gy, occ lt grn, occ brn-red, firm, subfiss, sl calc when brn-red,	
	tr	else non calc, occ mic ls, wh, firm-hd	
	tr tr	dol, lt buff-buff, hd, arg pyr	
2407	100	sh a/a	
	tr	a/a	
2410	100	sh, occ stky else a/a	
	tr	dol a/a, pyr	
2413	85	sh a/a	
	15 tr	anhydrite, clr, tabular, xln, med hd dol a/a	anhy show wh fluor no cut
	tr	pyr	ls show dull yel min fluor
2416	85	sh a/a	
	15 tr	anhy a/a dol a/a	"
	tr	pyr, glauc	
2419	90	sh, mostly lt grn, occ sft else a/a	"
	10 tr	anhy a/a dol a/a, ls a/a, pyr, glauc	
2425	100	sh a/a	
	tr	anhy a/a, ls a/a, dol a/a, pyr, glauc	
2428	100	sh a/a	
	tr	a/a	

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WELLSITE SAMPLE DESCRIPTION

COUNTRY: NORWAY | AREA: NORTH SEA | FIELD: 15/12-Delta

WELL NO.: 15/12-3

COORDINATES: 58 ° 14 ' 36,59" N ; 01 ° 52 ' 45,67 " E

K.B.E.: 25 meters | COMPANY: STATOIL/ESSO

HOLE SIZE: 12 1/4" | GEOLOGIST: O. Greiner | DATE: 23.08.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
2431	100	sh, lt-dk gy, occ lt grn-grn, occ brn-red, firm, subfiss, sl calc when brn-red	ls show dull yel min fluor
	tr	else non calc, occ mic, occ sft-firm, sltst, lt gy-buff, calc cmtd, mod hd	
	tr tr	ls, wh occ lt brn, firm-hd, occ xln, occ arg dol, lt buff-buff, arg, hd	
	tr	pyr, glauc, anhy, clr tabular, xln, med hd	anhy show wh min fluor
2434	100	sh a/a	
	tr tr	sltst a/a anhy a/a, dol a/a, pyr, glauc	"
2437	100	sh, mostly lt-med gy else a/a	
	tr	a/a	
2440	100	sh a/a	"
	tr	a/a	blk spots an the lt gy sh and ls, carb material
2443	100	sh a/a	"
	tr	a/a	
2446	90	sh a/a	"
	10 tr	clyst, lt brn, sft-firm, non calc sltst a/a, dol a/a, ls a/a, anhy a/a	
	tr	pyr, glauc	
2449	85	sh a/a	
	15 tr	clyst a/a ls a/a, dol a/a, sltst a/a, anhy a/a	"
	tr	pyr, glauc	
2452	85	sh a/a	
	15 tr	clyst a/a a/a	"
2455	90	sh a/a	"
	10 tr	clyst a/a a/a	

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WELLSITE SAMPLE DESCRIPTION

COUNTRY: NORWAY | AREA: NORTH SEA | FIELD: 15/12-Delta
WELL NO.: 15/12-3
COORDINATES: 58 ° 14 ' 36,59" N ; 01 ° 52 ' 45,67 " E
K.B.E.: 25 meters | COMPANY: STATOIL/ESSO
HOLE SIZE: 12 1/4" | GEOLOGIST: O.Greiner | DATE: 23.08.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
2458	90	sh, lt-med gy, occ lt grn-grn, occ brn-red	blk spots on
		firm, subfiss, sl calc when red-brn, else non calc	
	10	clyst, red-brn, sft-firm, sl calc, stky	the lt sh & ls, car
	tr	dol, lt buff-buff, arg, hd	material
	tr	ls, wh, occ lt brn, firm-hd, occ xln, occ arg	
	tr	glauc, pyr, anhy, clr, mod hd, occ xln	
	tr	sltst, lt gy-buff, calc cmt, mod hd	ls show dull yel
2461	50	sh a/a occ lt bluish gy	
	50	clyst	
	tr	ls, wh-clr, lt gy-buff, mod hd, occ xln, occ arg,ang	ls show dull yel
	tr	dol a/a	fluor
	tr	pyr, glauc	
2464	45	sh a/a	
	45	clyst a/a	
	10	ls a/a	"
	tr	anhy, clr, mod hd, occ xln	stky red-brn
	tr	dol a/a	clyst "messes"
	tr	chert, wh-lt blue gy, hd	up the samples
	tr	pyr, glauc, marl, gy-wh, sft	
2467	80	marl, wh-gy, aft	yel dull min
	20	clyst a/a	fluor
	tr	sh a/a	
	tr	pyr, ls a/a	
2468	90	ls, wh, sft-mod hd, ang	
	10	marl a/a	
2470	100	ls, wh, sft, occ hd, then ang, occ sl arg	ls show pale yel
	tr	marl, a/a	fluor
	tr	sh a/a, clyst a/a, dol a/a	
	tr	pyr	
2473	100	ls, wh, sft-hd, when hd then ang, chalky	
	tr	sh a/a, dol a/a, pyr	
2476	95	ls a/a	
	5	dol, yel grn-grn, mod hd, ang, friable	

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WELLSITE SAMPLE DESCRIPTION

COUNTRY: NORWAY | AREA: NORTH SEA | FIELD: 15/12-Delta
WELL NO.: 15/12-3
COORDINATES: 58 ° 14 ' 36,59" N ; 01 ° 52 ' 45,62 "
K.B.E.: 25 meters | COMPANY: STATOIL/ESSO
HOLE SIZE: 12 1/4" | GEOLOGIST: O. Greiner | DATE: 25.08.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
2479		circ. out	
2488		—"—	
2491	100	ls, wh, sft-mod hd, non-sl arg, when	ls show dull
		hd ang, chalky	yel min fluor
	tr	dol, lt gy grn-grn, mod hd, ang, friable	
		arg, occ lt yel grn, then calc	
	tr	sh, gy-blue gy, subfiss, firm, non calc	
	tr	pyr, glauc	
2494	95	ls a/a	sh poss
	5	dol a/a	cavings
	tr	sh a/a	
	tr	pyr	
2497	100	ls a/a occ arg	"
	tr	occ sh, dk gy, subfiss, firm, non calc, else a/a	
2500	95	ls a/a	"
	5	dol a/a	
	tr	a/a	
2503	100	ls a/a	
	tr	a/a	
2506	100	ls a/a	
	tr	sh, occ brn gy else a/a	
	tr	marl, lt gy, sft-firm	
	tr	pyr	
2509	100	ls a/a	
	tr	a/a	
2512	90	ls a/a	
	10	marl a/a	
	tr	sh a/a, pyr	

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Den norske stats oljeselskap a.s
Postboks 300, 4001 Stavanger

WELLSITE SAMPLE DESCRIPTION

COUNTRY: NORWAY | AREA: NORTH SEA | FIELD: 15/12-Delta
WELL NO.: 15/12-3
COORDINATES: 58 ° 14 ' 36,59" N ; 01 " 52 ' 45,67 " E
K.B.E.: 25 meters | COMPANY: STATOIL/ESSO
HOLE SIZE: 12 1/4" | GEOLOGIST: O. Greiner | DATE: 26.08.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
2515	100	ls, wh-lt tan, sft-mod hd, sl arg, when hd, ang	ls show dull yel min fluor
	tr	sh, dk gy, subfiss, firm, non calc	
	tr	marl, lt gy, sft-firm	
	tr	pyr	
2518	90	ls a/a	"
	10	marl a/a	
	tr	sh a/a	
	tr	pyr	
2521	100	ls a/a	"
	tr	sh a/a, pyr	
2524	90	ls a/a	"
	10	marl a/a	
	tr	sh, occ brn-red, occ sl slty else a/a	
2527	90	ls a/a	"
	10	marl a/a	
	tr	sh gy a/a	
	tr	dol, red-brn, hd, ang	
	tr	pyr	
2530	100	ls, firm-hd else a/a	
	tr	sh a/a	
	tr	pyr	
2533	100	ls, mostly mod hd, occ xln else a/a	
	tr	marl a/a	
	tr	pyr	
	tr	sd, clr qtz, subrnd, f-med, lse grns	
2536	100	ls a/a	incl of blk
	tr	glauc, sltst, lt gy-grn, firm, non calc, blky	carb mat. in ls
	tr	pyr, marl a/a	
2539	90	ls a/a	
	10	marl a/a	
	tr	a/a	

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Den norske stats oljeselskap a.s
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WELLSITE SAMPLE DESCRIPTION

COUNTRY:	NORWAY	AREA	NORTH SEA	FIELD:	15/12-Delta
WELL NO.:	15/12-3				
COORDINATES:	58 ° 14 ' 36,59" N ; 01 ° 52 ' 45,67 " E				
K.B.E.:	25 meters	COMPANY:	STATOIL/ESSO		
HOLE SIZE:	12 1/4"	GEOLOGIST:	O. Greiner	DATE:	26.08.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
2542	90	ls, wh-lt tan, firm-hd, mostly mod hd,	ls show dull yel
		sl arg, ang, chalky	fluor
	10	marl, lt gy, sft-firm	
	tr	pyr	
	tr	sh, lt gy grn-med gy, subfiss, occ blky,	
		firm, non calc	
	tr	sltst, gy, occ grn gy-dk gy, occ yel grn,	
		arg, hd, calc cmtd	
2545	80	ls a/a	
	20	marl a/a	
	tr	sltst a/a	
	tr	sh a/a, pyr, glauc	
2548	80	ls a/a	
	20	marl a/a	
	tr	a/a	
2551	100	ls a/a	
	tr	marl a/a	
	tr	pyr	
2554			circ out
			wiper trip
2557	100	ls a/a	~ 50% cavings
	tr	sltst a/a, marl a/a, pyr	
2560	50	ls, occ xln, then wh, hd, ang else a/a	
	50	marl a/a	
	tr	sh a/a	
	tr	sltst, occ w/glauc grains, vf-f, else a/a	
	tr	pyr, glauc	
2563	50	ls a/a	
	50	marl a/a	
	tr	a/a	

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WELLSITE SAMPLE DESCRIPTION

COUNTRY: NORWAY | AREA: NORTH SEA | FIELD: 15/12-Delta
WELL NO.: 15/12-3
COORDINATES: 58 ° 14 ' 36,59" N ; 01 ° 52 ' 45,67 " E
K.B.E.: 25 meters | COMPANY: STATOIL/ESSO
HOLE SIZE: 12 1/4" | GEOLOGIST: O. Greiner | DATE: 26.08.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
2566	40	ls, wh-lt tan, occ pink, firm-hd,	ls show dull yel
		occ sft-firm, non-sl arg, when hd,	fluor
		ang, occ chalky, occ xln, then hd, ang	
	60	marl, lt-med gy, sft, occ sft-firm	
	tr	sd, clr qtz, subrnd, lse grains, f-med	shale poss
	tr	sh, lt-med gy, occ grn gy, subfiss,	cavings
		occ blky, non calc, firm	
	tr	sltst, gy, occ yel-grn, occ grn gy,	
		calc cmtd, occ w/glauc grains, firm-hd	
	tr	pyr, glauc, calcite, clr, ang, med hd	
2569	80	ls, wh-lt tan, sft-hd, non sl arg,	"
		occ chalky, occ xln, then hd, ang,	
		occ pink, sft-firm, arg	
	20	marl, a/a	
	tr	a/a	
2572	90	ls a/a	50% cavings
	10	marl	
2575		nut plug	
2578	100	ls a/a	30%"nut plug"
	tr	pyr	
	tr	sh a/a	
2581	100	ls a/a	"
	tr	pyr	
	tr	sh a/a	
2584	80	ls a/a	"
	10	marl a/a	
	10	sh, occ red-brn then firm, blky else a/a	
	tr	pyr, sltst a/a	
2587	70	ls a/a	"
	20	marl a/a	
	10	sh a/a	
	tr	a/a	

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Den norske stats oljeselskap a.s
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WELLSITE SAMPLE DESCRIPTION

COUNTRY: NORWAY	AREA NORTH SEA	FIELD: 15/12-Delta
WELL NO.: 15/12-3		
COORDINATES: 58 ° 14 ' 36,59" N ; 01 ° 52 ' 45,67" E		
K.B.E.: 25 meters	COMPANY: STATOIL/ESSO	
HOLE SIZE: 12 1/4"	GEOLOGIST: O.Greiner/H.Nygård	DATE: 27 - 29.08.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
2590	70	ls, wh-lt tan, occ pink, firm-hd,	20%"nut plug"
		occ sft-firm, non-sl arg, when hd	
		ang, occ xln	
	20	sh, lt grn gy-med gy, occ red brn,	
		firm, subfiss, occ blky, non calc	
		occ sl slty	
	10	marl, lt-med gy, sft-firm	calcite show
	tr	pyr	wh min fluor
	tr	calcite, clr, xln, med hd	ls dull yel fluor
2593	50	ls a/a	sh poss cavings
	50	sh a/a	
	tr	glauc, pyr	
2596		a/a	
2599	60	ls, wh-lt tan, occ pink, firm-hd, occ sft-firm,	back to turlodrill
		non-sl arg	
	40	sh, occ blk, firm, subfiss, non calc	
		else a/a	
2602	80	ls a/a	
	20	sh a/a	
2605	90	ls a/a	
	10	sh a/a	
2608	90	ls, more pink, firm-sft, arg, else a/a	more pink
	10	sh a/a	
	tr	anhy, clr, xln, tab	
2611	90	ls a/a	
	10	sh a/a	
2614	80	ls a/a	
	10	marl, brn, sft	
	10	sh a/a	
2617	90	ls, mostly pink, sft-firm, sl arg, else a/a	
	5	marl a/a	
	5	sh a/a	
2620	90	ls, mostly wh-lt tan a/2590, else a/a	
	5	marl a/a	
	5	sh a/a	
	tr	pyr	
2623		a/a	

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WELLSITE SAMPLE DESCRIPTION

COUNTRY: NORWAY	AREA NORTH SEA	FIELD: 15/12-Delta
WELL NO.: 15/12-3		
COORDINATES: 58 ° 14 ' 36,59" N ; 01 ° 52 ' 45,67 " E		
K.B.E.: 25 meters	COMPANY: STATOIL/ESSO	
HOLE SIZE: 12 1/4"	GEOLOGIST: Nygård	DATE: 29.08.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
2626	90	ls, wh-lt tan, occ pink, firm-hd, occ sft-firm, non-sl arg	
	5	sh, lt grn-gy, gy-blk, firm, subfiss, occ fiss, non calc	
	5	marl, brn, sft	
2629		a/a	
2632	90	ls a/a	
	5	marl, lt gy-grn, brn, sft	
	5	sh a/a	
	tr	pyr	tr pyr
2635	100	ls a/a	
	tr	sh a/a ;marl a/a	
2638	100	ls a/a	
	tr	sh a/a ;marl a/a	
2641	100	ls a/a	
	tr	sh a/a ;marl a/a	
2644		a/a	
2647	100	ls a/a	
	tr	sh a/a ;marl a/a	
2650		a/a	
2653	100	ls, mostly pink, else a/2626	
	tr	chert, yel-brn, v hd, amorf silica	tr chert
	tr	sh a/a	
	tr	marl a/a	
2656	100	ls a/a	
	tr	sh a/a ; marl a/a ;pyr, xln	tr pyr
2659	100	ls, mostly wh-lt tan a/2626, occ pink a/2626	
	tr	chert, yel-brn, v hd, amorf silica	
	tr	sh a/a	
	tr	marl a/a ;pyr, xln	
2662	100	ls, mostly pink, else a/2626	
	tr	a/a	
2665		a/a	
2668	100	ls, mostly pink, else a/2626	
	tr	marl a/a	
	tr	sh a/a	
	tr	pyr, xln	
2671	100	ls, lt tan, pink, lt brn, occ wh, sft-firm, arg grdg into marl	
	tr	sh a/a	
2674		a/a	

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WELLSITE SAMPLE DESCRIPTION

COUNTRY: NORWAY | AREA: NORTH SEA | FIELD: 15/12-Delta

WELL NO.: 15/12-3

COORDINATES: 58 ° 14 ' 36,59" N ; 01 ° 52 '45,67 " E

K.B.E.: 25 meters | COMPANY: STATOIL/ESSO

HOLE SIZE: 12 1/4" | GEOLOGIST: Nygård | DATE: 30.08.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
2677	100	ls, lt tan, occ wh, occ brn-pink, sft-firm, arg occ grdg into	
		marl, lt brn-brn, sft	
	tr	sh, lt grn-gy, gy-blk, firm, occ hd, subfiss, fiss, non calc, occ micromic	
2680	100	ls a/a	
	tr	sh a/a ;pyr, xln	
2683		a/a	
2686	100	ls a/a	
	tr	sh a/a	
2689	100	ls a/a	
	tr	sh a/a ;pyr	
2692		a/a	
2695	100	ls a/a	
	tr	sh a/a	
2698	100	ls, mostly wh, else a/a	
	tr	sh a/a ;pyr	
2701		a/a	
2704	100	ls, a/2677	
	tr	sh a/a	
2707	100	ls, lt tan, wh occ w/brn lam, occ brn-pink, sft-firm, arg, occ grdg into	
		marl, lt brn, sft	
	tr	sh a/a	
2710	90	ls a/a	
	10	sh a/a	
2716	50	sh, lt grn-gy, gy-blk, occ grn-blue, firm, firm-hd, subfiss, occ fiss, occ pyr, non calc, occ micromic	
	50	ls, occ mod hd, else a/2707	
	tr	marl, lt tan, occ lt brn, sft, occ firm-mod hd	
2719	70	ls, a/a	
	30	sh, occ brn, firm, non calc, else a/a	shale zone
	tr	marl, lt gy, lt tan, sft-firm	
2722	90	ls a/a	
	10	sh a/a	
	tr	marl a/a	
2725	100	ls, wh, lt gy, occ wh-gy lam, sft-firm, occ firm-mod hd, arg	ls are just wh-gy
	tr	sh, gy-grn, gy-blk, lt gy w/blk spots, firm-mod hd non-sl calc	
	tr	marl, lt gy, sft-firm	

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WELLSITE SAMPLE DESCRIPTION

COUNTRY: NORWAY | AREA: NORTH SEA | FIELD: 15/12-Delta

WELL NO.: 15/12-3

COORDINATES: 58 ° 14 ' 36,59' N ; 01 ° 52 ' 45,67' E

K.B.E.: 25 meters | COMPANY: STATOIL/ESSO

HOLE SIZE: 12 1/4" | GEOLOGIST: Nygård | DATE: 31.08.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
2728	100	ls, wh, lt gy, occ wh-gy lam, occ lt brn-pink, sft-firm, occ mod hd, occ arg	
	tr	sh, gy-grn, gy-blk, lt gy w/blk spots, firm-mod hd, occ hd, non-sl calc	samples getting sl slty
	tr	marl, lt gy, lt brn, sft-firm, slty	
2731		a/a	
2734	100	ls, occ wh-brn lam, else a/a	
	tr	marl, occ brn, else a/a	
	tr	sh, occ brn, non calc, else a/a	
2737	100	ls, mostly lt tan-lt brn, grdg into marl, else a/a	small pyr xls in ls
	tr	sh a/a	
	tr	marl, lt tan, brn, sft-firm, slty	
	tr	pyr	
2740	80	marl, brn, lt tan, sft, slty, occ micromic	top plenus marl?
	20	ls a/a	
	tr	sh a/a	
	tr	pyr	
2743	90	marl, brn, lt tan, sft, slty, occ micromic	
	10	ls a/a	tr glauc
	tr	sh a/a	
	tr	glauc, dk grn, firm	
	tr	pyr, xln	
	tr	dol, lt buff, hd, arg	
2746	90	marl a/a	
	10	ls a/a	
	tr	sh a/a	
	tr	glauc	
2749	90	marl, occ grnish, else a/a	
	10	ls a/a	
	tr	sh	
	tr	glauc	
2752	90	marl a/a	
	tr	ls a/a	
	tr	sh	
	tr	glauc	
2755	70	marl a/a	
	30	ls a/a	
	tr	sh a/a	
	tr	glauc ;pyr	
2758	90	marl, mainly lt-med gy, else a/2740	marl getting gy
	10	ls a/a	
	tr	glauc; pyr; sh a/a	

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Den norske stats oljeselskap a.s
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WELLSITE SAMPLE DESCRIPTION

COUNTRY: NORWAY | AREA: NORTH SEA | FIELD: 15/12-Delta

WELL NO.: 15/12-3

COORDINATES: 58 ° 14 ' 36,59" N ; 01 ° 52 '45,67 " E

K.B.E.: 25 meters | COMPANY: STATOIL/ESSO

HOLE SIZE: 12 1/4" | GEOLOGIST: Nygård | DATE: 01.09.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
2761	100	marl, lt-med gy, occ lt tan, sft, occ firm-sft, slty, occ micromic	
	tr	sh, lt gy-grn, gy-blk, brn, firm-sft, occ firm-mod hd, non calc, occ slty, occ micrmic, occ pyr, occ glauc	
	tr	ls, wh, lt tan, occ wh-brn lam, sft-firm, occ hd & xln (wh), occ arg	
2764	100	marl a/a	
	tr	sh a/a	
	tr	ls, occ pink, else a/a	
	tr	pyr, dol;lt buff, hd, arg	
2767		a/a	
2770		a/a	
2773		a/a	
2776		a/a	
2779	100	marl, occ brn, else a/2761	
	tr	sh a/a	
	tr	ls a/a	
2782	100	marl, more brnish, else a/2761	
	tr	a/a	
2784	100	marl a/a	
	tr	sh a/a	
	tr	ls a/a	trakk turbinbit
	tr	dol, grn-brnish, hd, v calc, sl arg	(slutt på turbin-
			boringen) Nytt rockbit.

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Den norske stats oljeselskap a.s
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WELLSITE SAMPLE DESCRIPTION

COUNTRY:	NORWAY	AREA:	NORTH SEA	FIELD:	15/12-Delta
WELL NO.:	15/12-3				
COORDINATES:	58 ° 14 '36.59" N ; 01 ° 52 '45.67 " E				
K.B.E.:	25 meters	COMPANY:	STATOIL/ESSO		
HOLE SIZE:	12 1/4"	GEOLOGIST:	Jakobsson	DATE:	20.09.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
2494	80	ls, wh, firm-hd, chalky, micromic, occ xln	
	15	sh, lt gy-grn-gy, brn-red brn, firm, non-sltly calc	NO SHOWS
	5	sltst, clr qtz, sft-friable, calc cmt,	sh app. to be
	tr	marl, gy-buff, sft-stky, occ slty	ptly caved
	tr	pyr, anhy	
2497	90	ls a/a	
	10	sh a/a	
	tr	a/a	
2500	100	ls a/a	
	tr	sh, sltst a/a	
2503	80	ls a/a	
	20	marl a/a	
	tr	sh, sltst, dol, a/a	
	tr	pyr, glauc	
2506	80	ls a/a	
	10	marl a/a	
	10	sh a/a	
	tr	sltst, lt tan, sft-firm, occ stky, calc cmt	NO SHOWS
	tr	abd pyr	
2509	90	ls a/a	
	10	marl a/a	
	tr	sh a/a	
	tr	a/a	
2512	60	ls a/a	
	30	sh, lt-dk gy, firm, non calc	poss. cavings
	10	marl a/a	
	tr	a/a	
2515	80	ls a/a	
	10	sh a/a	
	10	marl a/a	
	tr	a/a	
2518		a/a	
2821		a/a	
2524		a/a	
2527		a/a	
2530		a/a	

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Den norske stats oljeselskap a.s
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WELLSITE SAMPLE DESCRIPTION

COUNTRY: NORWAY | AREA: NORTH SEA | FIELD: 15/12-Delta

WELL NO.: 15/12-3

COORDINATES: 58 ° 14 ' 36,59" N ; 01 ° 52 ' 45,67" E

K.B.E.: 25 meters | COMPANY: STATOIL/ESSO

HOLE SIZE: 12 1/4" | GEOLOGIST: Jakobsson | DATE: 23.09.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
2533	100	ls, wh, firm-hd, chalky, micromic, occ xln,	
	tr	sh, med-dk gy, firm-hd, fiss, non calc	NO SHOWS
	tr	pyr	
	tr	marl, lt tan-buff, sft-firm, occ sltky	
	tr	sltst, clr qtz, friable, dol cmt	
	tr	dol, buff, hd, xln	
2536	100	ls a/a	
	tr	a/a	
2539	100	ls a/a	
	tr	a/a	
2542	100	ls a/a	
	tr	a/a	
2545	100	ls a/a	
	tr	a/a	
2548	100	ls a/a	
2551	100	ls a/a	
2554	100	ls a/a	
2557	100	ls a/a	
2560	100	ls a/a	
2563	100	ls a/a	inc. cav.
2566	100	ls a/a	
3569	100	ls a/a, small amt of pink chalky ls a/a	
2572	100	ls a/a	
2575	100	ls a/a, incr amt of pink ls a/a	
2578	100	ls a/a	
2581	100	ls, wh-pink, else a/a	
2584		a/a	
2587		a/a	
2590		a/a	

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WELLSITE SAMPLE DESCRIPTION

COUNTRY: NORWAY | AREA: NORTH SEA | FIELD: 15/12-Delta

WELL NO.: 15/12-3 sidetrack

COORDINATES: 58 ° 14 ' 36,59" N ; 01 ° 52 ' 45,67 " E

K.B.E.: 25 meters | COMPANY: STATOIL/ESSO

HOLE SIZE: 12 1/4" | GEOLOGIST: Jakobsson | DATE: 24.09.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
2593	100	ls, wh, occ pink, firm, occ sft, chalky, micromic	
	tr	sh, med-dk gy, firm-hd, fiss, non calc	
	tr	pyr	
2596		a/a	
2599		a/a	
2602		a/a	
2605		a/a	
2608		a/a	
2611		a/a	
2614		a/a	
2617		a/a	
2620		a/a	
2623		a/a	
2626		a/a	
2629		a/a	
2632		a/a	
2635		a/a	
2638		a/a	
2641		a/a	
2644		a/a	
2647		a/a	
2650		a/a	
2653		a/a	

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Den norske stats oljeselskap a.s
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WELLSITE SAMPLE DESCRIPTION

COUNTRY: NORWAY | AREA: NORTH SEA | FIELD: 15/12-Delta

WELL NO.: 15/12-3 sidetrack

COORDINATES: 58 ° 14 ' 36.59" N ; 01 ° 52 ' 45.67 "

K.B.E.: 25 meters | COMPANY: STATOIL/ESSO

HOLE SIZE: 12 1/4" | GEOLOGIST: Nygård | DATE: 26.09.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
2656	100	ls, wh-lt gy, occ pink, firm-sft, occ arg, chalky	large pieces of sh
	tr	sh, dk gy, occ grn-gy, firm-mod hd, fiss, non calc	over shaker up to
		micromic	5 cm big; cavings.
	tr	marl, brn, sft	(up to 50% in sampl
2659		a/a	
2662		a/a	
2665		a/a	
2668		a/a	
2671	100	ls a/a	
	tr	sh a/a	
	tr	marl a/a	
	tr	pyr	
2674	100	ls, more pink & arg, else a/a	
	tr	sh a/a	
	tr	marl a/a	
2677		a/a	
2680		a/a	
2683		a/a	
2686	100	ls a/a	
	tr	sh, occ brn, calc, else a/a	
	tr	marl a/a	
	tr	pyr	
2689		a/a	
2692		a/a	
2695	100	ls, occ more arg, else a/a	
	tr	sh a/a	
	tr	marl a/a	
	tr	pyr	
2698		a/a	
2701		a/a	
2704	100	ls, mostly wh, else a/2656	
	tr	sh a/a	
	tr	marl a/a, pyr	

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Den norske stats oljeselskap a.s
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WELLSITE SAMPLE DESCRIPTION

COUNTRY: NORWAY | AREA: NORTH SEA | FIELD: 15/12-Delta

WELL NO.: 15/12-3 sidetrack

COORDINATES: 58 ° 14 ' 36,59" N ; 01 ° 52 ' 45,67 " E

K.B.E.: 25 meters | COMPANY: STATOIL/ESSO

HOLE SIZE: 12 1/4" | GEOLOGIST: Nygård/Nylend | DATE: 27.09.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
2707	100	ls, wh, lt buff, pink, sft, occ firm, occ arg	
	tr	sh, dk gy, occ grn-gy, firm, occ mod hd, fiss, non calc	
	tr tr	marl, med-lt brn, sft, flakey pyr	
2710		a/a	
2713	90 10	ls, wh, lt buff, pink, sft, occ arg marl, med-lt brn, sft-firm	
	tr	sh a/a	
2716		a/a	
2719	100 tr	ls, wh, sft, occ, firm sh a/a	
	tr	marl a/a	
2722	100 tr	ls, wh-lt gy, sft, occ arg sh a/a	
2725	100 tr	ls, lt gy-wh, sft-firm, occ arg sh a/a	
2728		a/a	
2731		a/a	
2734	100 tr	ls a/a sh a/a	
2737		a/a	
2740		a/a	
2743	40 40	marl a/a ls a/a	
	20	sh a/a	
2746		a/a	
2749	75 20	marl, med brn, sft-firm ls a/a	
	5	sh a/a	
2752	90 5	marl, lt gy-lt brn-med brn, sft-firm ls a/a	
	5	sh a/a	

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WELLSITE SAMPLE DESCRIPTION

COUNTRY: NORWAY | AREA: NORTH SEA | FIELD: 15/12-Delta

WELL NO.: 15/12-3 sidetrack

COORDINATES: 58 ° 14 ' 36,59" N ; 01 ° 52 ' 45,67 " E

K.B.E.: 25 meters | COMPANY: STATOIL/ESSO

HOLE SIZE: 12 1/4" | GEOLOGIST: Nygård/Nylend | DATE: 28.09.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
2755	100	marl, lt buff, brn, gy, sft, slty	slty form
	tr	sh, dk gy, gy-grn, firm-mod hd, fiss, non calc	
	tr	ls, wh, lt gy, sft-firm, occ arg	
	tr	glauc, dk grn-grn, mod hd and tr pyr	
2758		a/a	
2761	100	marl, more gy, else a/a	
	tr	ls	
	tr	sh	
	tr	glauc tr pyr	
2764	100	marl, dk gy-gy, occ brn-lt buff, sft, slty	
	tr	sh a/a	
	tr	ls a/a	
	tr	glauc a/a	
2767		a/a	
2770		a/a	
2773		a/a	
2776		a/a	
2779	100	marl a/a	
	tr	ls a/a	
	tr	sh a/a	
2782		a/a	
2785		a/a	
2788		a/a	
2791	100	marl, dk gy-gy, occ brn, sft, slty	
	tr	sh a/a	
2794	100	marl, lt-med gy, sft-firm, slty	
	tr	sh a/a	
	tr	ls a/a	
2797		a/a	
2800	100	marl, lt gy-med gy, occ buff, sft-firm, slty	
	tr	sh a/a	

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WELLSITE SAMPLE DESCRIPTION

COUNTRY: NORWAY | AREA: NORTH SEA | FIELD: 15/12-Delta

WELL NO.: 15/12-3 sidetrack

COORDINATES: 58 ° 14 ' 36,59" N ; 01 ° 52 ' 45,67" E

K.B.E.: 25 meters | COMPANY: STATOIL/ESSO

HOLE SIZE: 12 1/4" | GEOLOGIST: Nygård/Nylend | DATE: 29.09.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
2803	95	marl, lt gy-med gy, occ buff, slty, sft-firm	
	5	sh, dk gy-grn gy, firm-mod hd, non calc	
	tr	ls, wh, sft-firm, microxln	
	tr	pyr	
2806	100	marl, lt gy-med gy, occ buff, sft-firm, slty	
	tr	sh, dk gy-grn, gy, occ blk, firm-mod hd, fiss	
		non calc	
	tr	ls, wh, sft-firm, microxln	
2809	100	marl a/a	
	tr	sh a/a	
	tr	ls a/a	
	tr	pyr	
2812	100	marl a/a	
	tr	sh a/a	
	tr	ls a/a	
	tr	sltst, lt gy, fri, v arg, calc	
2815		a/a	
2818	90	marl a/a	
	10	sltst a/a	
	tr	sh	
	tr	ls a/a	
	tr	pyr	
2821		a/a	
2824	90	marl a/a	
	5	sh a/a	
	5	sltst a/a	
	tr	pyr	
2827	80	marl a/a	
	10	sltst a/a	
	10	sh a/a	
	tr	pyr	
2830	70	sltst, lt gy, lt grn, gy, grn patches of glauc, fri, v arg, calc, micromic	
	10	marl a/a	
	10	ls a/a	
	10	sh, gy-grn, gy, dk gy, brn, firm-mod hd, subfiss-fiss, occ sl calc, occ micromic	
	tr	pyr	
	tr	sd, clr qtz, f, subang-subrnd	
2833	80	sltst a/a	
	10	ls a/a	
	10	marl a/a	
	tr	sh a/a, pyr, sd a/a	

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WELLSITE SAMPLE DESCRIPTION

COUNTRY: NORWAY | AREA: NORTH SEA | FIELD: 15/12- Delta

WELL NO.: 15/12-3 sidetrack

CO ORDINATES: 58 ° 14 ' 36,59" N ; 01 ° 52 ' 45,67 " E

K.B.E.: 25 meters | COMPANY: STATOIL/ESSO

HOLE SIZE: 12 1/4" | GEOLOGIST: Nygård/Nylend | DATE: 30.09.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
2836	80	sltst, lt gy, lt grn, gy, grn patches of glauc, fri, v arg, calc, micromic	
	10	ls, wh, firm, microxln	
	10	marl, lt gy-grn, lt buff, sft, slty	
	tr	sh, gy, gy-grn, dk gy, brn, firm-mod hd, subfiss-fiss, occ sl calc, occ micromic	
	tr	sd, clr qtz, f, subang-subrnd	
	tr	pyr	
2839		a/a	
2842	50	sltst a/a	
	30	sh a/a	
	15	ls a/a	
	5	marl a/a	
	tr	sd a/a	
	tr	pyr	
2845	60	sltst, red brn, sft-firm, v arg, calc	
	30	sltst, lt gy, lt grn, gy, grn patches of glauc fri, v arg, calc, micromic	
	5	marl a/a	
	5	sh a/a	
	tr	ls a/a	
	tr	pyr	
2848	70	sltst, red brn, sft-firm, v arg, calc	
	20	sltst, lt gy-grn gy, glauc, fri, v arg, calc	
	10	sh a/a	
	tr	marl a/a	
	tr	pyr	
2851	40	sltst, red brn, a/a	
	40	sltst, lt gy-grn gy, a/a	
	10	sh a/a	
	10	ls, wh-lt gy, firm-hd, microxln	
	tr	pyr	
2854	20	sltst, red brn, a/a	
	80	sltst, lt gy-grn gy, a/a	
	tr	sh a/a	
	tr	ls a/a	
	tr	pyr	

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WELLSITE SAMPLE DESCRIPTION

COUNTRY: NORWAY	AREA: NORTH SEA	FIELD: 15/12-Delta
WELL NO.: 15/12-3 sidetrack		
COORDINATES: 58° 14' 36,59" N ; 01° 52' 45,67" E		
K.B.E.: 25 meters	COMPANY: STATOIL/ESSO	
HOLE SIZE: 12 1/4"	GEOLOGIST: Nygård/Nylend	DATE: 01.10.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
2857	50	sltst, lt gy-grn, grn patches of glauc, fri, sft, firm, v arg, calc, micromic	
	50	sltst, red-brn, sft, v arg, grdg into slty marl	
	tr	sh, gy-grn, gy, lt gy, occ dk gy, sft-firm, occ mod hd, subfiss, non calc, occ slty, micromic	
	tr	sd, clr qtz, f-med, subrnd	
	tr	pyr	
	tr	ls, wh, mod hd, microxln	
2860	60	sltst, lt gy-grn, a/a	
	40	sltst, red-brn, a/a	
	tr	a/a	
2863		a/a	
2866	80	sltst, red-brn, a/a	
	10	sltst, buff-yel, firm, non calc, micromic	
	10	sltst, lt gy-grn, a/a	
	tr	a/a	
2869	70	sltst, red-brn, a/a	
	10	sltst, buff-yel, a/a	
	10	sltst, lt gy-grn, a/a	
	10	sh a/a	
	tr	ls a/a	
	tr	pyr	
2872	70	sltst, red-brn, a/a	
	20	sltst, lt gy-grn, a/a	
	10	sh a/a	
	tr	sltst, buff-yel, a/a	
	tr	pyr	
	tr	ls a/a	
2875	50	ls, wh, lt gy, sft, sl arg	ls-strg
	40	sltst, red-brn a/a	
	tr	pyr a/a, tr sltst, buff-yel, lt gy-grn a/a	
	10	sh a/a	
2878	60	marl, med gy, sft, non-sl slty	
	40	sltst, red-brn a/a	
	tr	pyr, ls a/a, sh a/a	
	tr	sltst, lt gy-grn a/a	
2881	60	sltst, red-brn a/a	
	40	marl, med gy a/a	
	tr	pyr, ls a/a	
	tr	sltst, lt gy-grn	
	tr	sh a/a	
	tr	pyriticed forams	

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WELLSITE SAMPLE DESCRIPTION

COUNTRY: NORWAY | AREA: NORTH SEA | FIELD: 15/12-Delta

WELL NO.: 15/12-3

COORDINATES: 58 ° 14 ' 36,59" N ; 01 ° 52 ' 45,67" E

K.B.E.: 25 meters | COMPANY: STATOIL/ESSO

HOLE SIZE: 12 1/4" | GEOLOGIST: Nygård/Nylend | DATE: 02.10.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
2884	60	marl, lt gy, sft-firm, occ sl slty	
	25	ls, wh-lt gy, sft-firm, occ hd, non arg	
	10	sh, dk gy-grn gy, firm, occ mod hd, subfiss-fiss, occ slty	
	5	marl, red brn, sft, v arg, occ slty	
	tr	pyr	
2887	70	ls, wh-lt gy, sft-firm, occ hd	
	20	marl, lt gy-med gy, sft-firm, occ sl slty	
	10	sh a/a	
	tr	marl, red brn a/a	
	tr	pyr, forams	
2890	50	ls a/a	
	40	marl a/a	
	10	sh a/a	
	tr	pyr	
2893	50	marl, red brn, sft-firm, v arg	
	30	ls a/a	
	20	sh, blk, sft, calc	
	tr	sh, grn gy, firm-mod hd, non calc	
	tr	pyr	
2896	50	marl, a/a	
	20	sh, grn, gy, firm-mod hd, non calc	
	20	sh, blk, occ dk brn, sft-firm, non calc	
	10	ls a/a	
	tr	pyr	
2899	50	marl, red brn, sft-firm, v arg	
	40	marl, lt gy-med gy, sft, occ sl slty, glauc	
	5	sh, blk, sft, sl calc	
	5	sh, grn gy, firm-mod hd, non calc	
	tr	ls, wh, lt gy, sft-mod hd, non arg	
	tr	pyr	
2902	70	marl, lt gy-med gy, else a/a	
	20	marl, red brn, else a/a	
	10	sh, grn gy, else a/a	
	tr	sh, blk, else a/a	
	tr	ls a/a	
	tr	pyr, glauc	
2905	40	marl, lt gy-med gy, sft, occ sl slty, glauc	
	30	marl, red brn	
	10	sh, blk, else a/a	
	20	sh, grn gy, else a/a	
	tr	pyr, glauc	

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WELLSITE SAMPLE DESCRIPTION

COUNTRY: NORWAY | AREA: NORTH SEA | FIELD: 15/12-Delta

WELL NO.: 15/12-3

COORDINATES: 58° 14' 36,59" N ; 01° 52' 45,67" E

K.B.E.: 25 meters | COMPANY: STATOIL/ESSO

HOLE SIZE: 12 1/4" | GEOLOGIST: Jakobsson/Nylend | DATE: 03.10.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
2908	80	marl, lt gy-med gy, sft, sl slty, glauconitic	NO SHOWS
	5	marl, red brn, sft-firm	
	10	sh, grn gy, firm, non calc	
	5	sh, blk occ dk brn, non calc, pyr	
	tr	pyr framboids, glauc	
2911		a/a	
2914	50	marl, lt gy, a/a	
	30	marl, med brn a/a	
	10	sh, grn-gy a/a	
	10	sh, blk, occ dk brn a/a	
	tr	a/a	
2917	50	marl, lt gy a/a	
	40	marl, med red brn a/a	
	5	sh, grn gy a/a	
	5	sh, blk a/a	
	tr	pyr, glauc, ls	
2920	50	marl, lt gy a/a	
	40	marl, red brn a/a	
	10	sh a/a	
	tr	a/a	
2923	40	marl, lt gy a/a	
	40	marl, lt brn a/a	
	10	sh, grn gy a/a	
	10	sh, blk a/a	
	tr	a/a	
2926	40	marl, lt gy a/a	
	40	marl, lt red brn a/a	
	10	sh, grn gy a/a	
	10	sh, blk a/a	
	tr	a/a	
2929	40	marl, lt gy a/a	
	40	marl, lt red brn a/a	
	10	sh, blk gy a/a	
	10	sh, blk a/a	
	tr	a/a	

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WELLSITE SAMPLE DESCRIPTION

COUNTRY: NORWAY | AREA: NORTH SEA | FIELD: 15/12-Delta

WELL NO.: 15/12-3

COORDINATES: 58 ° 14 ' 36,59" N ; 01 ° 52 ' 45,67" E

K.B.E.: 25 meters | COMPANY: STATOIL/ESSO

HOLE SIZE: 12 1/4" | GEOLOGIST: Jakobsson/Ljones | DATE: 04.10.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
2932	90	marl, lt gy, sft-stky, arg	
	10	sh, dk gy, occ blk, occ lt gy, hd, v calc	NO SHOWS
	tr	marl, red brn, sft, stky	
	tr	pyr	
2935	90	marl, a/a	
	10	sh a/a	
	tr	a/a	
2938	90	marl a/a	
	tr	sh a/a	
	tr	pyr	
2941		a/a	
2944		a/a	
2947	70	marl, a/a	
	20	sh a/a	
	5	ls a/a	
	5	sltst a/a	
	tr	pyr, glauc	
	tr	sst	
2950	80	marl a/a	
	20	sh a/a	
	tr	ls, sltst, pyr, glauc a/a	
2953	80	marl a/a	
	20	sh a/a	
	tr	a/a	
2956		a/a	
2959		a/a	
2962	40	marl, lt gy a/a, v slty	incr slt cont
	40	marl, red brn a/a, v slty	in marl
	20	sh a/a	
	tr	a/a	
2965		a/a	
2968	60	marl, red-red brn, sft, stky, slty	marl grdg to calc
	20	marl, lt gy, sft, stky, slty	sh
	20	sh, lt-dk gy, firm-hd, fiss, subfiss	
	tr	sltst a/a	
	tr	pyr, glauc, ls a/a	

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WELLSITE SAMPLE DESCRIPTION

COUNTRY: NORWAY | AREA: NORTH SEA | FIELD: 15/12-Delta
WELL NO.: 15/12-3
COORDINATES: 58 ° 14' 36,59" N ; 01 ° 52 ' 45,67" E
K.B.E.: 25 meters | COMPANY: STATOIL/ESSO
HOLE SIZE: 12 1/4" | GEOLOGIST: Jakobsson/Ljones | DATE: 05.10.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
2971	60	marl, grdg to calc sh,	
		lt red-red brn, sft-stky, occ firm-hd,	NO SHOWS
		slty	
	20	sh, lt gy-dk gy, hd, fiss, lam, calc	
	10	marl, lt gy,sft-firm, stky, slty	
	5	sltst, clr qtz, in wh calc cmt, fri-lse, occ hd	
	5	sst, clr qtz, lse, vf, well rnd, well srtd	
	tr	pyr, glauc, ls	
	tr	ls, wh, hd, xln, occ arg	
2974	60	sh/marl, v calc sh, red-occ red brn, sft-stky-firm,	the red marl incr
		occ hd, slty, occ micromic	sh prob
	20	sh, dk gy, occ blk, hd, non calc, fiss, lam	
	10	sh, lt grn gy-bluish gy, firm-hs, fiss, non calc	
	10	sst, clr qtz, vf-f, gr + to slt, lse-friable, ??	
		non-sltly calc, occ v calc, calc cmt,	NO SHOWS
		when friable	
	tr	pyr, glauc	
2977	50	sh, red-dk brn	
	50	marl, grdg to sh, lt red a/a	
	30	marl, lt gy, wh, a/a	
	20	sh, dk gy-blk a/a	
	tr	sh, red a/a	
	tr	pyr, glauc, ls a/a	
2980	80	ls, wh, chalky, sft-firm, occ hd, occ xln	
	10	marl, red-occ lt gy, sft-firm	
	10	sh, lt gy-dk gy, hd, non calc	
	tr	pyr, glauc	
2983		a/a	
2986	50	marl, lt gy-lt grn gy, sft-stky, to firm, slty	
	30	ls, chalky, occ xln, wh, sft-firm, occ hd-v hd,	NO SHOWS
		occ arg	
	10	marl, red, sft, stky, slty	
	10	sh, med-dk gy, hd, non calc	
	tr	pyr, glauc	
2989	50	ls a/a	
	30	marl a/a	
	20	sh a/a	
	tr	a/a	

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WELLSITE SAMPLE DESCRIPTION

COUNTRY: NORWAY | AREA: NORTH SEA | FIELD: 15/12-Delta

WELL NO.: 15/12-3

COORDINATES: 58 ° 14 ' 36.59" N ; 01 ° 52 ' 45.67 " E

K.B.E.: 25 meters | COMPANY: STATOIL/ESSO

HOLE SIZE: 12 1/4" | GEOLOGIST: Jakobsson/Ljones | DATE: 06.10.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
2992	60 20	marl, lt gy-wh-gy, sft, slty, arg ls, wh, firm-hd, pyr, occ arg	NO SHOWS
	20 tr	sh, med-dk gy, occ grn gy, firm-hd, non calc sltst,(abd) clr qtz, lse-friable, calc cmt	
	tr tr	sh, red, firm, calc pyr	
2995	70	sh, dk brn, occ blk brn, sft, occ stky, slty, calc	form change NO SHOWS
	20 10	coal, blk-dk brn, dull, occ glossy surf sltst, clr qtz, lse, non calc, occ calc	
	tr tr	ls a/a pyr	
2998	100 tr	sh, coaly, dk brn-blk brn, a/a sltst a/a	(mudst)
	tr	pyr, glauc a/a	
3001	95 5	sh, a/a sltst a/a	
	tr	ls, marl, pyr, glauc, coal a/a	
3004		a/a	
3007		a/a	
3010	95	sh/coaly sh, dk brn-blk brn, occ gy brn, sft-firm, else a/a	
	5 tr	sltst a/a a/a	
3013		a/a	
3016		a/a	
3019		a/a	
3022		a/a	
3025		a/a	
3028		a/a	
3031		a/a	
3034		a/a	

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WELLSITE SAMPLE DESCRIPTION

COUNTRY: NORWAY | AREA: NORTH SEA | FIELD: 15/12-Delta

WELL NO.: 15/12-3

COORDINATES: 58 ° 14 ' 36,59 " N ; 01 ° 52 ' 45,67 " E

K.B.E.: 25 meters | COMPANY: STATOIL/ ESSO

HOLE SIZE: 12 1/4" | GEOLOGIST: Jakobsson/Ljones | DATE: 07.10.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
3037	100	coaly sh, dk brn-gy brn, sft-stky, occ firm slty, coaly, pyr, calc,occ non calc	NO SHOWS
	tr tr	slt, clr qtz, lse, calc coal, dull blk, pyr, hd, occ firm, elastic	
	tr	pyr	
3040		a/a	
3043		a/a	
3046	60 20	sh, gy-brn, firm, coaly, pyr, sltly calc a/a sh, lt gy-lt bluish gy, lt grn gy, firm-hd, sltly calc, micromic, slty	new bit
	20	sh, brick red, firm-hd, slty, micromic,	NO SHOWS
	tr	sltly-sl calc pyr, ls, marl, glauc a/a	
3049	80 20	sh, gy brn, firm-hd, coaly, slty a/a sh, brick red a/a	decr coal cont in sh
	tr	coal/pyr, ls, marl a/a	
3052	90 10	sh, gy-brn, occ blk brn, coaly a/a sh, red a/a	
	tr	ls, pyr	
3055	100 tr	sh, gy brn a/a sh, red a/a	
	tr	pyr, slt a/a	
3058		a/a	
3061		a/a	
3064		a/a	
3067		a/a	
3070		a/a	
3073		a/a	
3076		a/a	
3079		a/a	

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Den norske stats oljeselskap a.s
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WELLSITE SAMPLE DESCRIPTION

COUNTRY: NORWAY | AREA: NORTH SEA | FIELD: 15/12-Delta
WELL NO.: 15/12-3
COORDINATES: 58 ° 14 '36,59" N ; 01 ° 52 ' 45,67" E
K.B.E.: 25 meters | COMPANY: STATOIL/ESSO
HOLE SIZE: 12 1/4" | GEOLOGIST: Jakobsson/Ljones | DATE: 09.10.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
3082	100	sh, gy brn, occ blk brn, firm-hd, coaly, slty, pyr, non-sltly calc	NO SHOWS
	tr	pyr	
3085		a/a	
3088	100	sh, gy-brn, occ blk-brn, firm, occ hd, slty calc, carb	no fluor
	tr	sh, brick-red, hd-firm sltst, occ stained, gy-brn, firm-sft	slow streaming wh cut in sltst
		sh, grnish-gy, firm-hd occ gy, hd	
3091	100	a/a	NO SHOWS
3094	100	a/a	
3097	95	sh, dk gy-brn a/a	no fluorescence
	tr	a/a, sltst, not stained	no cut
3100	95 tr	sh, a/a sh, brick-red, firm-hd	NO SHOWS
		sh, gy-grn, sft-firm coal, blk, brittle	
		glauc ls, dol, wh-tan, firm-hd	
3103	95	sh, a/a	
	tr	a/a	
3106		a/a ÷ coal	
3109		a/a	
3112	95	sh, a/a	fluoresc. ?
	tr	a/a	
3115	95	sh, gy-brn, firm-occ hd, slty calc, carb	
	tr	sh, brick-red, sft-firm, calc sh, grnish-gy, sft-firm, calc	
		ls, wh-tan, sft-firm	

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WELLSITE SAMPLE DESCRIPTION

COUNTRY: NORWAY | AREA: NORTH SEA | FIELD: 15/12-Delta
WELL NO.: 15/12-3
COORDINATES: 58 ° 14 '36,59" N ; 01 ° 52 '45,67 " E
K.B.E.: 25 meters | COMPANY: STATOIL/ESSO
HOLE SIZE: 12 1/4" | GEOLOGIST: Veiberg/Ljones | DATE: 10-11.10.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
3118	95	sh, gy-brn, firm-hd, coaly slty, calc	fluoresc. ?
	tr	sh, brick-red, sft-firm, calc ls, grn-tan, sft-firm	
		glauc	
3121		a/a + tr, sltst, gy-brn, sft	"
3124		a/a	
3127	95	sh, gy-dk gy-brn, firm, occ hd, carb, calc	
	tr	a/a	
3130	95	sh a/a	
	tr	a/a	
3133	95	sh, gy-dk gy-brn, sft-firm, occ sft, calc, slty, occ v slty, pyr	
	tr	pyr sh, brick-red, sft-firm, calc, slty test, blk specks	
		sh, lt gy-grnish gy-grn, firm-hd, non calc sltst, med gy-lt gy, sft-firm, friable, pyr, non calc	
		ls, dol, wh-buff, hd	
3136	100	sh, a/a	
	tr	a/a	
3139		a/a	
3142		a/a sh occ v slty	
3145		a/a	slow-fast str wh cut in sltst & sd
	tr	a/a + sd: f-vf,clr,ang	
3148		a/a	
3151		a/a	
3154		a/a	

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WELLSITE SAMPLE DESCRIPTION

COUNTRY: NORWAY | AREA: NORTH SEA | FIELD: 15/12-Delta

WELL NO.: 15/12-3

COORDINATES: 58 ° 14 ' 36.59" N ; 01 ° 52 ' 45.67" E

K.B.E.: 25 meters | COMPANY: STATOIL/ESSO

HOLE SIZE: 12 1/4" | GEOLOGIST: Veiberg | DATE: 12.10.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
3157	100	sh, gy-dk gy-brn, sft-firm, calc, slty, occ v slty, pyritic, weakly carb	
	tr	sltst, lt gy-med gy, friable, sft, non calc, sh, brick red, firm-hd, occ lt gy-grnish	
		pyr	
		sd, clr, f, ang	
3160		a/a	
	tr	a/a + glauc	
3163	90	sh a/a	
	10	siderite, blk, hd-v hd, slty texture, reacts	
		v slowly w/HCl when warming up	
	tr	a/a + ls, dol, wh, firm-hd, H_2S - smell	
3166	90	sh a/a	
	10	unidentified a/a	
	tr	a/a - sd	
3169		a/a	
3172		a/a	
3175		a/a	
3178	100	sh/clyst a/a	
	tr	a/a + unidentified mnrl	
3181		a/a	
3184		a/a	
3187		a/a	
3190		a/a	
3193		a/a	no fluor, but slow to mod
3196		a/a	streaming yel-wh cut in the most
3199		a/a	slty sh/clyst
3202	95	sh/clyst a/a, v slty	
	5	unidentified mnrl a/a	"
	tr	a/a	mod - fast str. cu

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WELLSITE SAMPLE DESCRIPTION

COUNTRY: NORWAY | AREA: NORTH SEA | FIELD: 15/12-Delta

WELL NO.: 15/12-3

COORDINATES: 58 ° 14 ' 36,59" N ; 01 ° 52 ' 45,67" E

K.B.E.: 25 meters | COMPANY: STATOIL/ESSO

HOLE SIZE: 12 1/4" | GEOLOGIST: Veiberg | DATE: 12.10.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
3205	100	clyst/sltst, dk gy-gy brn, sft, occ firm, sl calc	SHOWS a/a
		occ lt med gy, occ pyr	
	tr	unidentified mnrl a/a	
		ls, dol, buff, wh, occ tan, firm-hd	
3208	95	clyst/sltst a/a	SHOWS a/a
	5	unidentified mnrl a/a	
	tr	a/a	
3211	95	a/a, but decreasing cont of sltst	NO SHOWS
	5	unidentifed mnrl a/a	v pr shows
	tr	a/a	
3214	95	sh/clyst, dk gy-gy brn, sft, occ firm, non calc	
		-sl calc, slty, occ pyr	"
	5	unidentifed mnrl a/a (x)	
	tr	a/a	
3217	100	clyst/sh a/a	"
	tr	a/a + unidentifed mnrl	
3220	75	clyst/sh a/a	
	25	x , a/a	"
	tr	ls, dol, clr-tan, firm, hd	
		sh, brick red, firm-hd, slty tex	
3223		a/a	"
3226		a/a	"
3229		a/a	"
3232	70	clyst/sh, a/a	
	30	x, a/a	"
	tr	a/a	
3233	80	clyst/sh, a/a	
	15	x, a/a	"
	5	marl/ls/dol, wh-lt gy, occ clr, firm-hd, pyr	
	tr	sd, vf-f, sd grains in ls-dol matrix	
		pyr	
3235	55	sd, clr-mlky wh, freq calc/dol cmtd, vf-f when calc	mnrl fluor
		/dol cmtd, med-crs else, subrnd-well rnd, subang-	
		subang-subrnd when calc/dol cmt	no cut
	35	dol/ls, wh, occ clr, freq pyr incl, hd-v hd	
	10	sh/clyst, brick red, occ grnish-gy, occ dk gy-brn,	
		occ slty calc, sft-hd	
	tr	pyr	

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WELLSITE SAMPLE DESCRIPTION

COUNTRY: NORWAY | AREA: NORTH SEA | FIELD: 15/12-Delta
WELL NO.: 15/12-3
COORDINATES: 58 ° 14 ' 36,59" N ; 01 ° 52 ' 45,67 " E
K.B.E.: 25 meters | COMPANY: STATOIL/ESSO
HOLE SIZE: 12 1/4" | GEOLOGIST: Veiberg/Nygård | DATE: 14.10.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
3238	45	sd, clr-wh mlky, v dol cmt, occ free grains, vf-f when cmt, else med-crs, subang-subrnd,	30 - 40% of cmt sd consists of cmt.
	20	when cmt, else subrnd-well rnd, friable ls/dol, wh-buff, hd-v hd, pyr	
	35	sh, brick red, occ pale brick red, occ gy-grnish gy, occ dk gy-brn, occ v slty, firm, occ hd	
	tr	pyr glauc	
3241	50	sh a/a	microfossils
	40	sd a/a	
	10	ls/dol, a/a	weak fluoresc.
	tr	pyr	
3244	60	sh, a/a	v slow str pale wh-pale bluish cut
	30	sd, a/a	
	10	ls/dol, a/a	
3247	55	sd a/a	
	30	sh, a/a	
	10	dol/ls, a/a	"
	5	pyr	
	tr	glauc	
3250	60	sd, a/a, free grains v rare	
	25	sh, a/a	"
	15	ls/dol, a/a	
	tr	glauc	
3253	60	sd a/a	
	30	sh a/a	"
	10	ls/dol a/a	
	tr	glauc	
	tr	stibnite (Sb_3S_3) within a grn sh NB!	grnish w/pyr and stibnite
3256	60	sd a/a	
	30	sh a/a	"
	10	ls/dol a/a	
	tr	pyr	
	tr	stibnite a/a	
3256 -	3263	cored interval	

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WELLSITE SAMPLE DESCRIPTION

COUNTRY:	NORWAY	AREA:	NORTH SEA	FIELD:	15/12-Delta
WELL NO.:	15/12-3				
COORDINATES:	58 ° 14 ' 36.59' N ; 01 ° 52 ' 45.67"				
K.B.E.:	25 meters	COMPANY:	STATOIL/ESSO		
HOLE SIZE:	12 1/4"	GEOLOGIST:	Nygård/Kræmer	DATE:	18.10.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
3265	50	dol, med gy, lt grn-gy, occ red, mlky wh, clr,	
		v hd-hd, occ xln, occ pyr, occ blk spots	NO SHOWS
	40	sh, dk gy, firm, calc, micromic, occ glauc spots	
		gy-grn, firm, non calc	
		lt grn, firm-mod hd, subfiss, pyr, non calc	
		brick red, mod hd, subfiss, calc, occ glauc spots	
	10	anhy, wh, sft, occ w/thn calc lam, mostly amorph	
	tr	marl, med gy, sft-firm	
	tr	ls, wh, lt buff, sol, sl arg	
	tr	glauc, dk grn, mod hd	
	tr	pyr	
3266	50	dol, a/a	
	40	sh, more of the brick red, else a/a	
	10	anhy a/a	
	tr	a/a	
3267	40	dol a/a	
	40	sh a/a	
	20	anhy a/a	
	tr	a/a	
3268	40	dol a/a	
	40	sh a/a	
	20	anhy a/a	
	tr	pyr, ls a/a	
3269	40	dol a/a	
	40	sh a/a	
	20	snhy a/a	
	tr	pyr, ls a/a	
3270	40	dol a/a	
	30	sh , dominated by brick red, else a/a	
	30	anhy a/a	
	tr	pyr, ls, glauc a/a	
3271	40	dol a/a	
	30	sh a/a	
	30	anhy a/a	
	tr	pyr, ls, glauc, a/a	
3272	40	sh a/a	
	30	dol a/a	
	30	anhy a/a	
	tr	a/a	

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WELLSITE SAMPLE DESCRIPTION

COUNTRY: NORWAY | AREA: NORTH SEA | FIELD: 15/12-Delta
WELL NO.: 15/12-3
COORDINATES: 58° 14' 36,59" N ; 01° 52' 45,67" E
K.B.E.: 25 meters | COMPANY: STATOIL/ESSO
HOLE SIZE: 12 1/4" | GEOLOGIST: Nygård/Kræmer | DATE: 19.10.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
3273	40	anhy, wh, sft, occ w/thn lam of calc, mostly amorph	
	30	sh, dk gy, firm, calc, micromic, occ glauc spot	
		gy-grn, firm, non calc	
		lt grn, firm-mod hd, subfiss, pyr, non calc	
		mostly, brick red, mod hd, subfiss, calc, occ glauc	
		spot yel-grn, firm, non calc	
	30	dol, med gy, lt grn-gy, occ red, mlky wh, clr	
		v hd-hd, occ xln, occ pyr, occ blk spots	
	tr	pyr	
	tr	ls, wh, lt buff, dol, sl arg	
	tr	glauc, dk grn, mod hd, brittle	
3274		a/a	
3275		a/a	
3276		a/a	
3277	50	anhy a/a	
	30	dol a/a	
	20	sh a/a	
	tr	a/a	
3278		a/a	
3279		a/a	
3280	50	sh a/a	
	30	dol a/a	
	20	anhy a/a	
	tr	ls a/a	
	tr	glauc a/a	
	tr	pyr/marchasite	
3281	40	sh a/a	
	30	dol a/a	
	30	anhy, occ sucrosic, else a/a	
	tr	ls a/a, glauc a/a, pyr/marchasite	
3282	50	anhy a/a	
	30	sh a/a	
	20	dol a/a	
	tr	a/a	
3283		a/a	
3284	60	anhy a/a	
	30	sh a/a	
	10	dol a/a	
	tr	a/a	

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WELLSITE SAMPLE DESCRIPTION

COUNTRY:	NORWAY	AREA:	NORTH SEA	FIELD:	15/12-Delta
WELL NO.:	15/12-3				
COORDINATES:	58 ° 14 ' 36,59" N ; 01 ° 52 ' 45,67 " E				
K.B.E.:	25 meters	COMPANY:	STATOIL/ESSO		
HOLE SIZE:	12 1/4"	GEOLOGIST:	Nygård/Kræmer	DATE:	21.10.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
3285	70 30	anhy, wh, sft, amorph, occ sucrosic sh, dk gy, gy-grn, lt grn, brick red, yel grn,	drill break at 3284,5m
		firm-mod hd, subfiss, non calc-calc, occ glauc spot	
	tr	dol, med gy, gy-grn, mlky wh, v hd-hd, occ xln, occ pyr	this is therefor prob halite
	tr tr	pyr/marchasite ls, wh, lt buff, sl arg	
	tr	glauc, dk grn, mod hd	
3286	80 20	anhy a/a sh a/a	RPN= 8 - 10m/h
	tr	a/a	
3287	80 20	sh a/a anhy a/a	salt - sat mud to 193 000 ppm
	tr tr	pyr dol a/a	
3288		a/a	samples very conta w/salt from saltsat mud
3289	70 20	sh a/a anhy a/a	
	10	halite, clr, lt buff, pink, wh lam of anhy, mod hd, brittle, ang grains	
3290	50 30	sh a/a halite a/a	
	20 tr	anhy a/a	
3291		a/a	
3292	40 40	halite a/a sh a/a	
	20 tr	anhy a/a pyr	
3293		a/a	
3294		a/a	
3295	80 20	halite a/a sh a/a	
3296		a/a	
3297		a/a	

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WELLSITE SAMPLE DESCRIPTION

COUNTRY: NORWAY	AREA: NORTH SEA	FIELD: 15/12-Delta
WELL NO.: 15/12-3		
COORDINATES: 58° 14' 36,59" N ; 01° 52' 45,67" E		
K.B.E.: 25 meters	COMPANY: STATOIL/ESSO	
HOLE SIZE: 12 1/4"	GEOLOGIST: Nygård	DATE: 22.10.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
3298	100	halite, clr, lt buff, pink, wh lam of anhy mod hd, brittle, ang grains	
	tr	sh, varicol, firm-mod hd, subfiss, non calc-calc, glauc spots	
	tr	pyr	
3299		a/a	
3300		a/a	
3301		a/a	
3302		a/a	
3303		a/a	
3304		a/a	
3305		a/a	
3306		a/a	
3309		a/a	
3312		a/a	
3315		a/a	
3318		a/a	
3321		a/a	
3324		a/a	
3327		a/a	
3330		a/a	
3333		a/a	
3336		a/a	
3339		a/a	

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WELLSITE SAMPLE DESCRIPTION

COUNTRY: NORWAY | AREA: NORTH SEA | FIELD: 15/12-Delta

WELL NO.: 15/12-3

CO ORDINATES: 58° 14' 36,59" N ; 01° 52' 45,67" E

K.B.E.: 25 meters | COMPANY: STATOIL/ESSO

HOLE SIZE: 12 1/4" | GEOLOGIST: Nygård | DATE: 22.10.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
3342	100	halite, clr, lt buff, occ pink, occ wh lam of anhy, mod hd, brittle, ang xln grains	
	tr	sh, varicol, firm-mod hd, subfiss, non calc-calc, glauc spots	
	tr	pyr	
3345		a/a	
3348		a/a	
3351		a/a	
3354		a/a	
3357		a/a	
3360		a/a	
3361		a/a	TD

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WELLSITE SAMPLE DESCRIPTION

COUNTRY: NORWAY | AREA: NORTH SEA | FIELD: 15/12-Delta

WELL NO.: 15/12-3

COORDINATES: 58° 14' 36,59" N ; 01° 52' 45,67" E

K.B.E.: 25 meters | COMPANY: STATOIL/ESSO

HOLE SIZE: 8 1/2" | GEOLOGIST: Kristensen | DATE: 13.11.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
3375	100	halite, clr, translucent-opaqe, hd, xln, brittle, lt brn stain from disel.	
3380		a/a	
3385		a/a	
3390		a/a	
3395		a/a	
3400		a/a	
3405		a/a	
3410		a/a	
3415		a/a	
3420		a/a	
3425		a/a	
3430		a/a	
3435		a/a	
3440		a/a	
3445		a/a	
3450		a/a	
3455		a/a	
3460		a/a	
3465		a/a	
3470		a/a	
3475		a/a	
3480		a/a	

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WELLSITE SAMPLE DESCRIPTION

COUNTRY: NORWAY	AREA: NORTH SEA	FIELD: 15/12-Delta
WELL NO.: 15/12-3		
COORDINATES: 58° 14' 36,59" N ; 01° 52' 45,67" E		
K.B.E.: 25 meters	COMPANY: STATOIL/ESSO	
HOLE SIZE: 8 1/2"	GEOLOGIST: Jakobsson	DATE: 16.11.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
3485	100	halite, clr-transparent, -opaque, occ brn-blkish, hd, xln, brittle, occ	NO SHOWS
		brn stain	
3490		a/a	
3495		a/a	
3500		a/a	
3505		a/a	
3510		a/a	
3515		a/a	
3520		a/a	
3525		a/a	
3530		a/a	
3535		a/a	
3540		a/a	
3545		a/a	
3550		a/a	
3555		a/a	
3560		a/a	
3565		a/a	
3570		a/a	
3575		a/a	
3580		a/a	
3585		a/a	

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WELLSITE SAMPLE DESCRIPTION

COUNTRY: NORWAY | AREA: NORTH SEA | FIELD: 15/12-Delta

WELL NO.: 15/12-3

CO ORDINATES: 58 ° 14 ' 36.59" N ; 01 ° 52 ' 45.67" E

K. B. E.: 25 meters | COMPANY: STATOIL/ESSO

HOLE SIZE: 8 1/2" | GEOLOGIST: Jakobsson | DATE: 18.11.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
3590	100	halite, clr-translucent, opaque, occ med brn, lt brn, hd, xln, brittle	NO SHOWS
3595		a/a	
3600		a/a	
3605		a/a	
3610		a/a	
3615		a/a	
3620		a/a	
3625		a/a	
3630		a/a	
3635		a/a	
3640		a/a	
3645		a/a	
3650		a/a w/tr of anhy	
3655		a/a w/tr of anhy	
3660		a/a	
3665		a/a	
3670		a/a	
3675		a/a	
3680		a/a	
3685		a/a	
3690		a/a	

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WELLSITE SAMPLE DESCRIPTION

COUNTRY: NORWAY | AREA: NORTH SEA | FIELD: 15/12-Delta

WELL NO.: 15/12-3

COORDINATES: 58 ° 14 ' 36,59" N ; 01 ° 52 ' 45,67" E

K.B.E.: 25 meters | COMPANY: STATOIL/ESSO

HOLE SIZE: 8 1/2" | GEOLOGIST: Jakobsson | DATE: 19.11.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
3695	100	halite, clr, opaque, occ med-dk brn,hd, xln, brittle	NO SHOWS
3700		a/a	
3705		a/a	
3710		a/a	
3715		a/a tr anhy	
3720		a/a	
3725		a/a	
3730		a/a	
3735		a/a	
3740		a/a	
3745		a/a	
3750		a/a	
3755		a/a	
3760		a/a	
3765		a/a	
3770		a/a	
3775		a/a	
3780		a/a	
3790		a/a	10m sampling interval
3800		a/a	
3810		a/a	

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WELLSITE SAMPLE DESCRIPTION

COUNTRY: NORWAY | AREA: NORTH SEA | FIELD: 15/12-Delta

WELL NO.: 15/12-3

CO ORDINATES: 58 ° 14 ' 36.59" N ; 01 ° 52 ' 45.67" E

K.B.E.: 25 meters | COMPANY: STATOIL/ESSO

HOLE SIZE: 8 1/2" | GEOLOGIST: Jakobsson | DATE: 20.11.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
3820	75	halite, clr, occ opaque, occ dk brn, xln, hd, brittle	NO SHOWS
	25	anhy, wh, dk brn oil stained (from mud) sft-firm	reduced rop 3810-3820m
3830	90	halite a/a	
	10	anhy a/a	
3840	80	halite a/a	
	20	anhy a/a	
3850	30	anhy a/a	
	70	halite a/a	
3855	100	halite, clr, opaque, translucent, (brn stain from mud),xln, hd, brittle	
	tr	anhy, wh-lt gy, (brn stain from mud), chalky texture, occ fib, firm-mod hd	
3860	100	halite, a/a	
3865		a/a	
3870		a/a	
3875		a/a	
3880		a/a	
3885		a/a	
3890		a/a	
3895		a/a	
3900		a/a	
3905		a/a	
3910		a/a	
3915		a/a	
3920		a/a	
3925		a/a	
3930		a/a	

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WELLSITE SAMPLE DESCRIPTION

COUNTRY: NORWAY | AREA: NORTH SEA | FIELD: 15/12-Delta

WELL NO.: 15/12-3

COORDINATES: 58° 14' 36,59" N ; 01° 52' 45,67" E

K.B.E.: 25 meters | COMPANY: STATOIL/ESSO

HOLE SIZE: 8 1/2" | GEOLOGIST: Kristensen | DATE: 21.11.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
3935	100	halite, clr, translucent, oraque, sl brn stain from mud, xln, hd, brittle	NO SHOWS
3940		a/a	
3945		a/a	
3950		a/a	
3960		a/a	
3970		a/a	
3980		a/a	
3990		a/a	
4000	100	halite, occ pink, else a/a	
4005		a/a	
4010	100	halite, clr, translucent, opaque, occ gy wh, occ pink, xln, hd, brittle	
	tr	anhy, gy wh-lt gy, chalky, texture, sft-firm	
4015		a/a	
4020	100	halite, a/a, incr in pink col salt (10%)	
	tr	anhy a/a	
4030		a/a	
4040	100	halite a/a	
	tr	anhy a/a, more abund	
4050		a/a	
4060	100	halite a/a	
	tr	sh, med-dk gy, sft, non calc	
	tr	anhy, wh, chalky texture, firm	
4070	60	halite, clr, translucent, gy wh, pink-red, xln, hd, brittle	
	40	sh, dk gy, sft, stky in pt	
	tr	anhy a/a	
	tr	dol, gy, mod hd, sucrosic, arg	

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WELLSITE SAMPLE DESCRIPTION

COUNTRY: NORWAY | AREA: NORTH SEA | FIELD: 15/12-Delta

WELL NO.: 15/12-3

COORDINATES: 58° 14' 36.59" N ; 01° 52' 45.67" E

K.B.E.: 25 meters | COMPANY: STATOIL/ESSO

HOLE SIZE: 8 1/2" | GEOLOGIST: Kristensen | DATE: 22.11.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
4080	95	sh, dk gy-blk, sft-firm, carb, stky in pt	NO SHOWS
		sl dol	
	5	halite, clr, translucent, opaque, xln, hd, brittle	
	tr	anhy, gy wh, chalky texture, firm	
4090	85	sh a/a	
	15	halite occ pink, else a/a	
	tr	anhy a/a	
4100	90	sh a/a	
	10	halite a/a	
	tr	anhy a/a	
4105	50	halite a/a	
	20	sh a/a	
	10	anhy, wh, gy wh, chalky texture, firm	
	20	dol, med-dk gy, hd, arg	
4110	60	halite a/a	
	20	anhy a/a	
	20	dol a/a	
	tr	sh a/a	
4115	95	halite a/a	
	5	anhy a/a	
	tr	sh a/a	
4120	100	halite, clr, translucent, xln, hd, brittle	
4125		a/a	
4130		a/a	
4135		a/a	
4140		a/a	
4150		a/a	
4160		a/a	
4170	100	halite, trse pink, else a/a	
	tr	sh, dk gy, firm-hd, sl dol	
4180	80	salt (Na,K?, M?) clr, opaque, pink-red,	
		hd, brittle, xln, arg in pt	
	15	sh, dk gy, firm-hf, sl dol, occ associated	
		w/salt	
	5	anhy, gy wh, chalky, massiv, firm	

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WELLSITE SAMPLE DESCRIPTION

COUNTRY: NORWAY | AREA: NORTH SEA | FIELD: 15/12-Delta
WELL NO.: 15/12-3
COORDINATES: 58 ° 14 ' 36.59" N ; 01 ° 52 ' 45.67 " E
K.B.E.: 25 meters | COMPANY: STATOIL/ESSO
HOLE SIZE: 8 1/2" | GEOLOGIST: Kristensen | DATE: 25.11.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
4190	80	salt (Na, K?, Mg?):pink-dk red, clr, translucent-opaque, brittle, xln, hd, often	NO SHOWS
		associated w/sh	
	20	sh:dk gy-blk, hd, sl dol in pt, often	
		associated w/salt	
	tr	anhy:gy wh, chalky, massiv, firm	
	tr	dol:gy brn, hd, xln, sucrosic	
4200	90	salt: a/a	NO SHOWS
	10	sh: a/a	
4210	90	salt: a/a	NO SHOWS
	10	sh: a/a	
	tr	anhy:wh, chalky, massiv, sft-firm	
4220	90	salt a/a	NO SHOWS
	10	sh a/a	
4230	90	salt a/a	NO SHOWS
	10	sh a/a	
4235	100	sh:brn, hd, dense, dol,	NO SHOWS
	tr	salt/sh a/a	
4240	95	sh:brn, dk gy-blk, hd, dense, occ associated w/salt	NO SHOWS
	5	salt a/a	
4245	100	sh:dk gy-blk, hd, dense, occ associated w/salt	NO SHOWS
4250	80	sh:brn, occ dk gy-blk, dense, hd, associated w/ salt in pt	NO SHOWS
	20	salt:pink-red, xln, hd, brittle	
4255	100	sh:brn, tr dk gy, hd, dense, dol, occ associated w/ salt:pink-red, xln, hd	NO SHOWS
4260	100	sh:dk gy-blk, brn, hd, dense, dol, occ associated w/ salt:clr, pink-red, xln, hd	NO SHOWS
4265	100	sh:dk gy-blk, dense, hd, dol, in pt grdng into dol:hd, sucrosic, v arg	NO SHOWS
	tr	salt:lt pink-red, xln, hd, brittle	
4270	100	sh:sl calc, dol, else a/a	NO SHOWS
	tr	salt:clr-mlky, xln, hd, brittle	
	tr	anhy:wh, massiv, sft	
4275	95	sh:occ brn gy, else a/a	NO SHOWS
	5	salt:a/a, occ pink-red	
	tr	anhy a/a	

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WELLSITE SAMPLE DESCRIPTION

COUNTRY: NORWAY | AREA: NORTH SEA | FIELD: 15/12-Delta
WELL NO.: 15/12-3
COORDINATES: 58° 14' 36,59" N ; 01° 52' 45,67" E
K.B.E.: 25 meters | COMPANY: STATOIL/ESSO
HOLE SIZE: 8 1/2" | GEOLOGIST: Kristensen | DATE: 25.11.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
4280	100	sh; dk gy-blk, dense, hd, sl calc, dol, occ grdng into dol	NO SHOWS
	tr	salt; clr, translucent, pink-red, hd, xln, brittle	
	tr	anhy; wh, massiv, sft	
4285		a/a	"
4290	100	sh; dk gy-blk, brn gy, else a/a	"
	tr	salt; a/a	
	tr	anhy:a/a	
4295	100	sh; dk gy-blk, brn gy-brn, hd, sl calc, dol	"
	tr	salt; clr, translucent, lt pink-red, hd, xln	
	tr	anhy; wh-gy wh, massiv, sft	
4300	100	sh; brn, hd, sl calc, dol	"
	tr	salt; a/a	
	tr	anhy; a/a	
4305		a/a	"
4310	100	sh; brn, occ dk gy-blk, else a/a	"
	tr	salt; a/a	
	tr	anhy; a/a	
4315	100	sh; brn, hd, sl calc, dol	
	tr	salt; a/a	
	tr	anhy;a/a	
4318	50	sh; a/a	"
	40	anhy; translucent-opaque, massiv, sft, occ gy wh	
	10	salt; clr-translucent, lt pink, hd, xln	
4321	70	anhy; gy wh-wh, massiv, chalky texture, sft-firm, in pt opaque-translucent, xln, hd	"
	25	sh; dk gy-blk, hs, dol	
	5	salt; clr-translucent, xln, hd, brittle	
4324	80	anhy; a/a, increase of xln anhy	"
	20	sh; a/a, occ associated w/salt; pink-red, xln, hd	
4327	80	anhy; a/a	"
	20	sh; dk gy-blk, hd, dol	
	tr	salt; clr, pink, xln, hd, brittle	

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WELLSITE SAMPLE DESCRIPTION

COUNTRY: NORWAY | AREA: NORTH SEA | FIELD: 15/12-Delta

WELL NO.: 15/12-3

COORDINATES: 58 ° 14 ' 36,59" N ; 01 ° 52 ' 45,67 " E

K.B.E.: 25 meters | COMPANY: STATOIL/ESSO

HOLE SIZE: 8 1/2" | GEOLOGIST: Kristensen /Østby | DATE: 02.12.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
4400	60	sst: red-red gy, vf-f, subang, fair srtd, hd-v hd, dol cmtd, arg in pt, mic- v mic,	NO SHOWS
		no vis por	
	40	sh: red, mod hd-hd, non slty-slty, occ sdy,	
		sl calc/dol, mic	
	tr	sh: dk gy, hd, dol	
4403	70	sst: red-red gy, gy, else a/a	
	30	sh: red a/a	"
	tr	sh: dk gy, hd, dol	
	tr	salt: clr, translucent, xln (probably caring)	
4406	80	sst: a/a	
	15	sh: red a/a	"
	5	sh: dk gy a/a	
4409	80	sst: a/a	
	15	sh: red a/a	"
	5	sh: dk gy a/a	
	tr	ls: wh, mod hd, xln	
	tr	salt: clr, v lt brnish, translucent, xln	
4412	80	sst: a/a	
	10	sh: red a/a	"
	5	sh: dk gy a/a	
	5	salt: a/a	
	tr	ls a/a	
4415	50	sst: a/a	
	30	sh: red a/a	"
	10	sh: dk gy a/a	
	5	ls:a/a	
	5	salt: a/a	
4418	80	sst: a/a	
	15	sh: red a/a	
	5	sh: dk gy a/a	"
	tr	ls a/a	
4421	75	sst: a/a	
	10	sh: red a/a	
	5	sh: dk gy a/a	"
	10	salt: a/a	
4424	85	sst a/a	
	10	sh: red a/a	"
	tr	salt: a/a	

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WELLSITE SAMPLE DESCRIPTION

COUNTRY: NORWAY	AREA: NORTH SEA	FIELD: 15/12-Delta
WELL NO.: 15/12-3		
COORDINATES: 58 ° 14 ' 36.59" N ; 01 ° 52 ' 45.67 " E		
K.B.E.: 25 meters	COMPANY: STATOIL/ESSO	
HOLE SIZE: 8 1/2"	GEOLOGIST: Østby/Ljones	DATE: 09.12.80

DEPTH	LITH. %	LITHOLOGIC DESCRIPTION	Shows & Remarks
4424		SEE CORE DESCR.	
4433		CORE NO.2	
4433		DRLD WITH DIAMOND BIT	
4450		UNINDENTIFIED FORMATION	
T.D.			

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CONVENTIONAL CORE DESCRIPTION

FIELD _____ WELL NO. 15/12-3 AREA North Sea Norway

CORE NO. 2 INTERVAL from 4424 to 4433 CORED 9 m REC 8,93 m 100 %

FORM. Rotliegendes GEOLOGIST M. Østby, T.E. Ljones DATE 8. des 1980

DEPTH	LITHOLOGY/ GRAIN SIZE (mu si vf f m c vc)	DIP (apparent)	SHOWS STAIN S F G	CUT P F G	FLUOR P F G	Φ P F G	LITHOLOGIC DESCRIPTION	MISC.
4424							sh: red brn, mod hd-hd, slty occ sl sdy, sl micac, non calc	no shows
4425							sst with v micac laminae	
	M						sst: red brn, occ wh-lt brn, qtz, vf-f, subang-sburnd, hd, no vis pot, v micac-micac, non calc, qtzitic	
4426	M							
	M							
4427	M							
	M							
4428	M							
	M							
4429	M							

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CONVENTIONAL CORE DESCRIPTION

FIELD _____ WELL NO. 15/12-3 AREA North Sea, Norway

CORE NO. 2 INTERVAL from 4424 to 4433 CORED 9m REC 8,93m 100%

FORM. Rotliegendes GEOLOGIST M.Østby, T.E. Ljones DATE 8 des.1980

DEPTH	LITHOLOGY/ GRAIN SIZE (mu si vf f m c vc)	DIP (apparent)	SHOWS STAIN S F G	CUT P F G	FLUOR P F G	Φ P F G	LITHOLOGIC DESCRIPTION	MISC.
	M						sst with v micac laminae	no shows
4430							sst: red brn, occ wh- lt brn qtz, vf-f, subang-subrnd, hd, no vis por, v micac, non calc, qtzitic	
	M							
	M							
4431								
	M							
	M							
4432								
	M							
	M							
4433								

mu si vf f m c vc →

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CONVENTIONAL CORE DESCRIPTION

FIELD Wildcat	WELL NO. 15/12-3	AREA North Sea	
CORE NO. 1	INTERVAL from 3256 to 3263,3	CORED 7,3 m	REC 7,3 m 100 %
FORM. Heather	GEOLOGIST Nygård/Kræmer	DATE 17/10-80	

DEPTH	LITHOLOGY/ GRAIN SIZE (mu si vf f m c vc)	DIP (apparent)	SHOWS STAIN S F G	CUT P F G	FLUOR P F G	Φ P F G	LITHOLOGIC DESCRIPTION	MISC.
							Dolomite, lt-med gy, wh, occ brnish gy, vhd-hd, arg unbd w/lams & thin layers	
3257							of shale, dk gy-blk, hd, sl calc, sl micromicac	
3258							carysized fractures w/sec fillings of dol a/a	
3259							lams of shale only from 32610,10 and dowowards inclin.30°	
3260								
3261							Tr: Anhydrite, amorphic, wh, mod hd	

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CONVENTIONAL CORE DESCRIPTION

FIELD Wildcat | WELL NO. 15/12-3 | AREA North Sea

CORE NO. 1 | INTERVAL from 3256 to 3263,3 | CORED 7,3 | REC 7,3 | 100 %

FORM. Heather | GEOLOGIST Nygård/Kræmer | DATE 17/10-80

DEPTH	LITHOLOGY/ GRAIN SIZE (mu si vf f m c vc)	DIP (apparent)	SHOWS STAIN S	STAIN F	STAIN G	CUT P	CUT F	CUT G	FLUOR P	FLUOR F	FLUOR G	Φ P	Φ F	Φ G	LITHOLOGIC DESCRIPTION	MISC.
3262															Dolomite, lt gy-wh-clr, occ arg, hd, occxln thin lams of shale, dkgy-blk, mod hd, sl calc, sl micromicac	no shows
3263															Tr: anhydr, wh, mod hd, amorphic	

mu si vf f m c vc →

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Den norske stats oljeselskap a.s

SIDEWALL CORE DESCRIPTION

COUNTRY: NORWAY	AREA: NORTH SEA	FIELD: 15/12-Delta
WELL NO.: 15/12-3	RUN NO.: 1	INTERVAL: 3115m - 3318m
COORDINATES: 58 ° 14 ' 36.59 " N ; 01 ° 52 ' 45.67 " E		
K.B.E.: 25 meters	COMPANY: STATOIL/ESSO	
HOLE SIZE: 12 1/4"	GEOLOGIST: Nygård	DATE: 26.10.80

DEPTH	REC.	LITHOLOGIC DESCRIPTION	POROSITY	SHOWS
3264.5	1cm	sh: med gy, firm, v slty, calc, micromic, pyr, occ w/slty strks,occ grains of sd, vf, clr, subang	POOR	v slow str wh cut
3266.5	2,2cm	sh: med-dk gy, mod hd-firm, slty, calc, micromic, occ pyr conc	POOR	NO
3318	1,5	halite: clr, buff, pink in strks, xln, hd	POOR	NO
		remarks: 24 misrun (not shot)		
		3 empty		
		3 recovery		

4.00.15

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SIDEWALL CORE DESCRIPTION

COUNTRY: NORWAY	AREA: NORTH SEA	FIELD: 15/12-Delta
WELL NO.: 15/12-3	RUN NO.: 2	INTERVAL: 2328.5m - 3110m
COORDINATES: 58 ° 14 ' 36.59" N ; 01 ° 52 ' 45.67" E		
K.B.E.: 25 meters	COMPANY: STATOIL/ESSO	
HOLE SIZE: 12 1/4"	GEOLOGIST: Nygård	DATE: 26.10.80

DEPTH	REC.	LITHOLOGIC DESCRIPTION	POROSITY	SHOWS
2650	2,0	sh: med gy, hd, fiss, non calc, micromic, plantremains, forams	POOR	v slow str wh cut
2708	2,0	ls: wh-lt gy, firm-mod hd, chlky, sl arg	POOR	NO SHOWS NO CUT
2742	1,0	ls: wh-lt gy, firm, chlky, arg	"	"
2891	1,3	ls: lt gy, firm, shlky, arg, occ thn lam of sh, occ marly	"	"
2900	2,4	marl: red-brn, firm, micromic, glauc spots	"	"
2988,5	3,0	marl: med gy, firm-mod hd, fiss	"	"
2995,5	2,0	marl: med gy, firm, subfiss	"	"
3005,7	2,0	sh: dk gy, hd-v hd, subfiss, v sl calc, sl micromic, blk remains of microfoss	"	fast str wh cut
3007,5	2,2	sh: blk-dk gy, hd-v dh, fiss, sl calc	"	"
3051,5	2,1	sh: blk-dk gy, hd, fiss, sl calc	"	"
3056,5	1,5	sh: blk-dk gy, dh, fiss, non calc	"	"
3067	2,1	sh: blk-dk gy, hd, fiss, sl calc, sl micromic	"	"
3102	1,9	sh: blk-dk gy, dh, fiss, sl calc, sl micromic blk spots of lign (planteremains)	"	"
3110	2,3	sh: blk-dk gy, hd, fiss, sl calc, sl micromic blk spots of lign(planteremains),	"	v slow str wh cu
		occ thn strks of pyr/marchasite		
		Remains: 16 misruns (not shot) 14 recovery		

4.00.15

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SIDEWALL CORE DESCRIPTION

COUNTRY: NORWAY	AREA: NORTH SEA	FIELD: 15/12-Delta
WELL NO.: 15/12-3	RUN NO.: 3	INTERVAL: 2951.5 - 3267.5m
COORDINATES: 58 ° 14 ' 36,59" N ; 01 ° 52 ' 45,67 " E		
K.B.E.: 25 meters	COMPANY: STATOIL/ESSO	
HOLE SIZE: 12 1/4"	GEOLOGIST: Nygård	DATE: 26.10.80

DEPTH	REC.	LITHOLOGIC DESCRIPTION	POROSITY	SHOWS
3204	2,3	sh: dk gy, mod hd, fiss, sl calc, slty	POOR	mod str wh cut
3225,5	2,1	sh: dk gy, hd, fiss, non calc, micromic, slty in strks	"	"
3227	1,0	sh: dk gy, hd, fiss, non-sl calc, micromic, sl slty	"	NO
3233	3,0	sh: dk gy, hd, fiss, non-sl calc, micromic	"	mod str wh cut
3240	0,2	sh: dk gy, hs, fiss, sl calc, micromic	"	"
3244,8	3,0	sh: lt gy-grn, firm, non calc, v pyr, slty, sl micromic	"	NO
3248,4	2,8	sh: lt gy-grn, firm, non calc, v pyr slty, sl micromic	"	no cut
3255,5	2,0	dol: lt gy, v hd, sucrosic, slty calc cmtd, v pyr (occ in veins),	"	slow str wh cut
		micromic		
3260,5	2,0	dol: lt gy, v hd, sucrosic, slty, calc cmtd, pyr	"	v slow str wh cut
3265,5	2,0	sh: dk gy, hd, subfiss, calc, occ thn lam of ls/dol, occ pyr,	"	NO
		occ slty		
3267,5	0,5	sh: dk gy-blk, v hd, fiss, non calc sl micromic	"	NO
		Remarks: 17 misruns (not shot)		
		11 recovery (payed for 9)		
		1 empty		
		1 lost		

4.00.15

III DRILLING REPORT

III 1. SUMMARY.

The 15/12-3 was a well designed to test possible hydrocarbons in Jurassic as well as Rotliegende sand. The well was located just south of the boarderline, between the 15/9 and the 15/12 block.

The well was drilled into Rotliegende sandstone, and reached a total depth of 4450m. The drilling was performed by the semi-submersible drilling rig Nordraug in 86m waterdepth.

The drilling mud used in this well can be devided into three; first phase down to the 13 3/8" setting depth bentonite/ligno-sulphate, second stage down to the 9 5/8" setting depth salt saturated, and down to TD oil based mud. The purpose of this was to drill efficiently through the thick saltlayer which had to be penetrated to reach the Rotliegende sand.

However, while drilling 12 1/4" hole with saltsaturated mud, the bottom hole assembly got stuck, and the hole had to be sidetracked. This happened while reaming in limestone, and was probably caused by a combination of inadequat hole cleaning and the fact that the string was pulled into tight hole.

The cutting cleaning equipment used while drilling with oil based mud functioned satisfactorily, and no downtime related to this equipment was antisipated.

No hydrocarbons were encountered, consequently no drillstem-testing was performed.

Nevertheless, total days spent on this location was 187, but this figure also includes 25 days when the rig-crew was on strike. This is 81+25 days more than the prognosis and was caused by hole problems plus some minor BOP-stock problems.

Total costs for drilling this well was approximately 85 mill.N.kr., wherios the budgeted cost was 48 mill. N.kr.

III 2. DRILLING OPERATION IN INTERVALS.

Nordraug arrived on location 15/12-3 at 16.30 hrs. the 19.6.1980. The anchorhandling was some delayed due to bad weather. The well was spudded in 86 m. waterdepth the 21/6 at 07.00 hrs.

The final position was: 58°14'35'' N
01°52'45'' E

36" hole, III-173 m.

Drilled this interval with 26" bit X36" holeopener in one run to 173 m. Used seawater and viscous pills for hole cleaning purposes. Landed and cemented 30" casing.

26" hole, 173-565 m.

Drilled 17 ½" pilothole to 192 m, lost circulation and had to set a cementplug across the 30" shoe. Drilled to 565 m without any other problems. Pulled riser and opened hole with 26" holeopener.
Ran and cemented 20" casing.

17½" hole, 565-2165 m.

Ran BOP-stock, but could not get a pressuretest on it. Pulled it back to surface, and found the AX-ring missing. Ran BOP-stack back with a new AX-ring. Drilled out cement with a 17½" bit and performed leak-off test equal to 1.76 s.g. mudweight.

Drilled down to 2165 m interrupted by wipertrips/dev. surveys every appr. 90 m.

Some problems were encountered with the mud-pumps which caused some downtime in this section. The 13 3/8" casing was run and cemented before the rig-crew started on a 25 days strike.

12 1/4" hole, 2165-3368 m.

Mixed salt-based mud, ran riser and drilled out cement. Ran leak-off test up to 1.75 s.g. without any leak-off.

Had severe trouble drilling down to 2440 m, the hole tended to pack off the bottom hole assembly, and consequently the mudweight was increased to 1.50 s.g. However, the reason for the sloughing hole which acted as if it was underbalanced, might have been a too high salinity of the mud.

Anyhow, a turbine was run and it drilled to 2488 m when circulation partly was lost. Cut back mudweight to 1.40 s.g. and turbodrilled to 2570 m. POOH with the turbine because the holeangle started increasing. Ran a rotary bit and tried to strighten up the hole. Ran back with the turbine and drilled to 2784 m. POOH to test BOP stack, but the wearbushing running and retrieving tool could not pass the lower annular preventer. Set a cementplug in the casing and pulled the stack.Changed out annular preventer rubber which had been teared up, and reran stack. Drilled out cement, and reamed the open hole section when the string got stuck. Tried to back-off the string, but parted the drilling jar instead. Ran several overshots and jarred on the fish for several days without success.

Set a densified cementplug above the fish and sidetracked the hole with a bent sub and a mud-motor.

Drilled with conventional rockbits and also with a diamondbit on turbine down to 3256m. Cut a core at that point, and drilled further down afterwards to 3368 m.

Ran 9 5/8" casing and cemented same. The cement, did not set up before pressuretesting, and consequently the cement at the shoe was squeezed away. Set a retainer above the shoe, and cemented the casing.

8 ½" hole, 3368-4450 m.

Performed three leak-off tests with successively decreasing results. Squeezed the shoe once more, drilled out the cement, and performed a leak-off test without leak-off to 2.10 s.g. Mixed oil based mud and displaced the hole. Drilled down to

3446 m. Lost one handle from the drill-pipe slips in the hole, and this slowed down the penetrationrate and made junk-drilling neccessary.

Drilled with conventional bits in the salt down to 3936, then ran in hole with a stratapaxbit and drilled to 4319 m (2 bits) Drilled to 4424 m with conventional bits, then had to pull the lower marine riser package to repair a leak in the balljoint. Reran riser and cut a core down to 4433 m. Drilled the hole to TD:4450 m. Logged and plugged back the well. The plug back and the anchorhandling was some delayed due to bad weather. The rig was released for 15/9-7 at 20.40 hrs., 24.12.1980.

III 3. EXTRACT OF DAYLY ACTIVITIES.

19.6.80. Nordraug arrived on location 15/12-3 at 16.30 hrs. Started anchorhandling, WOW for 10.5 hours.

20.6.80 WOW, continued anchorhandling at 1330 hrs. and finished same at 2230. Made up bottom hole assembly and mixed spud mud.

21.6.80 Spudded in with 26" bit and 36" holeopener at 07.00 hrs. and drilled to 173 m. Circulated, wipertripped, dropped survey and POOH. Rigged up and ran 30" casing.

22.6.80 Landed 30" casing on 5" HWDP and cemented same. Ran pin connector and drilled out cement to 171 m.

23.6.80 Drilled 17½" pilothole to 192m. Lost circulation partly, and detected leak beneath baseplate. Placed a cementplug at 30" casingshoe and drilled out same. Drilled to 285 m, dropped and retrieved survey.

24.6.80 Drilled to 565 m, circulated and wipertripped. Ran Totco deviation survey and POOH.

25.6.80 POOH, rigged up and logged. Ran ISF/SONIC-GR Displaced riser with seawater and pulled pin-connector. RIH with 26" bit and opend 17½" hole to 26".

26.6.80 Continued to open hole to 26", circulated with seawater, and displaced hole with mud. Wipertripped and POOH. Started to run 20" casing.

27.6.80 Landed and cemented 20" casing. Ran BOP stack.

28.6.80 Landed and latched on BOP to wellhead. Attempted to test the BOP without any success. Pulled the stack and found the AX gasket missing. Installed new, and ran the BOP-stack.

29.6.80 Tested BOP. OK. RIH with 17½" bit and started drilling cement.

30.6.80 Drilled cement, shoe and three meters of new formation and performed leak-off test equivalent to 1.76 sp.gr. Continued drilling 17½" hole, and ran survey and wipertripped at 661 m, 742m and 831m. Drilled to 862m.

01.7.80 Drilled to 894m, dropped survey and wipertripped. Circulated and POOH.

02.7.80 RIH with new bit. Circulated at 20" shoe while mud logging unit was repaired. RIH and drilled to 941 m. Circulated while mud pump no. 1 was repaired. Drilled to 988m, dropped survey and wipertripped. Drilled to 1083 m.

03.7.80 Circulated, dropped survey and wipertripped. Drilled to 1176m, ran survey and wipertripped.

Drilled to 1244 m.

04.7.80 Drilled to 1252m, dropped survey and POOH. RIH and drilled to 1347m, ran survey and wipertripped. Hole was tight with max. 45 t. drag at 1255 m. Reamed back to bottom and made another wipertrip. Had still 45 t. overpull.

05.7.80 Reamed back to bottom and drilled to 1378 m. Repaired mud pump no. 1, dropped survey and wipertripped. The hole was still tight at 1400 to 1200 m. with 55 t. max. overpull.
Reamed to bottom and drilled to 1446m. One mud pump brake down, consequently pulled up into 20" shoe.

06.7.80 Repaired mud pumps, RIH and drilled to 1478m, ran survey, wipertripped and drilled to 1572 m. Dropped survey and wipertripped.

07.7.80 Drilled to 1667m,dropped survey and POOH.
RIH and drilled to 1726 m.

08.7.80 Drilled to 1761, dropped survey and wipertripped.
Drilled to 1857 m, dropped survey and wipertripped.
Tight hole from 1802 to 1632 with 38 t. max. overpull.
Reamed down to bottom.

09.7.80 Drilled to 1950 m, dropped survey and POOH.

10.7.80 POOH. Damaged the gripping arm in derric, and repaired same. Made up new bit and RIH. Lost the bottom hole assembly 3 stands off bottom. Tried to screw into fish with no success. POOH.

11.7.80 Made up overshot and RIH. Caught the fish and jarred it out. Picked up new bit and BHA and RIH.

12.7.80 RIH and drilled to 2030 m.

13.7.80 Drilled to 2055m, dropped survey and made lo stands wipertrip. Could not retrieve the survey. Drilled to 2122m. Bit torqued up, POOH.

14.7.80 POOH and retrieved survey. RIH with new bit and drilled to 2165m. Wipertripped.

15.7.80 Wipertripped to 20" shoe, reamed from 2116m. to bottom. Dropped survey and POOH. Rigged up to log, ran ISF-SONIC/GR and FDC-GR/CAL.

16.7.80 Finished logging and RIH with bit. Reamed and circulated and POOH. RIH with jetting tool and washed wellhead. Retrieved wearbushing and started to run 13 3/8" casing.

17.7.80 Ran 13 3/8" casing and cemented same. Backed out running tool and laid out landing string.

18.7.80 RIH and washed wellhead. Ran seal assembly and tested BOP stack. Ran wearbushing. Made up new bottom hole assembly with 12 1/4" bit and RIH. Tagged cement and hung off. Tested casing under shearrams. OK. Unlatched LMRP and pulled riser.

19.7.80 Pulled and laid down riser.
Rig on strike at 12.00 hrs.

20.7.-
14.8.80 Rig crew on strike.

15.8.80 Mixed salt based mud. Ran and latched on LMRP.

16.8.80 Tested BOP and attempted to run wearbushing. Was not able to land the wearbushing.

17.8.80 Jetted BOP and wellhead area and ran modified wear-bushing. RIH with new BHA.

18.8.80 RIH. Drilled out cement and casing shoe, and changed out mud to a slightly undersaturated sodiumchloride mud system. Drilled three meter of new formation and ran leak-off test up to 1.75 equiv. mud weight without observing any leak-off. Drilled to 2185 m. and POOH.

19.8.80 Continued POOH. RIH with new bit and drilled to 2258 m. Wipertripped to 13 3/8" esg. shoe with no drag. Drilled to 2305 m.

20.8.80 Drilled to 2347 m. and attempted to make a wipertrip. Got stuck, but managed to work pipe free. Wipertripped to csg. shoe and reamed to bottom. Drilled to 2400 m. and got stuck on connection. Worked pipe free and reamed thight section.

21.8.80 POOH. The hole was thight and the drillstring got stuck several times. RIH with new bit and reamed to bottom. Increased mudweight from 1.22 s.g. to 1.25 s.g.

22.8.80 Reamed thight hole and drilled to 2429 m. Made six stands wipertrip and reamed last stand to bottom. Drilled to 2436 m. Circulated bottom up. Increased mudweight gradually to 1.35 s.g.

23.8.80 Circulating and working pipe whole increasing mudweight to 1.4 s.g. Wipertripped and reamed. Increased mudweight to 1.50 s.g. and POOH. Made up turbine with diamond bit and RIH.

24.8.80 RIH with turbine to 2440 m. and reamed to bottom. Drilled to 2470 m. and circulated bottoms up. Drilled to 2488 m and lost circulation partly. Pulled out to shoe and circulated while cutting mudweight back to 1.40 s.g.

25.8.80 Circulated at 13 3/8" shoe while cutting mudweight to 1.40 s.g. RIH and reamed from 2396 to bottom. Drilled to 2547 m.

26.8.80 Drilled to 2554 m. Got stuck while wipertripping, but worked pipe free. Drilled to 2570 m. and POOH. Made up new BHA with bit and one stab and RIH.

27.8.80 RIH and drilled to 2593, with high RPM and low weight on bit to strighten the hole. Wipertripped four stands and drilled to 2597 m. Circulated.

28.8.80 POOH. Made up turbine and RIH. Drilled to 2620 m.

29.8.80 Drilled to 2620 m, dropped survey and wipertripped to shoe. Reamed back to bottom and drilled to 2680 m.

30.8.80 Drilled to 2713 m, dropped survey and wipertripped, retrieved survey, but no picture obtained. RIH to bottom and ran a new survey. Drilled to 2721 m.

31.8.80 Drilled 12 1/4" hole to 2778 m.

01.9.80 Drilled to 2784 m, dropped survey and POOH. Made up wearbushing running and retrieving tool on HWDP and RIH. Could not get through lower annular preventer, POOH. RIH with openended DP and set a cementplug from 2120 m. to 2070 m and one plug from 2050 m to 2000 m.

02.9.80 POOH. RIH with bit and togged cement at 2037 m. Pressure tested OK, POOH. Pulled BOP stack.

03.9.80 Pulled BOP stack and worked on same.

04.9.80 Worked on BOP-stack.

05.9.80 Worked on BOP-stack, pressuretested same on test-stump and started running the stack.

06.9.80 Ran and landed BOP. Pressuretested the stack and ran wear bushing. Drilled out cementplug and started washing and reaming.

07.9.80 Circulated, washed and reamed thight hole down to 2404 m.

08.9.80 Washed and reamed to bottom at 2784m, circulated and started pulling out of hole. Got stuck at 2715 m. The drillstring packed off and no circulation could be obtained. Jarred on fish and jarred it up to 2634 m.

09.9.80 Jarred on fish: Ran Schlumberger stringshot, but could not get through X-over at 2466 m. Made modification on stringshot and ran throug X-over. Torqued string to the left and fired stringshot. No success, found stringshot not fired. Repaired same and rerun it.

10.9.80 Torqued string to the left and fired stringshot. Pulled drillstring out of hole and found the jar parted at the mandrell upper housing. RIH with overshot.

11.9.80 Continued RIH. Tagged fish at 2466m and catched same. Jarred the fish down to 2477m. Attempted to run stringshot, but could not get through the broken mandell in the Jar. Jarred fish down to 2478m, overshot backed off on connection. Pushed fish down to 2482m. POOH and laid down overshot.

12.9.80 Picked up new overshot and RIH. Catched fish and jarred same down to 2502 m., backed off the overshot and pulled up into shoe. WOW.

13.9.80 RIH to top of fish and caught same. Jarred fish down to 2513m. Washed out seales in overshot when trying to establish circulation. Backed off and caught, fish again, tried to run stringshot, but could still not get through the broken jar. Backed off overshot and POOH.

14.9.80 Made up new overshot RIH and caughed fish. Jarred the fish down to 2554 m. Was not able to get it any further down. Backed off overshot and POOH. Bottom of fish at 2712 m.

15.9.80 Laid down overshot and picked up bit. RIH and tagged fish at 2554 m. Circulated, wipertripped and POOH. Rigged up and ran ISF-SONIC/GR.

16.9.80 Ran FDC-CNL-GR-CAL. RIH with openended drillpipe and set a cementplug from top of fish at 2554m to 2475m. Pulled out four stands and circulated long way. POOH. Retrieved wearbushing and pressuretested BOP-stack.

17.9.80 Continued pressuretesting BOP stack. Ran wearbushing and RIH with bit. Tagged cementplug at 2472 m. Circulated and diluted sodiumcloride content back to 90.000 ppm.

18.9.80 Circulated and conditioned mud. Drilled out cement to 2488m. Wipertripped and POOH. Retrieved wearbushing and retested BOP-stack while WOC.

19.9.80 Ran wearbushing, made up kick-off assembly with turbine and bent sub and RIH. Ran orientationsurvey to orientate BHA. Drilled sidetrucked hole from 2488 m to 2492 m.

20.9.80 Drilled to 2503 m. and POOH. Made up same BHA with new turbine and drilled sidetracked hole from 2503 m to 2504 m.

21.9.80 Drilled to 2510m, dropped survey, retrived same on sandline and POOH.

Made up new BHA with rotary bit and RIH.

22.9.80 RIH. Reamed from 2488m to bottom. Drilled 12 1/4" hole to 2529 m.

23.9.80 Drilled to 2538m. and POOH. Made up drilling turbine and RIH. Drilled to 2557 m.

24.9.80 Drilled to 2561m, circulated, dropped survey wipertripped to shoe and retrieved surveyinstrument. RIH and drilled to 2623m. POOH due to washout in drillstring.

25.9.80 POOH. Found washout in a connection between two HWDP. RIH and drilled to 2657 m.

27.9.80 Drilled to 2740m, ran survey and wipertripped, drilled to 2784m.

28.9.80 Drilled to 2803, dropped survey and POOH. Set back turbine, tested BOP-stack. RIH with new BHA.

29.9.80 RIH and drilled to 2836 m.

30.9.80 Drilled to 2840m, dropped survey and POOH. Made up new bit and RIH. Drilled to 2858 m.

1.10.80 Drilled to 2894 m and circulated bottom up.

2.10.80 Circulated, dropped survey and POOH. Made up new bit and RIH. Drilled to 2908 m.

3.10.80 Drilled to 2950 m.

4.10.80 Drilled to 2964m, circulated, dropped survey and POOH. Made up new bit and RIH.

5.10.80 Drilled to 2993 m.

6.10.80 Drilled to 3043m, circulated and dropped survey. POOH.

7.10.80 POOH. Retrieved wearbushing and tested BOP. Ran wearbushing and picked up new bit. RIH to 13 3/8" shoe and picked up hang-off tool. WOW.

8.10.80 WOW. Retrieved hang-off tool and RIH. Drilled to 3093m.

9.10.80 Drilled to 3128 m.

10.10.80 Drilled to 3132, curculated, dropped survey and POOH. Made up drilling turbine and RIH.

11.10.80 Reamed and washed to bottom. Drilled to 3183 m.

12.10.80 Drilled to 3233m dropped survey and tripped to 13 3/8" shoe.

13.10.80 Retrived survey and RIH. Circulated and POOH. Laid out turbine and picked up new bit RIH.

14.10.80 RIH and drilled to 3250 m.

15.10.80 Repaired mud pump no. 2 and drilled to 3252m. POOH, and tested BOP-stack. RIH with new bit and picked up extra drillcollars.

16.10.80 RIH and drilled to 3256m. POOH and picked up core-barrel and RIH with same.

17.10.80 Cut core no. 1 from 3256 to 3263m. POOH and retrieved core, 100% recovery. Set back corebarrel and RIH with new bit. Worked on racking arm in derric.

18.10.80 RIH to 3256m and reamed out rat-hole from core. Drilled 12 1/4" hole to 3279m. and circulated bottoms up.

19.10.80 Dropped survey and POOH. Retrieved survey, picked up new bit and RIH to 13 3/8" casing shoe. Hung off in wellhead and backed out running string. Stringed up blocks to 12 lines and retrieved hang-off tool.

20.10.80 WOW to unload mudmaterials from workboat. Circulated and increased salinity in mud to 170.000 mg/l. Drilled 12 1/4" hole to 3284 m.

21.10.80 Drilled to 3286m. Pulled up into shoe and circulated while adding sodiumcloride to saturate mud. Drilled 12 1/4" hole to 3306 m.

22.10.80 Mode 2 stands short wipertrip and circulated bottoms up. RIH and drilled to 3331 m. Pulled out to 3280 m and circulated buttoms up. RIH and drilled to 3367 m.

23.10.80 Drilled to 3368m, pulled four stands and circulated bottoms up. RIH to bottom, no fill. POOH and laid down excess drillcollars. Rigged up to log and ran ISF-SONIC-GR. The sonic tool did not function. Ran FDC/CNL-GR-CAL.

24.10.80 Continued logging. Ran FDC/CNL-GR-CAL., HDT, rerun ISF/SONIC-GR, velosity survey and two runs with side-vall cores.

25.10.80 Continued logging. Run no. 2 and no.3 sidewall cores, and CBL in the 13 3/8" casing. RIH for clean-up trip.

26.10.80 Performed clean up trip prior to running 9 5/8" casing Rigged up and run casing.

27.10.80 Continued to run 9 5/8" casing. Landed same with shoe at 3351m, and cemented the string using DV collar at 2369 m.

28.10.80 Ran seal-assembly, but could not get a positive pressuretest. Pulled seal-assembly and ran a new one. Tested same OK. Tested BOP-stack.

29.10.80 Finished testing BOP stack and ran wearbushing. RIH with bit and drilled out DV-tool. Attempted, to test 9 5/8" casing, without any success. POOH and made up RTTS packer.

30.10.80 RIH with RTTS packer and tested the casing in several steps. Found the leakage to be located below 3321 m. POOH.

31.10.80 Made up new BHA with bit and RIH. Tagged float collar and performed leak-off-test to 1.65 equivalent mud-weight. POOH and ran CBL log. RIH with bit.

1.11.80 Drilled out float collar and washed down to the float-shore. Circulated.

2.11.80 Circulated and POOH. Made up casingscraper and RIH.

3.11.80 Worked casingscraper in DV-collar and float collar and POOH. Set ez-sv-drill retainer on wireline at 3324 m and RIH with stinger on drillpipe. Started squeezing cement.

4.11.80 Squeezed cement, poo stingerand reversed out. POOH. RIH with bit and drilled cement and retainer.

5.11.80 Drilled out retainer and cement plus shoe. Performed three leakoff-tests. 1.test: 2.12 s.g., 2.test: 1.97 s.g and 3.test 1.79 s.g. equivalent mudweight.

6.11.80 Ran gaugering and junkbasket on wireline. Found thightspots in DV-collar. Ran bit and scraper. Set retainer at 3322m. and RIH with stinger.

7.11.80 Stung into retainer, but unable to establish injection-rate. POOH. RIH w/openended DP to below wellhead. Circulated and POOH. Retrieved wearbushing and tested BOP on yellow pod: OK. Set wear bushing.
Made up bha and RIH.

8.11.80 Continued RIH and filled pipe after 20,40 and 80 stands. Drilled out retainer at 3322m. RIH to bottom, 1m fill, and drilled junk + new hole from 3370 to 3373 m. Performed FIT twice. Leakoff at 1.67 sp.gr. equivalent POOH. RIH w/openended DP.

9.11.80 RIH to 3347 m. Set 150 m balansed cmt. plug from 3347m to 3197m. with density 1.97 s.g. POOH with 15 stds and squeezed 5.1 m3 cmt. into formation by holding v.p.r. closed and stepwise pump through DP and chokeline. Held backpressure on formation while WOC. POOH.

10.11.80 POOH with open ended DP. Made up new bha. and RIH. Circulated while WOC. Tagged cmt. at 3210m. Drilled cmt. to 3333m. Hand no cmt. underneath. Had 7 m fill when RIH to TD. Washed and worked junk basket.

11.11.80 Performed FIT. Max. pressure equal. to 2.1 s.g. but no leakoff. POOH to 3344. Dumped all surface mud and cleaned all mud system on surface. Hung off string and started to mix. oil based mud.

12.11.80 Mixed oilbased mud. Retrived string in wellhead and RIH to 3345 m. Tested bouth kelly cocks to 345 bar and started to displace hole with oil based mud. Pumped 50 bbls of sea water ahead of the oilbased mud. The first 50 bbls of oil based mud was high viscosity mud.

13.11.80 Continued to displace oilbased mud. Drilled 8½" hole from 3373 to 3446 m.

14.11.80 Dropped survey and POOH. RIH w/new bit and bha. Lost one handle from the slips in the hole. Installed one DP rubber on each stand except the 10 first. Cont. RIH Filled string with mud.

15.11.80 Worked junk to bottom. Torque variations indicated junk below bit drilled 8½" hole from 3440 m to 3591 m.

16.11.80 Drilled from 3591m to 3608m.
Circ. and dropped survey. Retrieved wearbushing.
Ran test plug. Tested BOP. OK.
RIH w/new bit. Filled string.

717.11.80 Cont. RIH. Drilled 8½" hole from 3608m. to 3701 m.
Dropped survey.

18.11.80 Drilled 8½" hole from 3702m to 3776m. Dropped survey. Repaired elevator. POOH to changebit.

19.11.80 RIH w/new bit tight spot at 3563m. Drilled 8½" hole from 3776m to 3854m.

20.11.80 Drilled 8½" hole from 3854m to 3870m. Dropped survey. Cont. drilling down to 3935m. Dropped survey and POOH to change bit.

21.11.80 Cont. POOH. Made up new bit, Christensen Stratapax V037. Drilled 8½" hole form 3936m down to 3988m.

22.11.80 Drilled 8½" hole down to 4023m. Dropped survey. Had tight spots when pipe was pulled into shoe. Washed down from 4007m to 4023m. Drilled 8½" hole down to 4104m. Circulated BTM up and dropped survey. Had problems with Halliburton retrieving line when retrieving survey.

23.11.80 Reamed and washed hole, and increased MW from 1.75 s.g. to 1.80 s.g.
Drilled 8½" hole from 4104 m. down to 4157m. Reamed and washed hole and dropped survey. POOH and changed stab+bit. RIH w/new stratapax bit.

24.11.80 Cont RIH filled pipe regularly. Reamed and washed BTM part of hole.
Drilled 8½" hole form 4157m down to 4234m. Raised MW. from 1.80 s.g. to 1.85 s.g. Circ. BTM up. Dropped survey. Washed and reamed hole to BTM. Cont. drilling. Drilled down to 4250 m.

25.11.80 Drilled 8½" hole from 4250 m to 4316m. Circ. and dropped survey.

26.11.80 RIH to BTM, drilled 8½" hole from 4316m to 4319m, circulated bottoms up. POOH.
Retrieved wearbushing and RIH w/test plug tested BOP. OK RIH with new bit and junk basket.

27.11.80 Cont. RIH, filled pipe with mud regularly.
Drilled 8½" hole from 4319m to 4335m.

28.11.80 Dropped survey. POOH to change bit. RIH with new bit, XDV.
Drilled 8½" hole from 4335m to 4340m. Circulated BTMS up from BOP. Had metal shavings in the cuttings. Checked rig pos. OK. Drilled 8½" hole from 4340m to 4344m.

29.11.80 Cont. drilling. Drilled 8½" hole from 4344m down to 4345m.
Lost mud over the diverter due to partly plugged flow line. Circulated and mixed mud, dropped survey, had misrun. Dropped survey again. OK. POOH.
RIH w/new bit. Drilled 8½" hole from 4345m to 4347m.

30.11.80 Drilled 8½" hole from 4347m down to 4389m. Dropped survey and POOH.

1.12.80 RIH w/new bit and junk basket. Drilled 8½" hole from 4389 down to 4400m.

2.12.80 Drilled 8½" hole from 4400m down to 4401m. Circulated and conditioned mud. POOH. Made up new bit and RIH. Hung off and WOW.

3.12.80 Continued WOW. Retrieved string. RIH and drilled 8½" hole from 4401m to 4409m. Repared lock-bar on heave comp.

4.12.80 Drilled 8½" hole from 4409m to 4424m circulated hole and dropped survey. Retrieved wearbusing, ran test plug and tested BOP. O.K.

5.12.80 RIH w/new bit. Filled pipe with mud regularly installed grey inside BOP 1.std. below hang-off tool. RIH w/same Hung off in wellhead. Closed middlepiperam. Retrieved landing string. Displaced riser w/sea water.

Disconnected lmrp. and pulled riser.
Worked on ball joint.

6.12.80 Changed balljt. Ran lmrp. RIH and retrieved drill string. Made up combination tool, retrieved wear bushing. RIH w/test tool.

7.12.80 Tested riser conn. to 172 bar OK.
Displaced riser w/oil fase. RIH reamed and washed from 4373m down to 4378m. Dropped survey at 4424 m. M/U 30" core BBL and corehead circulated at bottom.

8.12.80 Cored from 4424m to 4433m. Had tight hole at 4380 m. When pulling out.

9.12.80 Drilled 8 15/32"hole from 4433m to 4450m. T.D. Circulated Btms. up.
Reamed hole and dropped survey. Rigged up Schlumberger, started logging.

10.12.80 Continued logging.
Waited on Schlumberger equipment.

11.12.80 Continued logging.
Circulated and conditioned mud. Set 200 m. cmt. plug from 4450m. to 4250m.

12.12.80 Continued cementing. Had 47 bar back pressure.
Reversed out cmt. slurry. Circulated and conditioned mud. Set new cmt. plug from 4450m to 4250m. PU 16 stds and reversed out.
Set balanced cmt. plug from 3400m to 3250m.
RIH w/8½" bit and Scraper.

13.12.80 Tagged cmt. plug at 3335m. Dressed of cmt. Circulated.
Pressure tested plug to 70 bar. OK. POOH.
RIH with gauge ring and junk basket.

14.12.80 Set bridge plug at 3336m. RIH w/open DP. Circulated and conditioned mud. Set cmt. plug from 3336 to 3235m.
POOH to 2150 m.
Displaced oil mud with seawater/polymer mud 1.25 s.g.
RIH with Schlumberger and perforated 9 5/8" csg. at 2052,5m with 1 11/16" puncher gun. Tested surface lines. OK. Tested csg. and had no pressure drop.
Reperforated 9 5/8" csg. at 2050 m w/six shots.

15.12.80 Tested csg. to 240 bar and had 24 bars pressure drop. After 10 min. RIH w/2 1/8" enerjet to 2052m. Pressured up annulus to 34.5 bar and perforated w/4 shots. Had 20.7 bar pressure drop.
Performed injection rates, set retainer at 2045m. Had to hang off due to weather. RIH and stung into retainer.
Pressure tested annulus and surface lines. OK.

16.12.80 Squeeze cemented. POOH retainer and laid cement plug on top same. POOH w/2 stos and reversed out. Circulated.
RIH w/Schl. perf. gun to 450 m. applied 35 bar on ann. and perforated 9 5/8" csg. and pressure dropped to 7 bar.
RIH and cut 9 5/8" csg at 541m. POOH w/csg. cutter.

17.12.80 WOW. RIH w/spear grapple and POOH w/9 5/8" csg.
RIH and set balanced cmt. plug from 600 m to 500 m.
Po to 500m and rev. out. Rih and attempted to perforate 13 3/8" csg. No success. Rerun perforating gun. But had missfire pressure tested csg. Press did not drop.

Rigged up Schl. and ran enerjet perf. gun.

18.12.80 Perforated 13 3/8" csg. at 450m w/2 1/8" enerjet perf.gun. Established injection rate w/B.J. Unit.
RIH with 12 1/4" bit and scraper to 500 m circ. and cond. mud.
Set retainer at 442m, stung into it and squeeze cmt.
Dumped cmt. plug on top of retainer.
RIH w 1 9/16 puncher gun, tried to perforate 13 3/8" csg. at 120m, no success.
Cut 13 3/8" csg. at 200m and rih w/grapple for retrieving.

19.12.80 Pulled 13 3/8" csg. no overpull. RIH w/17 ½" bit and tagged top of 13 3/8" csg. Circulated and conditioned mud. RIH and set cmt. plug from 250m to 150 m. Pulled BOP and riser. Made up cutting assy for 20" csg.

20.12.80 WOW. RIH with cutting assy and cut 20" csg. at 118m.
POOH. RIH and cut 30" csg. at 118m. RIH with 18 3/4" WH housing running tool. Screwed into wellhead. But was not able to retrewe w.h.
RIH w 30" cutting assy. Started cutting 30" csg.

21.12.80 Twisted off string. POOH w/same RIH w. overshot
was not able to get out fish.
RIH w/Taper tap, stabbed into fish and retrieved same.
RIH w/csg. cutting assy. Cut 30" csg.at 118m,
string torqued. up POOH.
RIH w/18 3/4" wh. running tool, screwed into w.h.
pulled out 30" csg. and 20" csg. and baseplate.
Jumped Scandive.
Started handling anchor.

22.12.80 Deballasted rig to 60'. Pulled anchors. WOW.
Pulled anchors.

23.12.80 Handled anchors.
WOW.

24.12.80 WOW.
Deballasted rig to 21'.
All anchors up at 20.40 hours.

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Den norske stats oljeselskap a.s

III 4. WELLBORE SCHEMATIC: 15/12-3

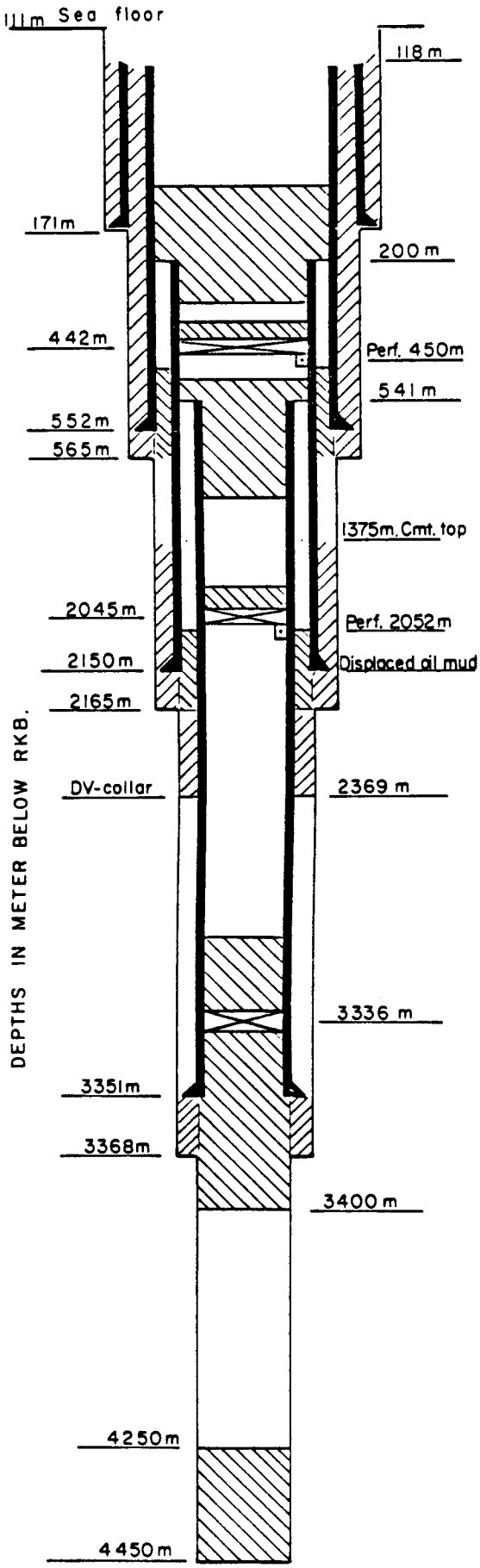
(Not to scale)

RKB - MSL: 111 m.

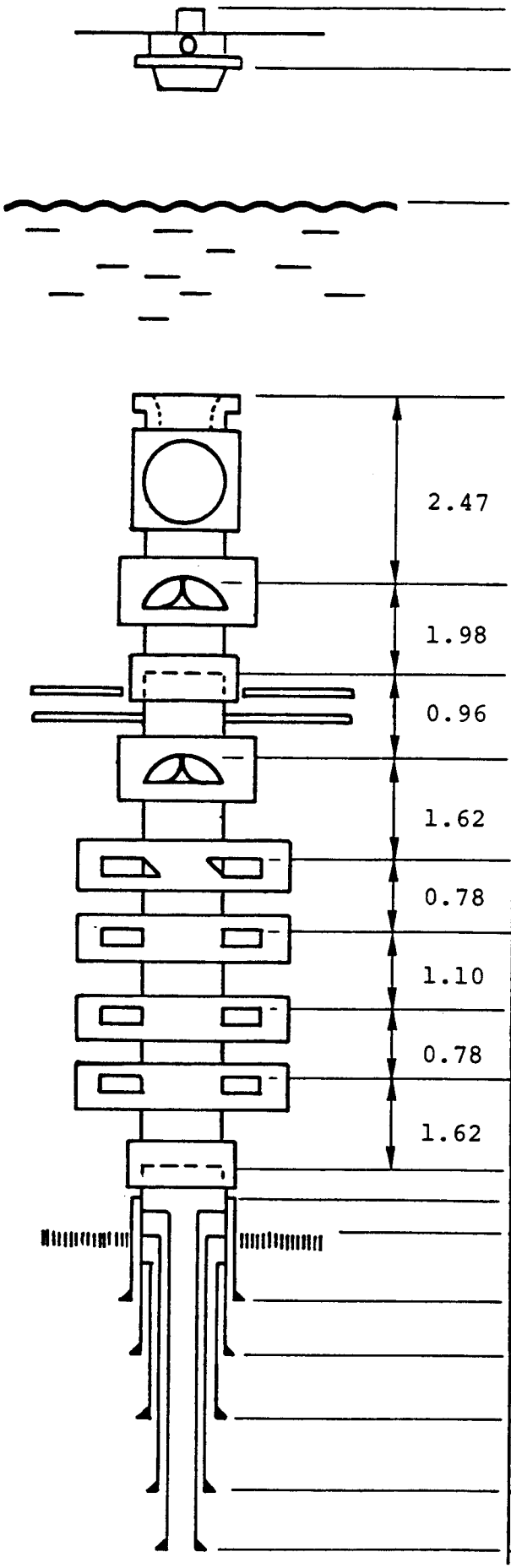
WATER DEPTH: 86 m.

Orginal av: KRB
Tegnet av: AM
Dato: 3-6-81

Hole	Casing
36"	30" Grade B 1jt+1.5"th 3jts 1"th
26"	20" 94 lb/ft X-56 LS
17 1/2"	13 3/8" 72 lb/ft N 80 Buttr.
12 1/4"	9 5/8" 53.5 lb/ft 111-3151 m P-110 Buttr. 3151-3351m MW125 Buttr.
8 1/2"	



Casing cement	Plugs / Squeeze
LEAD: 16.5t "G" cmt. w/3.2 1/100 kg. A-3L 1.56 s.g. slurry TAIL IN: 13 t. "G" cmt. w/1.8 1/100 kg. $CaCl_2$ 1.91 s.g. slurry	Cut 20" csg and 30" csg at 118 m.
	Set balanced cmt.plug from 250m to 150m: 17.2mt class "G" cmt mixed w/seawater, sp.g 1.93
LEAD: 85.6t "G" cmt. w/3.2 1/100 kg.A-3L and seawater, 1.56.s.g. slurry TAIL IN: 13t "G" cmt w/5.7 m3 seawater 1.9 s.g.slurry	Cut 133/8"csg at 200m
	Squeezed 6.1mt class cmt mixed w/seaw.Sp.gr 1.92 Laid 0.5m3 cmt on top of retainer
	Set balanced cmt.plug 600 to 500m: 9.4mt cla "G" cmt.mixed w/seawa Sp.gr.:1.92
	Cut 20"csg. at 541 m.
LEAD: 101.8 t "G"cmt. w/3.55 1/100 kg A-3L and 0.27 1/100 kg R-14L 1.56 s.g. slurry TAIL IN: 13 t. "G" cmt w/0.9 1/100 kg. R-12 1.9 s.g. slurry	
	Squeezed 5 mt class "G cmt.through 9 5/8" re mixed w/1.78 1/100 kg D-19LN and 0.9 1/100 R-12L.Sp.gr.:1.9. La 0.6 m2 slurry on top retainer
	Displaced oil mud w/s polymer mud w.1.25 De 2150 m.
DV-collar installed at 2369 m. 1. stage: 60.2t "G" cemt. w/30.8m3 saltw. and 1628 l D19LN and 601 L R12L slurryw. 1.9 s.g. 2. stage: 43.3t "G" cmt. w/18.8 m3 freshw and 390 l R12L slurryweight 1.9 s.g.	
	Set cmt.plug from 333 to 3235 m. 3.8mt cla "G" cmt are blended w. A-5 and Disc. Mixed w. f.water and 10 l. R-14L. Sp.gr.: 1.7
	Set bridge plug at 3336 m.
	Set cmt.plug from 340 to 3336 m (should have been 3250). 7.5 mt class "G" cmt.premixed w/41.8% A-5 and 35% D-8C. Mixed w/fresh-water and 201 R-14L
	Set cmt.plug from 445 to 4250 m. 9.2 mt cla "G" cmt.premixed with 41.8% A-5. Mixed with 3.9 mt.freshwater + 45 l. R-14 L. Sp.gr.: 1.97



M.	
0	RKB
	DIVERTER RISER CONNECTOR FLANGE
25	SEA LEVEL MEAN
97.7	JOINT RISER CONNECTOR FLANGE
100.2	UPPER ANNULAR RUBBER TOP (CLOSED)
102.1	LOWER STACK ASSEMBLY TOP
103.1	LOWER ANNULAR RUBBER TOP (CLOSED)
104.7	SHEAR RAMS TOP
105.5	U.P. RAMS TOP
106.6	M.P. RAMS TOP
107.4	L.P. RAMS TOP
109.0	18 3/4 WELLHEAD TOP
109.4	30" HOUSING TOP
111.0	MUD LINE
171	30" SHOE
552	20" SHOE
2150	13 3/8" SHOE
3351	9 5/8" SHOE
	7" SHOE

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FORMASJONSSTYRKETEST

Dato: 30/6-80

Brønn nr.: 15/12-3 **Dybde:** Brønn: 565 m. Foring: 552 m. Test: F.I.T.

Fartøy: NORDRAUG **Høyde R.K.B.:** Over vannfl.: 25 m. Over sjøb.: 109 m.

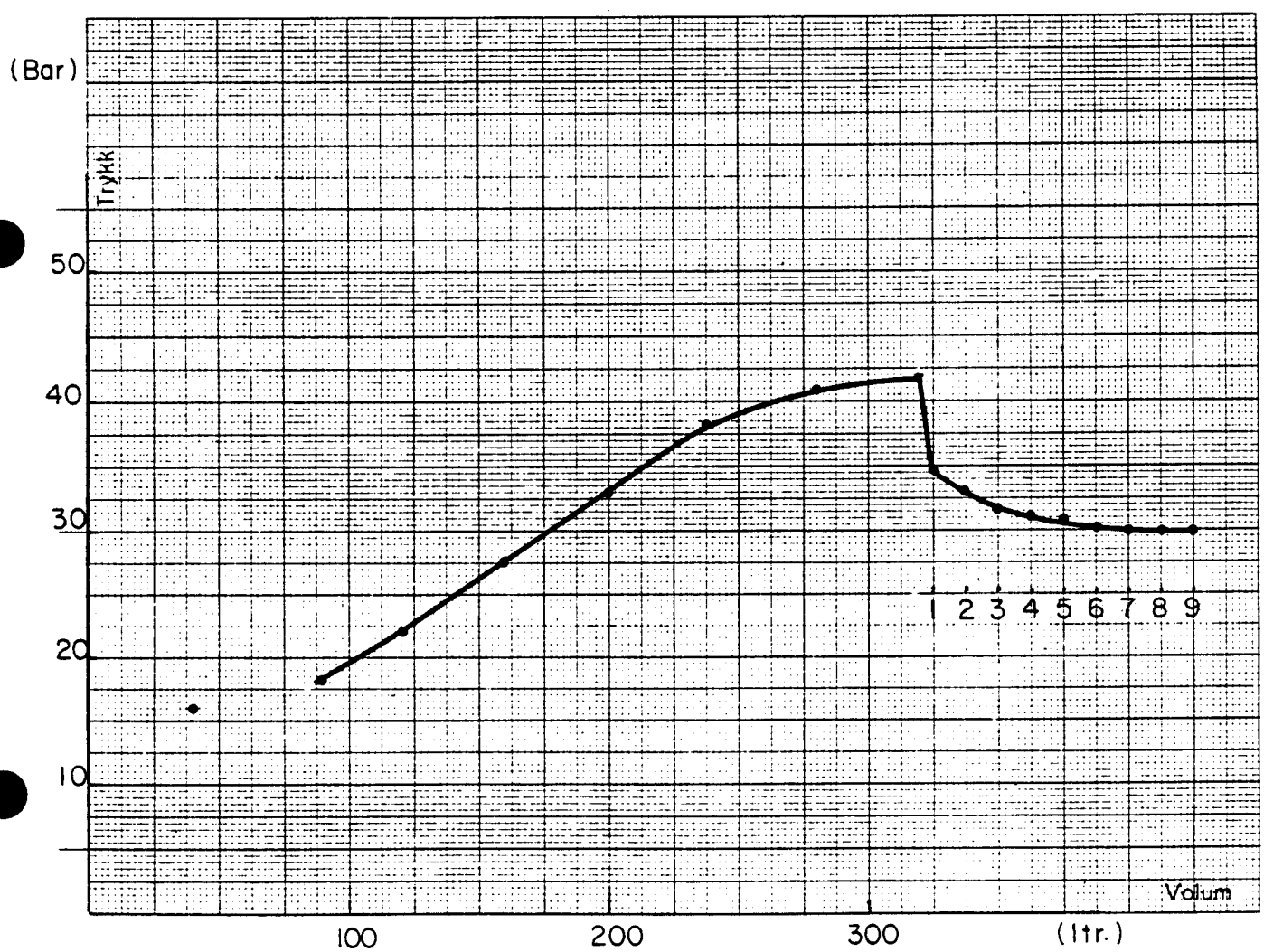
Foring: Diam.: 20" Tyngde: 94 lb/ft. Grad: x56 Maks. trykk: 145 bar

Boreslam: Tetthet: 1.04 sg. Vis: 100+ P.V.: - Y.P.: - Filt: - Gel.: -

Pumpe: Type: B.J. Kapasitet: Vol./tidsenh.: 79/5 l/min Tilb.str.: 238 l

Antatt styrke: 1.6 sg. Obs. spr. trykk: 37.9 bar Ekv. formasj. styrke: 1.76 sg.

Volum/tid	Trykk (Bar)	Volum/tid	Trykk	Volum/tid	Trykk	Anmerkninger
40	15.5	1 min.	34.5	9 min	29.7	
79.5	17.2	2 min.	33			
119	22	3 min.	31.7			
159	27.5	4 min.	31.4			
199	32.8	5 min.	30.7			
238.5	37.9	6 min.	30.3			
278	40.7	7 min.	30			Sign.:
318	41.4	8 min.	29.7			



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FORMASJONSSTYRKETEST

Dato: 19/8-80

Brønn nr.: 15/12-3 **Dybde:** Brønn: 2165 m. Foring: 2150 m. Test: F.I.T.

Fartøy: NORDRAUG **Høyde R.K.B.:** Over vannfl.: 25 m. Over sjøb.: 109 m.

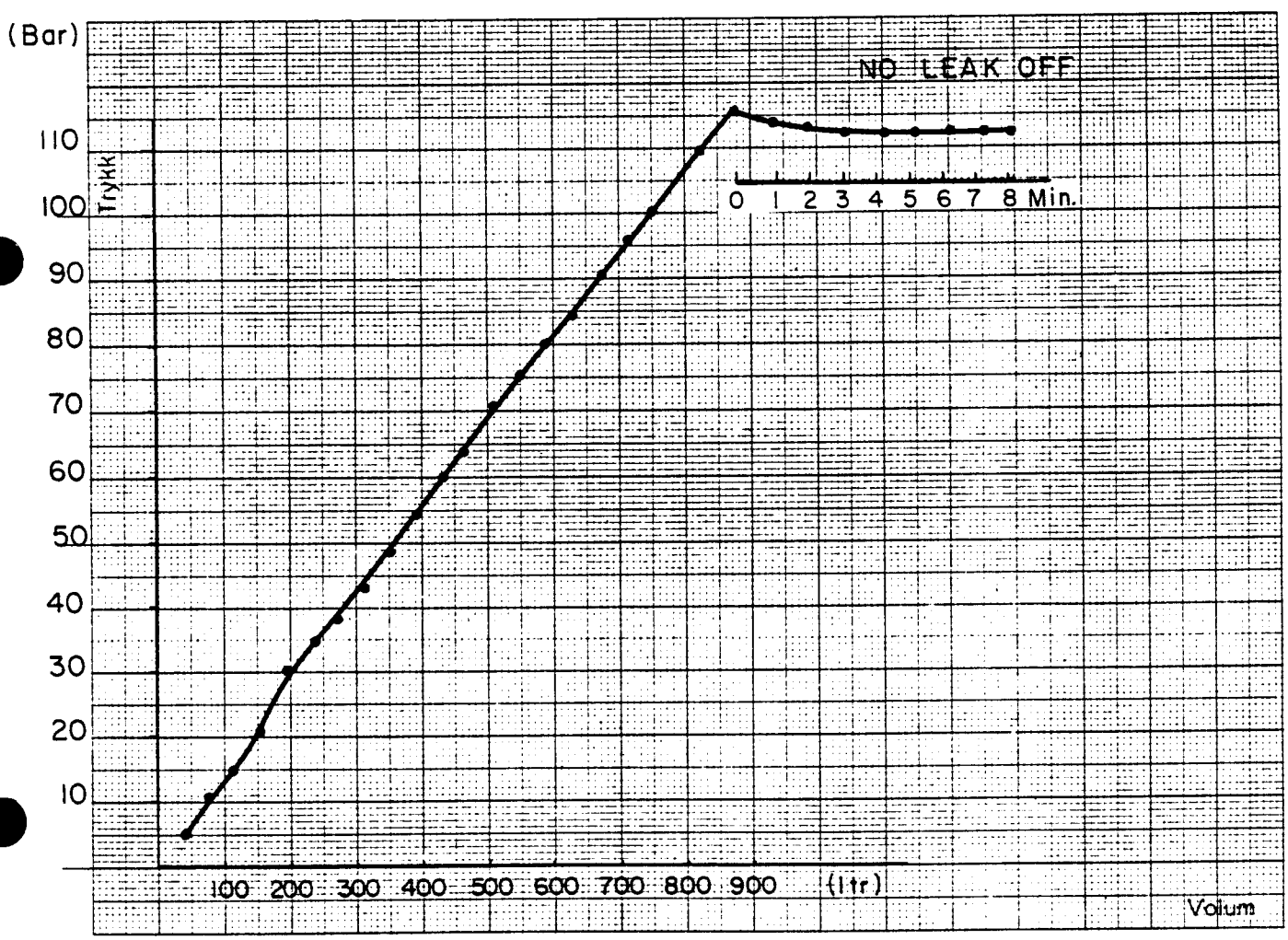
Foring: Diam.: 13 3/8" Tyngde: 72 lb/ft. Grad: N-80 Maks. trykk: 371 bars

Boreslam: Tetthet: 1.20 sp.gr. Vis: 43 P.V.: 15 cp Y.P.: 12 lb/100 ft^2 Filt: 6.2 Gel 2/2 lb/100 ft^2

Pumpe: Type: B.J. Kapasitet: Vol./tidsenh.: 79.5 l/min. Tilb.str.: 874.2 l.

Antatt styrke: 1.75 sp.gr. Obs. spr. trykk: 116 bars Ekv. formasj. styrke: 1.75 sp.gr.

ltr. Volum/tid	Bar Trykk	Ltr. Volum/tid	Bar Trykk	Ltr. Volum/tid	Bar Trykk	Min. Bar Anmerkninger
40	4.8	357.5	49	675.7	91	3 - 112
79.5	10.3	397.5	54.5	715.5	95	4 - 112
119	14.5	437.2	60.3	755	100.5	5 - 112
159	20.7	477	63.8	795	104	6 - 112
199	29.3	516.5	70.5	834.5	109.5	7 - 112
238.5	33.8	557.5	75.5	874.5	116	8 - 112
278	38	596	80.7	1 min.	114	Sign.:
318	43	636	85	2 min.	113	



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FORMASJONSSTYRKETEST

Dato: 31/10-80

Brønn nr.: 15/12-3 **Dybde:** Brønn: 3367 Foring: 3351 Test: F.I.T.

Fartøy: NORDRAUG **Høyde R.K.B.:** Over vannfl.: 25 m. Over sjøb.: 109 m.

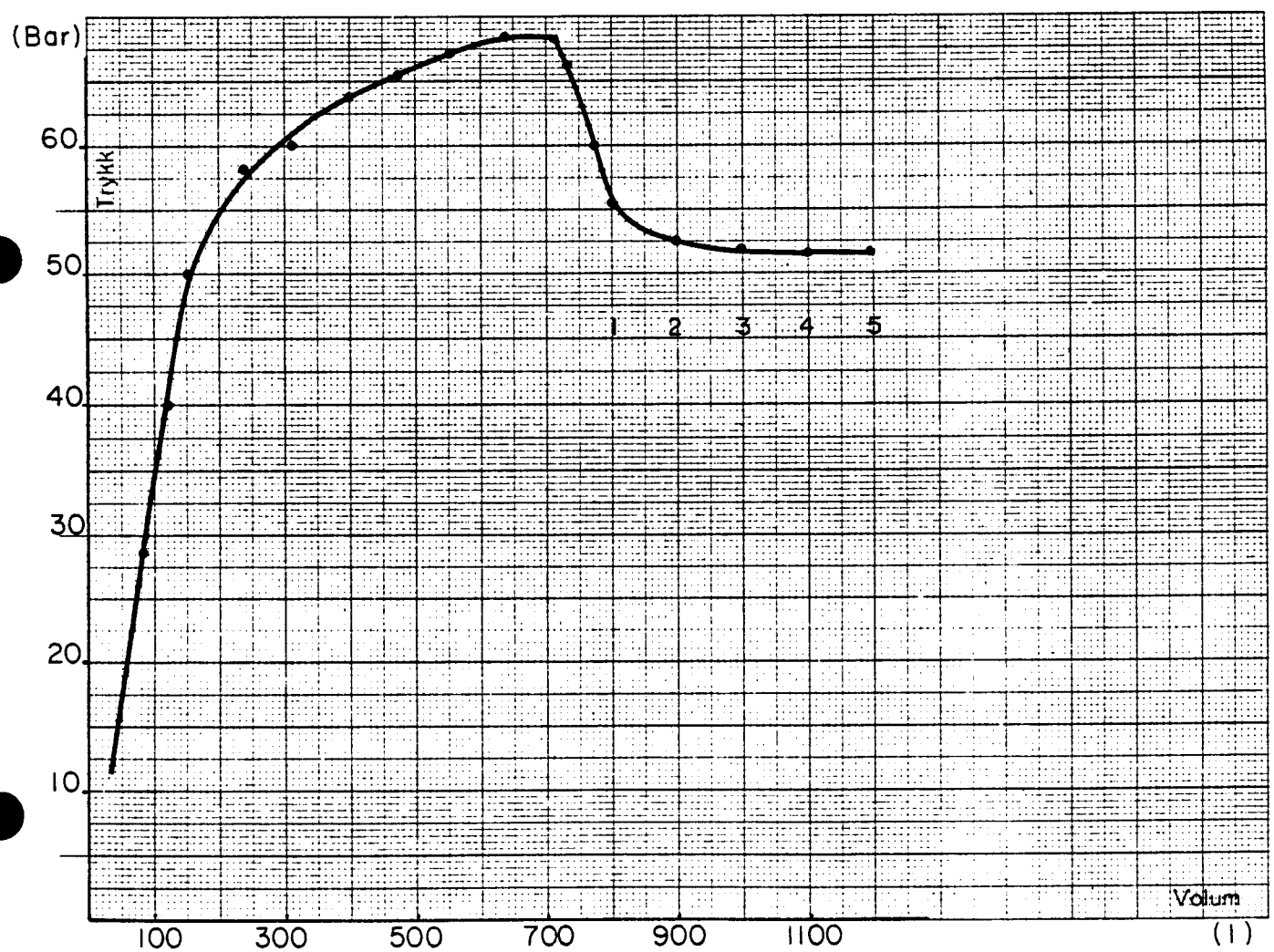
Foring: Diam.: 9 5/8" Tyngde: 53.5# /ft. Grad: PII0/MW125 Maks. trykk: 538 BAR

Boreslam: Tetthet: 1.48 sg. Vis: 60 P.V.: 20 Y.P.: 21 Filt: 10.0 Gel.: 5/21

Pumpe: Type: B.J. Kapasitet: Vol./tidsenh.: 79.5 Tilb.str.: 238.5 l.

Antatt styrke: 1.8 sg. Obs. spr. trykk: 55.9 BAR Ekv. formasj. styrke: 1.65 sg.

L.	Bar	L.	Bar	Min	Bar	
Volum/tid	Trykk	Volum/tid	Trykk	Volum/tid	Trykk	Anmerkninger
79.5	27.6	715.5	68.3	0	55.2	
159	51.7			1	53.4	
238.5	58.6			2	52.4	
318	60.3			3	51.7	
397.5	63.8			4	51.4	
477	65.5			5	51.4	
556.5	67.2					Sign.:
636	68.3					



III.7. TOTALT 19/6 - 24/12

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TIDSFORDELING FOR BORERIGG

Brønn nr.: 15/12-3

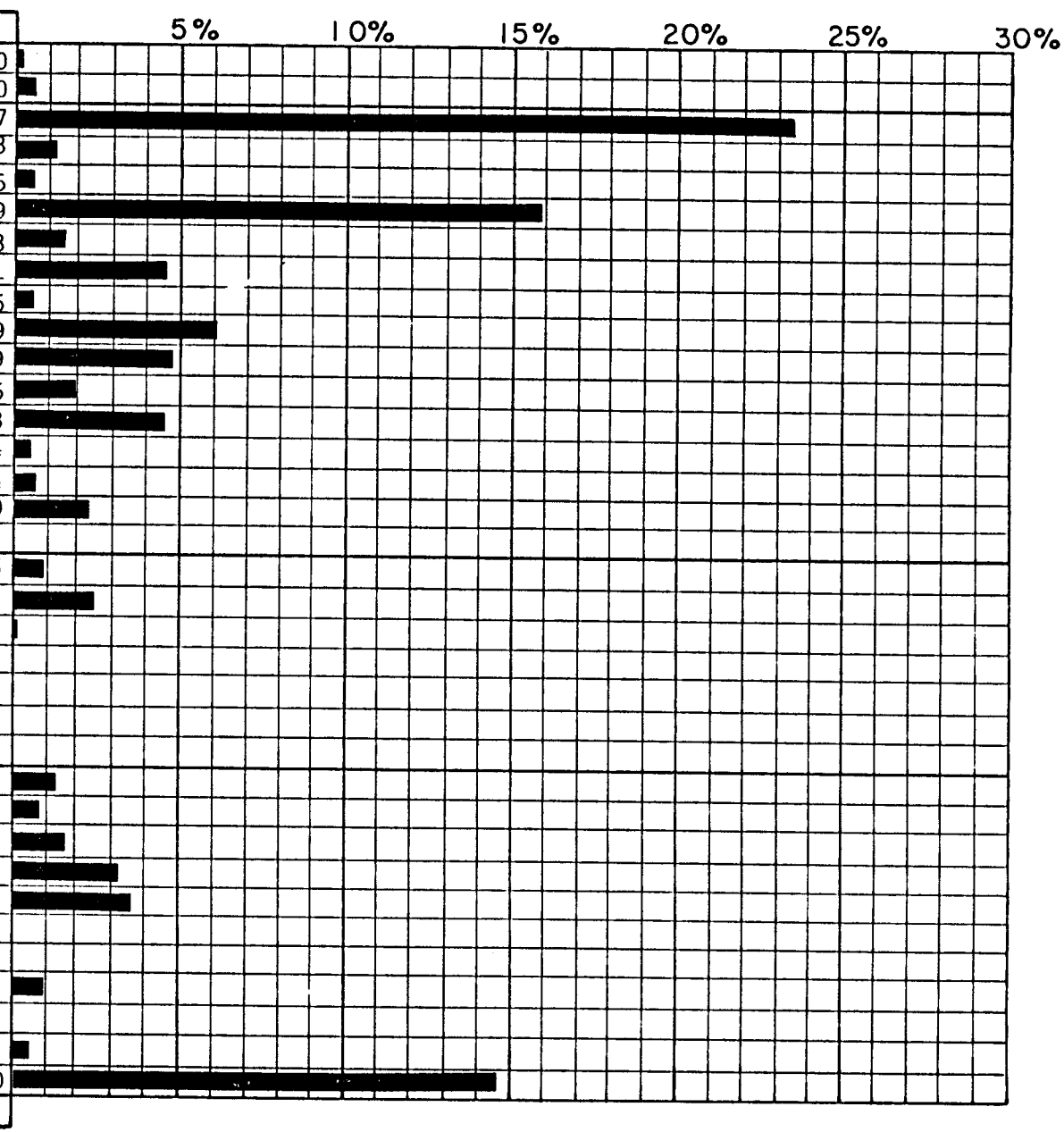
Tot=188 dgr = 4512 ti

	Dato									
	Dybde									%
	Hulldiameter									
Flyt-ting	Under veis	9								0.20
	Forankring	27								0.60
Boreoperasjoner	Effektiv boring	1059								23.47
	Annen boring	58								1.28
	Hullåpning	2.5								0.05
	Reg. tripping	717								15.89
	Foring og sement	157								3.48
	Undersj. utst.-B.O.P.	208								4.61
	Høytrykksdet.	2.5								0.05
	Tilpasning og sirk.	275								6.09
	Rømming	216								4.79
	Avviksmåling	88								1.95
	Plugging	209								4.63
	F.S.T.	20								0.44
	Vedlikehold	29								0.64
	Andre	104								2.30
	Anm.									
Formasjonstesting	Kjerneboring	39								0.86
	El. logging	114								2.52
	Sirk. for prøver	3								0.06
	F.I.T.	-								
	Produksjonstest	-								
	Andre	-								
	Anm.									
Ventetid	Riggrep.	58.5								1.29
	Riggflytting	36								0.79
	Venting på vær	77.5								1.71
	Undersj. utst.-B.O.P.	143								3.17
	Fisking	163								3.61
	Tapt sirk.	18.5								0.41
	Trykkontroll	-								
	Brønnproblemer	44								0.98
	Form. testing									
	Dykking	2.5								0.05
	Andre	659	(640.5 skyldes streik 19/7-15/8)							14.60
	Anm.	4512								100.00%

4.01.06

RIG TIME DISTRIBUTION FOR WELL 15/12-3

		HRS	%
	Moving	9	0.20
	Mooring	27	0.60
DRILLING OPERATION	Efficient drilling	1059	23.47
	Other drilling	58	1.28
	Hole opening	2.5	0.05
	Regular tripping	717	15.89
	Casing and cementing	157	3.48
	Sub sea eq. and BOP	208	4.61
	Abnormal press. detection	2.5	0.05
	Cond. and circ.	275	6.09
	Reaming	216	4.79
	Directional survey	88	1.95
	Plugging	209	4.63
	Formation leak-off test	20	0.44
	Maintenance	29	0.64
	Other	104	2.30
FORMATION EVALUATION	Coring	39	0.86
	El. logging	114	2.52
	Circ. for samples	3	0.06
	RFT	-	
	Production testing	-	
	Other	-	
DOWNTIME	Rig repairs	58.5	1.29
	Rig moving	36	0.79
	Waiting on weather	77.5	1.71
	Subsea eq. and BOP	143	3.17
	Fishing	163	3.61
	Lost circulation	18.5	0.41
	Well control	-	
	Hole problems	44	0.98
	Formation evaluation		
	Diving	2.5	0.05
	Other	659	14.60
	TOTAL	4512	100%



WELL: 12-3
RIG: "NORDRAUG"
Drilling cost vs. depth
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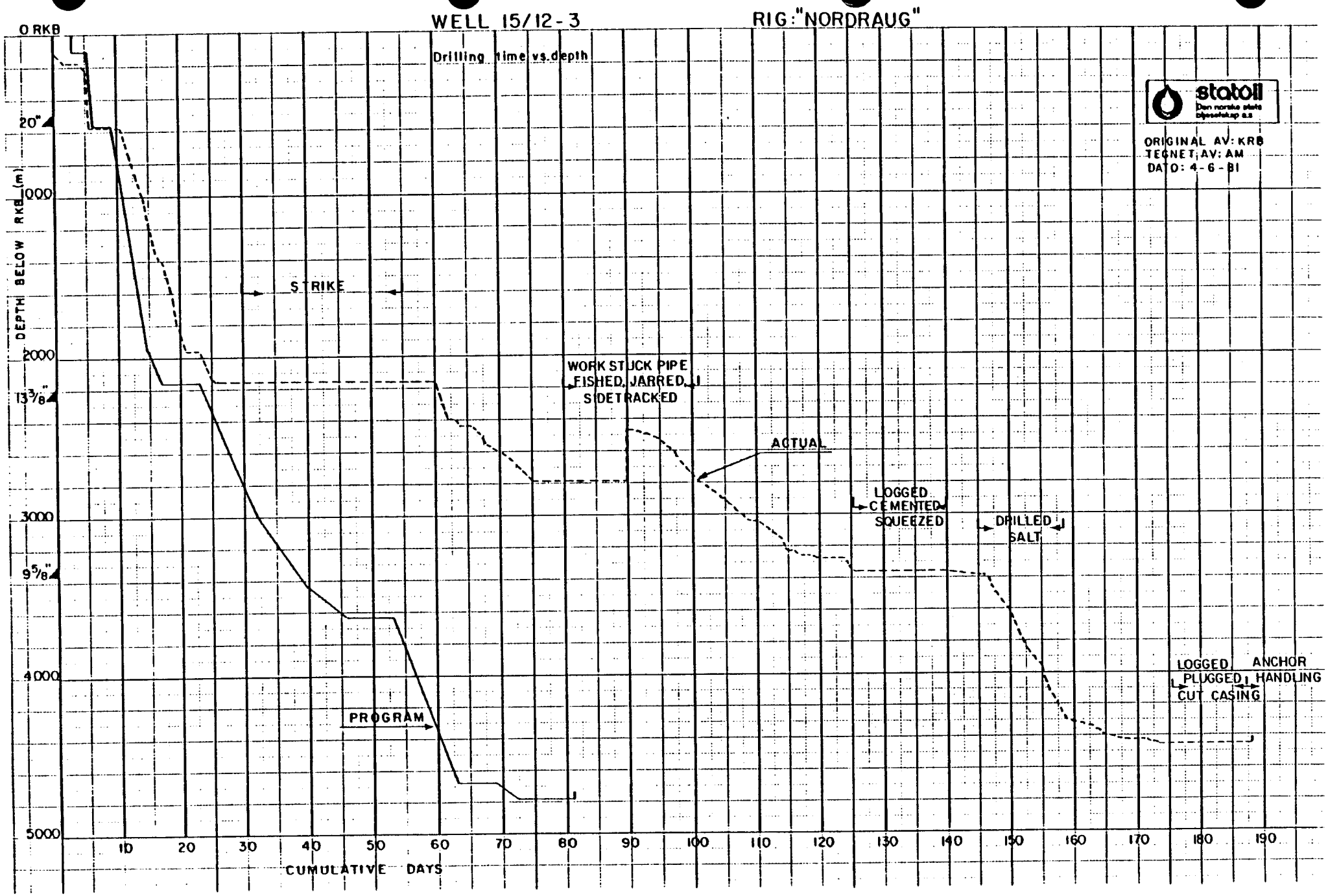
Den norske stats oljeselskap a.s
ORIGINAL AV: KRB
TEGNET AV: AM
DATO: 4-6-81
ORKB
1000
2000
3000
4000
5000
Depth below RKB (m)
ACTUAL
PROGRAM
10
20
30
40
50
60
70
80
90
CUMULATIVE COST (MM Kr.)


WELL 15/12-3
RIG: "NORDRAUG"
Drilling time vs. depth
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Den norske stats oljeselskap a.s
ORIGINAL AV: KRB
TEGNET AV: AM
DATO: 4-6-81
0 RKB
20"
13 3/8"
9 5/8"
DEPTH BELOW RKB (m)
1000
2000
3000
4000
5000
STRIKE
WORK STUCK PIPE
FISHED, JARRED,
SIDETRACKED
ACTUAL
LOGGED
CEMENTED
SQUEEZED
DRILLED
SALT
LOGGED
PLUGGED
CUT CASING
ANCHOR
HANDLING
PROGRAM
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170
180
190
CUMULATIVE DAYS

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BORKRONEDATA

Brønn nr.: 15/12-3

Nr.	B. k. Nr.	Diam.	Fabr.	Type	Serie no.	Dyser 1/32"	Dybde ut	Fremdrift	Rot. tid	Total rot.tid	Bore-hast.	V.p.b.	O.p.m.	Pumpe			Tilstand			Anmerkninger
														Trykk	V.grad	v/t	T	B	G	
1	1	26"	HTC	OSC-3AJ		3x22	173	62	13		4.8	2-6	50-80	160		4200				Run with 36" holeopener
2	2	17.5"	Sec.	S35J		3x18	565	392	26.5		14.8	3-10	80-120	103		3000	1	6	I	
3	1RR	26"	HTC	OSC-3AJ		3x18														Open hole to 26"
4	3	17.5"	Sec.	S3SJ		3x20	894	329	18.5		17.8	6-7	110-135	169		3972	4	5	I	
5	4	17.5"	Sec.	S3SJ		3x18	1252	358	36.5		9.8	6-11	110-135	169		3972	6	5	I	
6	5	17.5"	Sec.	S3SJ		20-20-18	1667	415	38		11	6-10	130-140	160		3370	3	4	I	
7	6	17.5"	HTC	OSC-3AJ		3x22	1950	283	34.5		8.2	8-12	130	120/150		3360	4	6	I	B.T.
8	7	17.5"	HTC	OSC-3AJ		3x20	-													BHA was dropped 3 stands of bottom
9	8	17.5"	Sec.	DSJ		3x20	2122	172	31.5		5.5	9-11	140-150	163		2721	5	6	I	
10	9	17.5"	Sec.	DSJ		3x24	2165	43	9.5		4.5	8-9	120-150	150		2979	1	1	I	
11	10	12 1/4"	HTC	X3A		3x12	2186	21	4.2		17	4-5	80	188		1987	3	2	I	
12	11	12 1/4"	HTC	X3A		3x12	2400	214	12.4		17	7-9	85	206		1908	4	3	1	
13	12	12 1/4"	HTC	X16		3x15	2459	59	9.4		5.7	10-11	90	186			3	3	I	
14	13	12 1/4"	D.Boart	LX-13		-	2571	112	21.3		5.25	20	40	285		2560				Turbo
15	14	12 1/4"	HTC	XDC		3x13	2597	26	15		1.7	12	120	207		1900	3	4	I	One nozzle plugged
16	13RR	12 1/4"	D.Boart	LX-13		-	2784	187	58.9		3.17	23-25		280		2425	50%		We ar	Turbo
17	11RR	12 1/4"	HTC	X3A		3x12														Circulating
18	15(14)	12 1/4"	HTC	XDV		3x15														Reaming bit left in hole
19	16	12 1/4"	SMITH	SVH		3x15														Circ. ream.
20	16RR	12 1/4"	"	SVH		3x15														Circ. drlg. cmt.

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BORKRONEDATA

Brønn nr.: 15/12-3

Nr.	B. k. Nr.	Diam.	Fabr.	Type	Serie no.	Dyser 1/32"	Dybde ut	Fremdrift	Rot. tid	Total rot.tid	Bore-hast.	V.p.b.	O.p.m.	Pumpe			Tilstand			Anmerkninger
														Trykk	V.grad	v/t	T	B	G	
21	17	12 1/4"	Chr.	SST		-	2503	15	6.5		1.2	4.5	-	225		2335				Kick-off
22	17RR	12 1/4"	Chr.	SST		-	2510	7	7.5		0.9	5-6	-	220		2400				10% wear
23	18	12 1/4"	HTC	J22		3x15	2538	28	20		1.4	9-18	50/60	241/152		2420/1940	1	2	1	One pumpe broke down
24	19	12 1/4"	D.Boart	LX-13		-	2623	35	17.1		4.9	25	650	283		2400				Wash-out in drillstring
25	19RR	12 1/4"	"	LX-13		-	2803	180	49.4		3.64	25	655	283		2400				40% Wear
26	20	12 1/4"	HTC	XDV		3x15	2840	37	21.6		1.71	11	75	235		2330	3	3	I	
27	21	12 1/4"	HTC	XDV		3x15	2894	54	30.3		1.78	16	75	207		2190	5	5	I	
28	22	12 1/4"	HTC	XDG		3x15	2964	70	39.6		1.77	11-13	110-120	207		2150	4	6	I	
29	23	12 1/4"	HTC	XDG		3x15	3043	79	40.2		1.97	12-15	110-120	207		2150	5	5	I	
30	24	12 1/4"	Smith	SDGH		3x14	3132	89	40.5		2.2	13-14	110	280		2170	4	6	I	
31	19RR	12 1/4	D.Boart	LX-13		-	3233	101	26.6		3.8	25	650	287		2224				Work out, in gauge
32	25	12 1/4"	HTC	XDG		3x14	3252	19	18.1		0.95	14-18	110-120	208		2080	7	6	1/8	
33	26	12 1/4"	HTC	J-55		3x15	3256	4	7.5		0.53	23-27	50-55	207		2144	1	1	I	
34	27	12 15/32	D.Boart	CB-401		-	3263	7	7.6		0.92	8-9	100-120	83		1265				No wear
35	28	12 1/4"	HTC	XDV		3x16	3279	16	14.7		1.09	20-25	70-80	207		2100	3	3	I	
36	29	12 1/4"	HTC	XDV		3x16	3367	88	25.2		3.50	8-11	85-100	152		2160	1	3	I	
37	30	8 ½"	HTC	J3		3x13			1			2-4	50	97		1431	3	3	I	Drill out DV-Collar
38	31	8½"	HTC	J3		3x13	3370	3												Drill out float and shoet
39	32	8½"	HTC	J3		3x13	3373	3												Drilled out retainer
40	33	8½"	HTC	X16		3x13	3445	72	19.9		3.62	20	60/80	205		1330	6	7	I	Changed to oilbase mud before drilling

4.01.08

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BORKRONEDATA

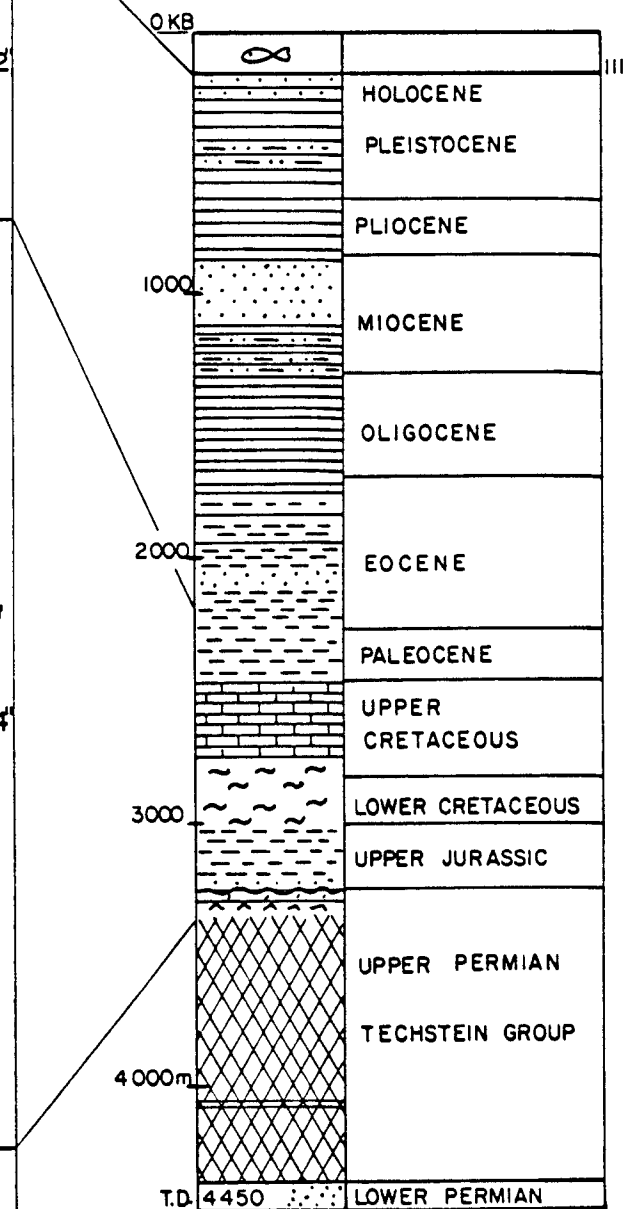
Brønn nr.: 15/12-3

Nr.	B. k. Nr.	Diam.	Fabr.	Type	Serie no.	Dyser 1/32"	Dybde ut	Fremdrift	Rot. tid	Total rot.tid	Bore-hast.	V.p.b.	O.p.m.	Pumpe			Tilstand			Anmerkninger
														Trykk	V.grad	v/t	T	B	G	
41	34	8½"	HTC	XIG		3x13	3608	163	20.1		8.11	15	100	201		1510	4	5	I	One slipshandel below bit.Junk.
42	35	8½"	HTC	XDV		3x13	3776	168	28		6	15-16	100	205		1526	5	8	I	
43	36	8½"	HTC	J-3		3x13	3935	159	21.2		7.5	12-16	90-100	208		1510	5	5	I	
44	37	8½"	CHR	Rockut		2.3sqin	4157	221	17.5		12.6	5	200	170		1625				15-20%
45	38	8½"	CHR.	Rockut		2.3sqin	4319	162	30.5		5.3	4.5	200	193		1625				5%
46	39	8½"	HTC	XDG		3x13	4335	16	18.5		0.9	9	120/100	172		1280	4	6	I	
47	40	8½"	HTC	XDV		3x13	4345	10	9.6		1.0	13-14	100	151		1150	2	4	I	
48	41	8½"	D.B.	LX-17			4388	43	21.4		2	14-15	200	214		1622				15%
49	42	8½"	HTC	J-4		3x13	4401	13	11		1.2	13-17	100	207		1399	4	4	I	
50	43	8½"	HTC	J-33		3x13	4424	23	20.4		1.1	13-16	65/80	190		1300	2	5	I	
51	44	8½"	HTC	J-4		3x13		Circ.												
52	45	8 15/32	D.B.	CR303			4433	9	5		1.8	9-10	100	133						10% coring
53	46	8 15/32		MD311		-	4450	17	8		2.1	13-14	200	220/258		1390				5%

4.01.08

BIT SEQUENCE AND LITHOLOGY COLUMN 15/12-3

NO	TYPE	DEPTH OUT (m)	ROP (m/hr)	HRS	DIAM
1	OSC - 3AJ	173	4.8	13	26"
2	S3 SJ	565	14.8	26.5	
3	OSC-3AJ	O. Hole			
4	S3SJ	894	17.8	18.5	
5	S3SJ	1252	9.8	36.5	
6	S3SJ	1667	11	38	17 1/2"
7	OSC-3AJ	1950	8.2	34.5	
8	OSC-3AJ	—			
9	DSJ	2122	5.5	31.5	
10	DSJ	2165	4.5	9.5	
11	X3A	2186	17	4.2	
12	X3A	2400	17	12.4	
13	X1G	2459	5.7	9.4	
14	LX-13	2571	5.25	21.3	
15	XDG	2597	1.7	15	
16	LX-13	2784	3.17	58.9	
17	X3A	Circ.			
18	XDV	Ream.			
19	SVH	Circ.			
20	SVH	Drlg. cmt.			
21	SST	2503	1.2	6.5	Kick-off
22	SST	2510	0.9	7.5	
23	J-22	2538	1.4	20	
24	LX-13	2623	4.9	17.1	12 1/4"
25	LX-13	2803	3.64	49.4	
26	XDV	2840	1.71	21.6	
27	XDV	2894	1.78	30.3	
28	XDG	2964	1.77	39.6	
29	XDG	3043	1.97	40.2	
30	SDGH	3132	2.2	40.5	
31	LX-13	3233	3.8	26.6	
32	XDG	3252	0.95	18.1	
33	J-55	3256	0.53	7.5	
34	CB - 401	3263	0.92	7.6	
35	XDV	3279	1.09	14.7	
36	XDV	3367	3.5	25.2	
37	J-3	—	Drlg. out DV-collar		
38	J-3	3370	Drlg. out float shoe		
39	J-3	3373	Drlg. out retainer		
40	X-1G	3445	3.62	19.9	
41	X-1G	3608	8.11	20.1	
42	XDV	3776	6	28	
43	J-3	3935	7.5	21.2	
44	Rockut	4157	12.6	17.5	
45	Rockut	4319	5.3	30.5	
46	XDG	4335	0.9	18.5	8 1/2"
47	XDV	4345	1.0	9.6	
48	LX-17	4388	2	21.4	
49	J-4	4401	1.2	11	
50	J-33	4424	1.1	20.4	
51	J-4	Circ.			
52	CB 303	4433	1.8	5	
53	MD 311	4450	2.1	8	



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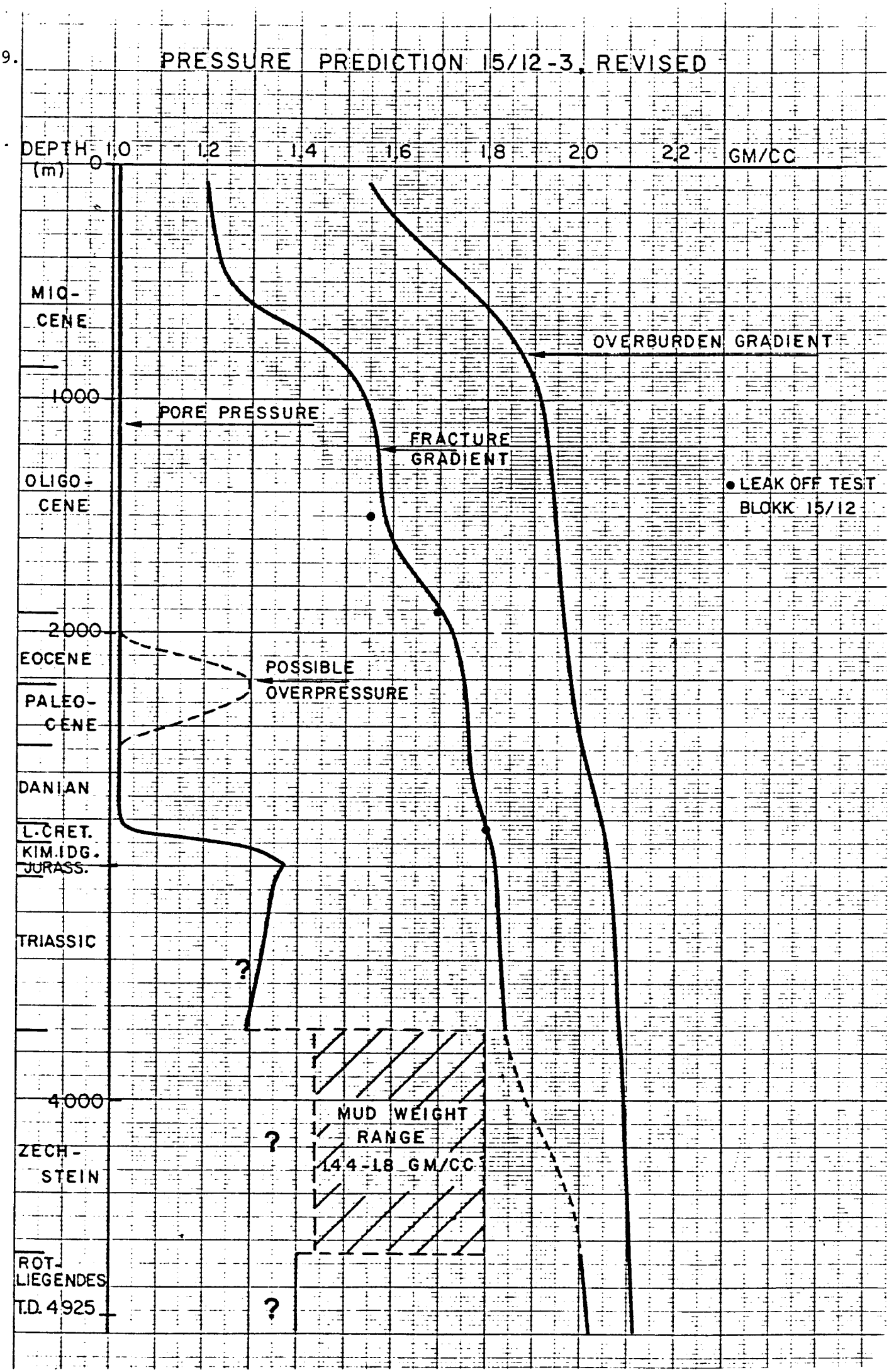
Den norske stats oljeselskap a.s

ORIGINAL AV: KRB
TEGNET AV: AM
DATO: 9-6-81

III. 9.


PRESSURE PREDICTION 15/12-3, REVISED
DEPTH (m)
1.0
1.2
1.4
1.6
1.8
2.0
2.2
GM/CC
0
1000
2000
4000
MIO-CENE
OLIGO-CENE
EOCENE
PALEO-CENE
DANIAN
L.CRET.
KIM.IDG.
JURASS.
TRIASSIC
ZECH-STEIN
ROT-LIEGENDES
T.D. 4925
OVERBURDEN GRADIENT
PORE PRESSURE
FRACTURE GRADIENT
LEAK OFF TEST BLOKK 15/12
POSSIBLE OVERPRESSURE
MUD WEIGHT RANGE
1.44-1.8 GM/CC
?
?
?

15/12-3 PRESSURE COMPOSITE PLOT

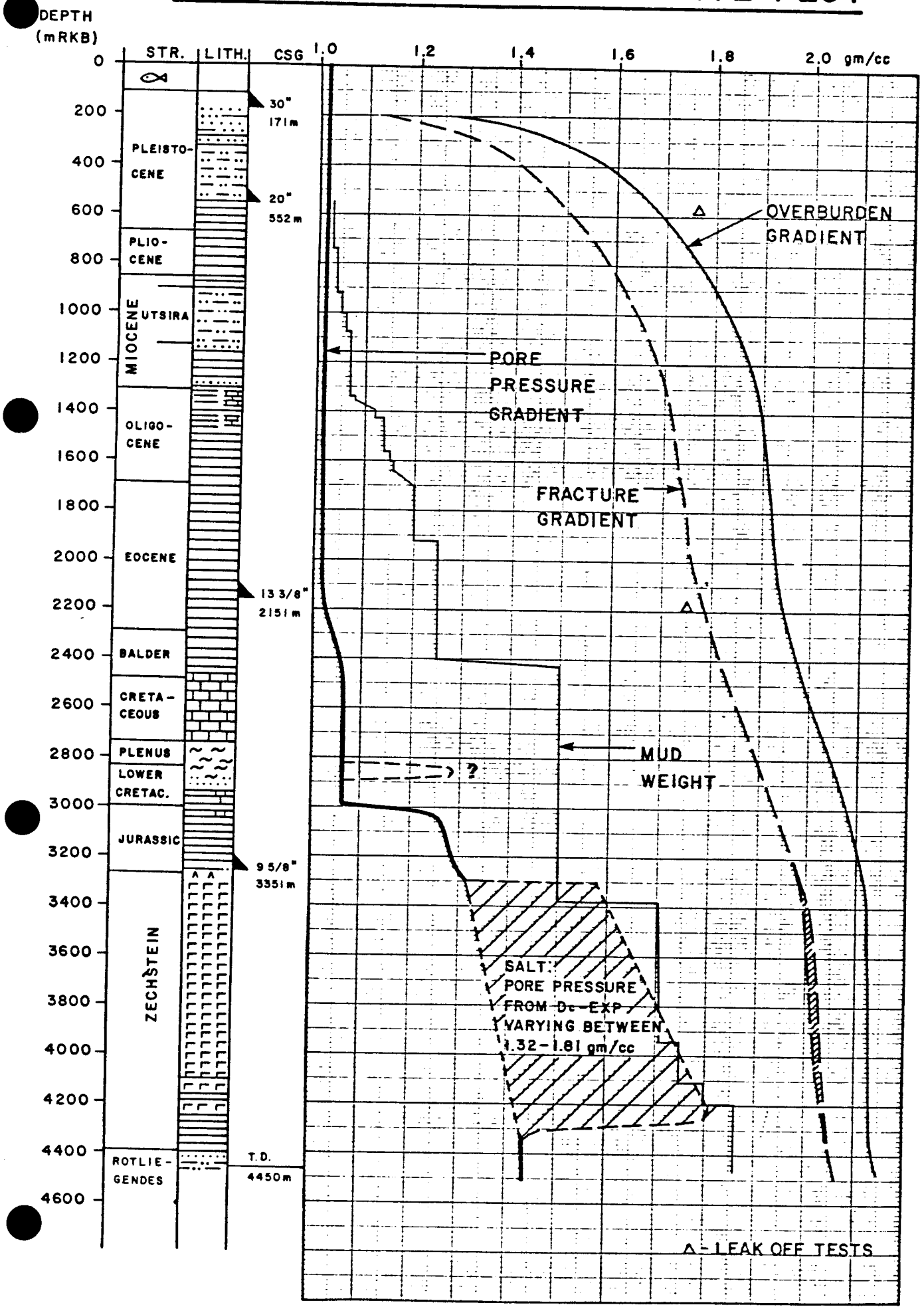
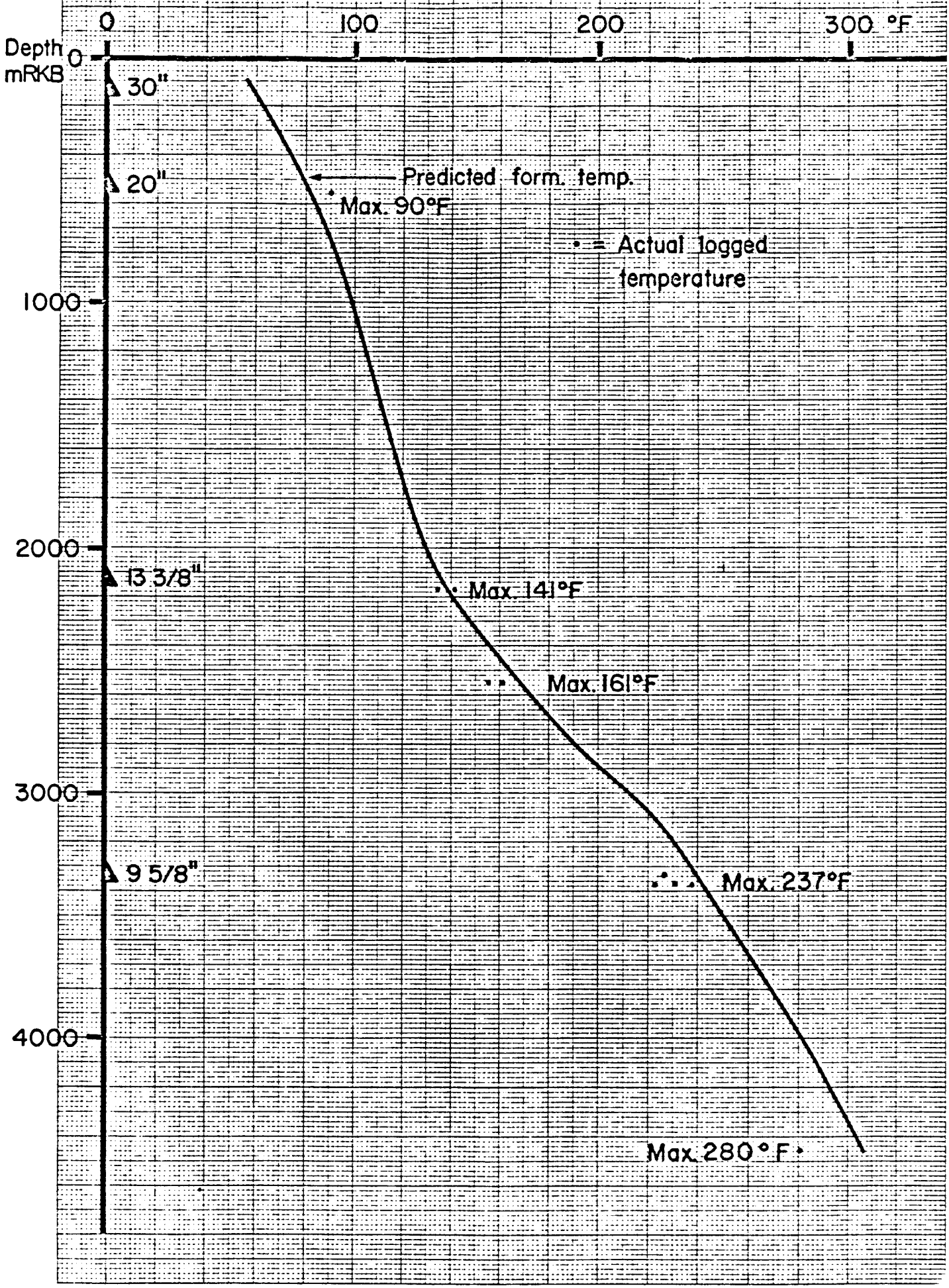


Fig. FORMATION TEMPERATURE 15/12-3



FABRICATION SUIS

SURVEY INFORMATION (RKB - Mean Sea Level ____ m)							AVERAGE TANGENTIAL METHOD												
RKB - Depth	MSL Depth	Drilled Interval	Drift Angle	Drift Change	Direction	Azimuth	Drift Angle Data			Azimuth Data			Vertical Distance	True Vert Depth	Interval Deviation	Dev to North	Position North	Dev to East	Position East
M_{RKB}	M	ΔM	i	Δi		a	$\frac{i_1+i_2}{2}$	$\sin\left(\frac{i_1+i_2}{2}\right)$	$\cos\left(\frac{i_1+i_2}{2}\right)$	$\frac{a_1+a_2}{2}$	$\sin\left(\frac{a_1+a_2}{2}\right)$	$\cos\left(\frac{a_1+a_2}{2}\right)$	ΔV	V	ΔD	ΔN	N	ΔE	E
171			3/4		Totco														
283			1/2		"														
562			0		"														
657		95	1.25		N42E	42°	0.63	0.0109	0.9999	42	0.6691	0.7431			1.036	0.7699	0.77	0.6932	0.69
738		91	1.5		N31E	31°	1.38	0.0240	0.9997	37	0.6018	0.7986			1.944	1.5525	2.32	1.1699	1.86
827		89	1.0		N29E	29°	1.25	0.0218	0.9997	30	0.5	0.8660			1.940	1.6800	4.00	0.9700	2.83
899		72	0.75		N4E	4°	0.88	0.0153	0.9998	17	0.2923	0.9563			1.102	1.0538	5.05	0.3221	3.15
984		85	1.0		N14E	14°	0.88	0.0153	0.9998	9	0.1564	0.9876			1.301	1.2849	6.33	0.2034	3.35
1079		95	0.25		S11E	169°	0.63	0.0109	0.9999	92	0.9993	-0.0348			1.036	-0.0360	6.29	1.0353	4.39
1172		93	0.5		N26W	334°	0.38	0.0066	0.9999	252	-0.9510	-0.3090			0.614	-0.1897	6.10	-0.5839	3.81
1248		76	0.5		N36E	36°	0.50	0.0087	0.9999	5	0.0871	0.9961			0.661	0.6584	6.76	0.0576	3.87
1474		226	1.0		N72E	72°	0.75	0.0130	0.9999	54	0.8090	0.5877			2.938	1.7267	8.49	2.3768	6.25
1568		94	0.75		N66E	66°	0.88	0.0153	0.9998	69	0.9335	0.3583			1.438	0.5152	9.01	1.3424	7.59
1663		95	0.75		N42E	42°	0.75	0.0130	0.9999	54	0.8090	0.5877			1.235	0.7268	9.74	0.9991	8.59
1755		92	0.75		N6W	354°	0.75	0.0130	0.9999	18	0.3090	0.9510			1.196	1.1374	10.88	0.3696	8.96
1853		98	1		N2E	2°	0.88	0.0153	0.9998	358	-0.0348	0.9993			1.499	1.4980	12.38	-0.0522	8.91
1944		91	1		N7E	7°	1	0.0174	0.9998	5	0.0871	0.9961			1.583	1.5768	13.96	0.1379	9.05
2051		107	1.25		N4W	356°	1.13	0.0197	0.9998	2	0.0348	0.9993			2.108	2.1065	16.07	0.0734	9.12
2161		110	0.75		S84W	264°	1	0.0174	0.9998	310	-0.7660	0.6427			1.920	1.2341	17.30	-1.4707	7.65
2254		93	1.75		N12W	348°	1.25			306					2.029	1.1924	18.49	-1.64	6.01
2343		89	1.75		N6W	354°	1.75			351					2.718	2.68	21.17	-0.42	5.585
2455		112	2.75		N9E	9°	2.25			1.5					4.397	4.39	25.56	0.115	5.700
2529		74	3.75		N20E	20°	3.25			14.5					4.195	4.06	29.62	1.05	6.75
2594		65	3.25		N21E	21°	3.5			20.5					3.97	3.71	33.33	1.39	8.14
2688		94	3		N21E	21°	3.125			21					5.12	4.78	38	1.83	9.98

SURVEY INFORMATION (RKB - Mean Sea Level ____ m)							AVERAGE TANGENTIAL METHOD												
RKB - Depth	MSL Depth	Drilled Interval	Drift Angle	Drift Change	Direction	Azimuth	Drift Angle Data			Azimuth Data			Vertical Distance	True Vert Depth	Interval Deviation	Dev to North	Position North	Dev to East	Position East
M_{RKB}	M	ΔM	i	Δi		a	$\frac{i_1+i_2}{2}$	$\sin\left(\frac{i_1+i_2}{2}\right)$	$\cos\left(\frac{i_1+i_2}{2}\right)$	$\frac{a_1+a_2}{2}$	$\sin\left(\frac{a_1+a_2}{2}\right)$	$\cos\left(\frac{a_1+a_2}{2}\right)$	ΔV	V	ΔD	ΔN	N	ΔE	E
2758		70	23/4	1/4	N9E	9°	2.875								3.51	3.47	41.47	0.18	10.16
2455		112	2.75		N9E	9^{0}									4.40		25.56		5.70
2474		19	2.5		N28E	28	2.625			18.5					0.87	0.83	26.39	0.27	5.98
2482		8	2.75		N18E	342	2.625			5					0.37	0.37	26.76	0.03	6.01
2498		16	2.5		N33W	327	2.625			334.5					0.73	0.66	27.41	-0.31	5.69
2500		2	2.0		N41W	319	2.25			323					0.08	0.06	27.48	-0.05	5.65
2533		33	2.5		N61W	299	2.25			309					1.30	0.82	28.30	-1.01	4.64
2627		94	2.25		N70W	290	2.375			294.5					3.90	1.62	29.92	-3.55	1.09
2722		95	0.75		S11E	169	2.0			229.5					3.32	-2.16	27.76	-2.52	-1.44
2775		53	1.0		N42E	42	0.875			105.5					0.81	-0.22	27.54	-0.78	-0.66
2834		59	0.5		N46E	46	0.75			44					0.77	0.56	28.10	0.53	-0.13
2960		126	1.0		N22W	138	0.75			12					1.65	1.61	29.71	0.34	0.21
3039		79	1.5		N23E	23	1.25			0.5					1.72	1.72	31.43	0.02	0.23
3127		88	1.5		N21E	21	1.5			22					2.3	2.14	33.57	0.86	1.09
3203		76	1.0		N14E	14	1.25			17.5					1.66	1.58	35.15	0.50	1.59
3275		72	1.5		N32E	32	1.25			23					1.52	1.44	36.60	0.59	2.18
3442		167	1.75		N46E	46	1.675			39			166.93		4.88	3.79	40.39	3.07	5.25
3604		162	1.25		N86W	274	1.5			340					4.24	3.98	44.37	-1.45	3.80
3697		93	0.75		S87W	267	1.0			270.5					1.62	0.01	44.38	-1.62	2.18
3771		74	0.75		N55W	305	0.75			286					0.97	0.27	44.65	-0.93	1.25
3865		94	1.25		S64W	244	1.0			274.5					1.64	0.13	44.78	-1.63	-0.38
3931		66	1.0		S64W	244	1.125			244.0					1.44	-0.63	44.15	-1.29	-1.67
4019		88	1.0		S69W	249	1.0			246.5					1.54	-0.61	43.54	-1.41	-3.08
4100		81	2.5		S24W	204	1.75			226.5					2.47	-1.70	41.84	-1.79	-4.87
4153		53	2.25		S11W	191	2.375			197.5					2.20	-2.10	39.74	-0.66	-5.53
4230		77	2.25		S25W	205	2.25			198					3.02	-2.87	36.87	-0.93	-6.46

SURVEY INFORMATION (RKB - Mean Sea Level ____ m)							AVERAGE TANGENTIAL METHOD												
RKB - Depth	MSL Depth	Drilled Interval	Drift Angle	Drift Change	Direction	Azimuth	Drift Angle Data			Azimuth Data			Vertical Distance	True Vert Depth	Interval Deviation	Dev to North	Position North	Dev to East	Position East
M_{RKB}	M	ΔM	I	ΔI		a	$\frac{I_1+I_2}{2}$	$\sin\left(\frac{I_1+I_2}{2}\right)$	$\cos\left(\frac{I_1+I_2}{2}\right)$	$\frac{a_1+a_2}{2}$	$\sin\left(\frac{a_1+a_2}{2}\right)$	$\cos\left(\frac{a_1+a_2}{2}\right)$	ΔV	V	ΔD	ΔN	N	ΔE	E
4311		81	30		S84W	264	2.625			234.5					3.71	-2.15	34.72	-3.02	-9.48
4331		20	3.0		N83W	277	3			270.5					1.05	0.01	34.73	-1.05	-10.53
4383		52	2.25		S64W	244	2.625			260.5					2.38	-0.39	34.34	-2.34	-12.87
4444		61	13/4		S38W	218	2			231					2.31	-1.34	33	-1.65	-14.52

HORISONTAL WELL TRACE

15/12-3

(SCALE 1:100)

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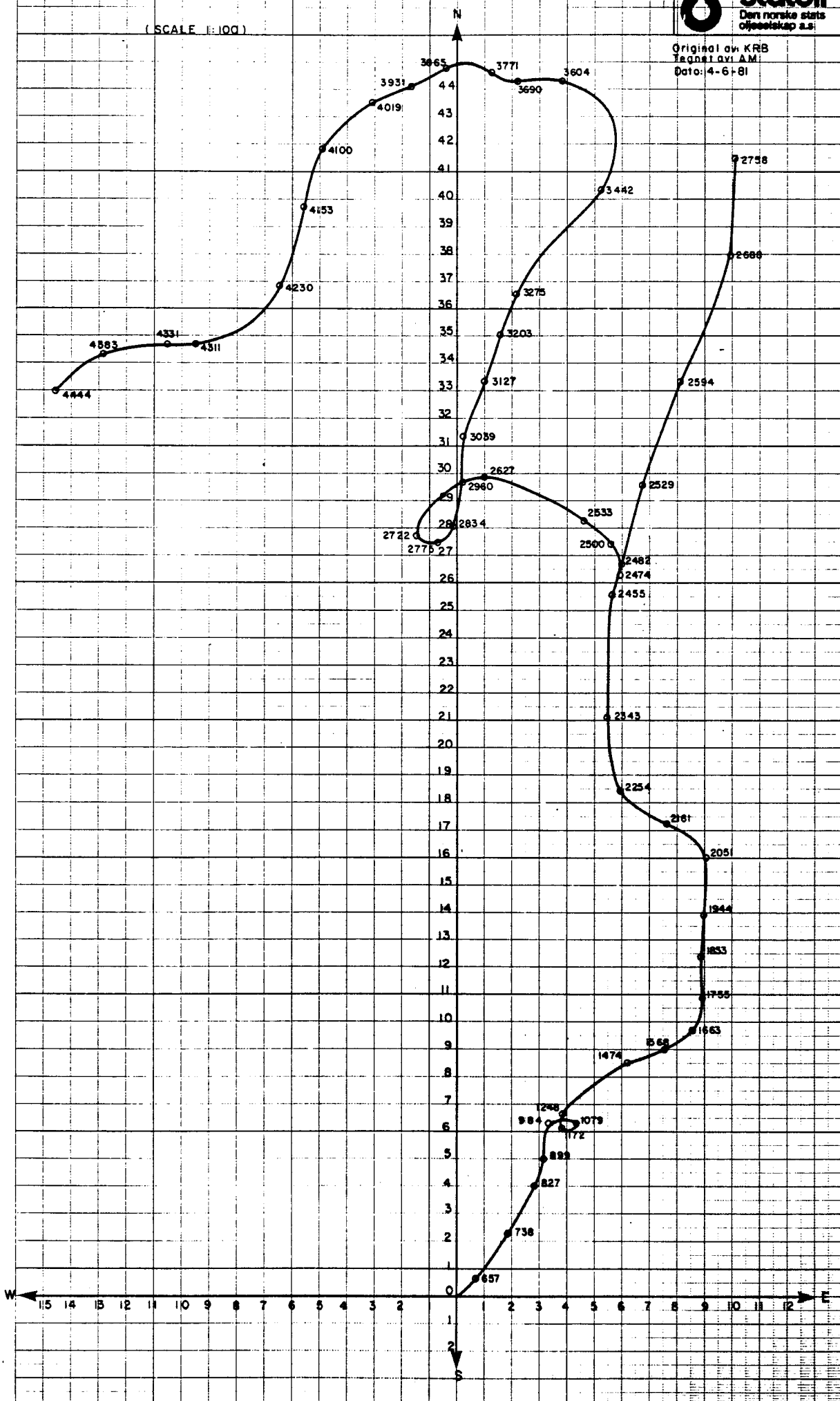
Original av: KRB
Tegnet av: AM
Dato: 4-6-81



III.11.

WELL SUMMARY

DATE: JANUARY 19TH, 1981

COMPANY DET NORSKE STATS OLJESELSKAP A/S, STATOIL

ADDRESS FORUS, P.O. BOX 300

4001 STAVANGER

WELL 15/12-3

LOCATION NORTH SEA

PREPARED BY : PETER BAYARD, SALES ENGINEER

DRESSER NORWAY A.S.

WELL SUMMARY

STATOIL WELL 15/12-3

INDEX

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ITEM 2	WELL SUMMARY BY INTERVAL
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ITEM 6	TOTAL MATERIALS CONSUMPTION
ITEM 7	MUD VOLUMES SUMMARY
ITEM 8	BARITE CONSUMPTION FOR 12-1/4" HOLE
ITEM 9	GRAPH DATA
ITEM 10	DAILY OPERATIONS
ITEM 11	APPENDIX TO 12-1/4" INTERVAL SUMMARY

WELL SUMMARY

SYNOPSIS

OPERATOR	STATOIL
WELL IDENTIFICATION	15/12-3
WELL LOCATION	NORTHSEA; NORWEGIAN SECTOR
WELL TYPE	EXPLORATION
SPUD DATE	21 JUNE, 1980
DATE TD	9 DECEMBER, 1980
TOTAL DEPTH	4450 M
CONTRACTOR	ROSS DRILLING
RIG IDENTIFICATION	NORDRAUG

HOLE SIZES, CASING SEATS AND MUD TYPES USED (ALL DEPTHS ARE FROM RKB)

RKB	111m
36" HOLE TO	173m
30" CONDUCTOR SET AT	171m
MUD TYPE USED	SPUD MUD
26" HOLE TO	565 m
20" CASING SET AT	552m
MUD TYPE USED	SPUD MUD
17½" HOLE TO	2165m
13-3/8" CASING SET AT	2151m
MUD TYPE USED	BENTONITE-SEAWATER
12-1/4" HOLE TO	3361m
9-5/8" CASING SET AT	3351m
MUD TYPE USED	POLYMER-SATURATED SALT
8½" HOLE TO	4450m
MUD TYPE USED	OILFAZE
MAXIMUM MUD DENSITY	1.86

WELL SUMMARY

36" HOLE INTERVAL 111m - 173m

1000 bbls of high viscosity spud mud were built for the spudding in. Drilling was conducted using seawater with slugs of spud mud spotted during connections and the hole filled after reaching the casing point of 173m. After a wiper trip the hole was displaced again with spud mud. The 30" conductor was set and cemented at 171m.

WELL SUMMARY

26" HOLE INTERVAL 171m - 565m

After running the riser and pin connector, cement was tagged at 167m with a 17½" bit. Seawater was used to drill out the shoe and new hole to a depth of 192m where returns were lost around the outside of the 30" conductor. A cement plug was then set and later tagged at 186m. Prehydrated bentonite with seawater dilution was utilized with full returns to drill out the cement and to drill ahead to the casing point of 565m. While drilling with a circulating mud system, the desander and all three desilters were in full operation to help ensure the lowest possible mud density. After reaching the casing point, the hole was logged and the riser pulled. The 17½" hole was then opened to 26" using seawater with high viscosity slugs on every third connection. At 565m, the hole was displaced with 1000 bbls of viscous prehydrated bentonite. Because of three meters of fill after a wiper trip to the shoe, 150 bbls of 1.25 density mud were spotted before P.O.O.H. to run casing. The 20" casing was set and cemented at 552m.

WELL SUMMARY

17½" HOLE INTERVAL 552m - 2165m.

After running the B.O.P. and riser, the cement and 3m new hole were drilled with seawater. Prior to the leak off test, the hole was displaced with a prehydrated bentonite-seawater mud. Drilling continued to 894m where hole swabbing occurred while P.O.O.H. to change a bit. A nut plug pill was circulated to clean the stabilizers on the operators instructions. No problems were encountered until 1347m where tight hole occurred for 3 stands during a survey. Tight hole again occurred for 4 stands during a survey at 1440m. During a bit trip at 1950m, drag was encountered from 1905m to 1792m. While RIH the BHA dropped down the hole. After recovering the fish, drilling proceeded o 2122m. While RIH during a bit trip tight hole was encountered at 2110m with 10m fill. Drilling then continued to the casing depth of 2165m. While P.O.O.H. for a wiper trip tight hole occurred at 2130m. After the wiper trip the hole was logged with no problems. While RIH with a bit, a tight spot was reamed from 2153m to 2156m. After circulating to condition the hole, 13-3/8" was run, and landed and cemented at 2121m where 200 bbls returns were lost during the displacement.

The mud used during this interval was a prehydrated bentonite-seawater dilution system. The API fluid lose was maintained in the range of 15-20cc with low viscosity cmc. The yield point was initially maintained with prehydrated bentonite. However, as more drill solids became incorporated into the system, Spersene was required to help maintain the rheology within the desired limits of 15-25lb/100 sq. ft. for the yield point.

The nut plug used during this interval was at the request of the operator who felt that nut plug sweeps would clean up suspected balled bits and stabilizers.

The maximum mud density employed during this interval was 1.25.

WELL SUMMARY

INTERVAL 2151m - 3361m (12-1/4" HOLE)

After the seal assembly was run and the B.O.P. tested, the cement was tagged at 2085m. The drill string was then hung off and the riser pulled as the rig went on strike from 19 July to 14 August. At the termination of the strike, 1600 bbls of saturated salt mud were prepared for this interval after the riser had been run. Although a semi-saturated system was called for during the initial stages of this interval, a fully saturated system was mixed to allow for seawater additions for volume control. While drilling the cement, the mud from the previous interval was displaced to seawater and then to saturated salt mud. After drilling the cement and 3 meters new hole, a formation integrety test was conducted to an equivalent density of 1.75. Drilling then proceeded to 2347m where the hole packed off while pulling to the shoe with a survey. At 2403m, while conducting a slow pump rate, the hole again packed off. After working free and reaming to bottom the hole again packed off while pumping a slug for a bittrip. While RIH with a new bit, the last 9 singles had to be reamed. Upon bottoms up while reaming large concave shale splinters were observed. The decision was then made to increase the mud density to 1.25 from 1.20. As more splinters were observed while reaming, the density was increased to 1.35. At 2410m a 60 bbl high viscosity pill was circulated which brought up a large volume of shale splinters. During a wiper trip at 2429m, the hole was tight from 2403m to 2300m. The hole again packed off after circulating bottoms up at 2458m. The mud density was then increased to 1.40. While RIH after a wiper trip the hole was reamed from 2400m to bottom. The mud density was increased to 1.50 during this operation. A 60 bbl high viscosity pill was circulated at this stage and brought up no increase in shale splinters/casings. Tight hole was experienced at 2435m while P.O.O.H. for a BHA change. While RIH with a turbine, the hole had to be reamed from 2440m to bottom. During drilling in marl and limestone at 2488m, partial returns were lost of 100 bbls. The instruction was issued to pull to the shoe and cut the mud density to 1.30 from 1.50. Using a centrifuge to discard barite and seawater dilution, the mud density was reduced to 1.40 where the instruction was issued to maintain the density. Upon RIH, a tight spot was hit at 2400m and the hole

cont'd .....

WELL SUMMARY

Cont.

had to be reamed to bottom. Tight spots were experienced at 2530m and 2538m during survey short trips. Tight spots were again encountered at 2410m and 2580m.

At 2784 a cement plug had to be set in order to pull the B.O.P. for repairs. While reverse circulating, 80 bbls of mud were lost to the formation when all valves on the return line were closed. A second plug was then set. After running the B.O.P. and riser and drilling the cement, the hole was washed and reamed to 2253m. The instruction was then issued to pull to the shoe and condition the mud to 165,000 mg/l chlorides from 150,000 mg/l chlorides and to reduce the API fluid loss to below 5cc from 7cc. While RIH the hole was washed and reamed to 2400m, then circulated twice at 2784 m. While P.O.O.H. the pipe was stuck at 2634m. Circulation could not be established. Eventually the decision was made to sidetrack the hole. During the fishing operations the interval was logged. The caliper log showed the hole to average 17½ inches from 2150m to the top of the limestone at 2472m. In particular sections 2388m - 2404m and 2464m - 2471m were repectively 22 inches and 21 inches. After considering the caliper log data, all parties concerned agreed to maintain the yield point in the range of 15-25 lbs/100 sq. ft. and the mud density at 1.50. However a further instruction was issued to reduce the chlorides to 90,000 mg/l from 160,000 mg/l. Before dressing the cement plug prior to kicking off, the mud was conditioned with an 850 bbl fresh water batch displacement while staging into the hole. After the mud had been conditioned a trip was made to change the BHA. While kicking off, the mud was further conditioned on instructions to maintain 1.5% to 2.0% by volume Magcolube and a yield point of 18 to 25 lbs/100 sq. ft. with XC-Polymer: the polymers used were to be XC-Polymer for rheology control and Magcopolysal for fluid loss control with a lower concentration of Drispac which had previously been used in the interval for both rheology and API fluid loss control. The hole was then drilled with no hole problems to the Anhydrite saltdome cap at 3279m. At this point the travelling blocks were restrung while the surface active mud was conditioned to 170,000 mg/l chlorides. The rest of the circulating system

cont'd .....

WELL SUMMARY

Cont.

was conditioned while circulating at the casing shoe and while staging into the hole. Throughout this process the mud density was maintained at 1.50 with saturated brine dilution volume.

The salt was penetrated at 3285m and the mud conditioned to saturation while circulating at the casing shoe and while staging into the hole. Although the mud was saturated to the point of free salt in the system, the maximum mg/l chlorides was 180,000 mg/l because the high concentration of polymers tended to coat the salt crystals thus prohibiting them from solubilizing. While drilling ahead in salt, one shale shaker was by passed to allow the salt cuttings to remain in the mud system. Mud density was maintained at 1.50 with saturated brine dilution volume. The salt was then drilled without problems to the casing depth of 3361m. The 9-5/8" casing was run and cemented at 3351m with 150 bbls of inhibitor and oxygen scavanger treated mud pumped behind the casing.

WELL SUMMARY

8½" HOLE INTERVAL 3351m - 4450m.

Difficulty was encountered in obtaining a satisfactory leak off test. Two cement squeeze jobs were performed before a satisfactory formation integrity test of an equivalent density of 2.00 was obtained. During these procedures the depth was deepened to 3373m.

When the instruction was given, all mud tanks were dumped and cleaned as were all the mixing lines. All valves in the mud room were tested as well. Because an oil base mud was to be used in this interval every precaution had to be taken to prevent leakage and water contamination of the mud.

After the mud tanks were prepared, 1550 bbls of 1.70 density Oilfaze were mixed. Mixing time was enhanced by the use of a shear device attached to one of the rig mud pumps. After the mud had been prepared, the instruction was issued to displace while circulating at the casing shoe; the water base mud returns were dumped at the flowline. Drilling then proceeded in the salt from 3373m with no hole problems to 3935m where a bit trip was made. However while RIH, the hole had to be reamed to bottom from 3922m. The mud density was then raised to 1.75 from 1.71. While P.O.O.H. for a survey and short trip at 4104m, the hole was tight from 3935m to 3924m; the mud density was raised to 1.80 from 1.75. During a bit trip at 4157m the hole was reamed and washed to bottom from 4132m after which the mud density was increased to 1.85 from 1.80. With the mud density at 1.85 - 1.86 the rest of the interval was drilled in salt, shale and Anhydrite to the TD of 4450m with no hole problems. The Oilfaze mud was prepared for this interval by adding 1045 sacks of Oilfaze basic package to 1045 bbls diesel. As the basic package was being mixed, the suggested amounts of emulsifier and oil-wetting agents - SE-11 and DV-33 were added. After these chemicals had been properly sheared, a retort test was conducted to determine the percentage water, if any, of the Oilfaze system. The retort indicated one percent water. Because water imparts viscosity mud suspension properties to an oil mud, another two percent seawater was added to the Oilfaze to ensure a good barite suspension. Another one to two percent water was assumed to be incorporated during the displace-

Cont'd .....

WELL SUMMARY

Cont.

ment. After the barite weight up to 1.70 the required amount of lime was added for alkalinity control and chemical efficiency. Throughout the mixing procedures, a shear device was employed. This device with its 500 psi pressure drop was attached to a rig mud pump at the pop off line. The shear device not only sheared and emulsified the chemicals and the two liquid phases of oil and water, but also imparted a 45c^{o} temperature to the mud; this was added advantage.

The displacement was conducted without problems. A 50 bbl seawater spacer was pumped by the BJ unit. This was followed by a 50 bbl high viscosity Oilfaze spacer pumped by the rig mud pump. With these two spacers in place, the 1.70 density Oilfaze was displaced with the rig mud pumps, while back pressure was held with the choke. The 1.50 density saturated salt mud was dumped at the flowline. When the displacement was complete, retort analysis of the mud indicated a two percent increase in water content.

During the interval the mud density was increased to a maximum 1.86 from 1.70. The plastic viscosity ranged between 26 and 40 cps while the yield point was maintained in the 10 to 14 lbs/100 sq feet range. Solids reached a maximum of 36% at a mud density of 1.85. Solids were controlled by the primary shakers and by new volume additions. The oil/water ratio was maintained between 95/5 and 90/10.

The electrical stability ranged between 1020 volts and 1500 volts primarily as a function of salt drill solids affecting the stability electrode.

The high pressure, high temperature fluid loss ranged from 1.4cc to 3.6cc.

The mp alkalinity was maintained in the 2.0 - 2.9 range while the mud activity was left uncontrolled. At end of the interval, the surface volume was disposed of by burning through the flare booms.

DAILY MUD PROPERTIES

Well: Statoil 15/12 - 3

PAGE 1

1980 DATE	Meters DEPTH	Sp.gr. WT.	VIS SEC.	CORR. PV	CORR. YP	GELS 0	GELS 10	pH BECK ☒ STRIP ☐	FLUID LOSS 100 PSI API	FLUID LOSS 500 PSI 300 °F HT-HP	CL ☒ CACL ☐ NACL ☐	ALKALINITY PF	ALKALINITY PM	ALKALINITY MF	CA ppm	RETORT % OIL	RETORT % SOL	RETORT % WATER	V.G. METER READING @ 122° 600 R.P.M.	300 R.P.M.	200 R.P.M.	100 R.P.M.	6 R.P.M.	3 R.P.M.	Bbl CEC		$ TOTAL MUD COST
21/6	-	1.03	100+																								4714.10
22/6	173	1.03	100+																								4740.18
23/6	173	1.03	120+																								8536.94
24/6	260	1.06	35	4	10	1	8	9.0	NC	NC	11000	.15	.2	NA	1520	0	3	97	18	14	NA	NA	NA	NA	NA		8536.94
25/6	565	1.08	35	5	15	10	12	9.0	NC	NC	18000	.1	.25	NA	2000	0	5	95	25	20	NA	NA	NA	NA	NA		12444.31
26/6	565	1.05	100+																								12681.71
27/6	565	1.05	100+																								14231.61
28/6	565	1.02	100+																								17089.43
29/6	565	1.03	100+																								17089.43
30/6	565	1.03	100+																								17089.43
1/7	830	1.04	42	20	22	5	25	11.5	22.0	-	13000	1.7	2.6	-	TR	0	4	96	52	32					22.0		18197.01
2/7	834	1.05	40	14	18	5	24	11.0	18.0	-	15000	0.8	2.0	1.1	80	0	6	94	46	32					20.0		25162.71
3/7	1052	1.05	40	16	14	4	15	11.0	18.0	-	20000	0.8	2.4	1.0	TR	0	6	94	46	30					22.0		26930.79
4/7	1130	1.08	39	14	8	3	12	10.5	19.0	-	17000	0.4	1.7	0.5	120	0	7	93	36	22					21.0		32478.80
5/7	1347	1.08	41	15	11	3	11	9.5	17.0	-	16000	0.3	1.4	0.4	80	0	8	92	41	26					23.0		38415.97
6/7	1440	1.15	44	15	12	5	18	10.0	16.0	-	17000	0.3	1.4	0.4	80	0	10	90	42	27					25.0		41962.47
7/7	1574	1.15	48	17	13	5	22	11.0	16.0	-	18000	0.2	1.1	0.3	120	0	10	90	47	30					23.0		43738.89
8/7	1707	1.20	47	9	14	5	19	10.0	15.0	-	19000	0.3	1.0	0.4	400	0	11	89	52	33					27.0		46597.13
9/7	1855	1.20	47	18	15	5	23	10.0	18.0	-	20000	0.2	1.4	0.3	600	0	12	88	51	33					25.0		47063.96
10/7	1948	1.25	47	18	14	5	17	10.0	18.0	-	20000	0.3	1.2	0.4	400	0	11	89	50	32					25.0		57305.94
11/7	1950	1.25	46	19	16	4	18	9.5	19.0	-	20000	0.2	0.7	0.6	600	0	12	88	54	35					25.0		57665.04
12/7	1950	1.25	49	18	16	4	18	9.5	19.0	-	20000	0.2	0.8	0.6	580	0	12	88	52	34					25.0		57665.04
13/7	2024	1.25	46	17	19	5	21	10.5	18.2	-	21000	0.2	2.8	0.75	240	0	12	88	53	36					30.0		63609.58
14/7	2122	1.25	45	17	20	5	23	10.0	15.0	-	22000	0.2	1.6	0.5	600	0	12	88	54	37					35.0		71660.91
15/7	2165	1.25	47	16	19	5	22	10.0	15.2	-	22000	0.2	1.6	0.6	480	0	12	88	51	35					35.0		74319.57
16/7	2165	1.25	45	16	18	5	22	10.5	15.0	-	22000	0.25	1.7	0.6	440	0	12	88	50	34					35.0		75220.68
17/7	2165	1.25	46	16	17	5	21	10.5	15.0	-	22000	0.2	1.8	0.6	400	0	12	88	49	33					35		76695.46
18/7	2165	1.25	49	17	19	5	22	10.5	15.2	-	22000	0.2	1.6	0.6	480	0	12	88	53	36					35		76695.46

DATE SPUD: DATE T.D.: COST:

DAILY MUD PROPERTIES

Well: Statoil 15/12-3

1980 DATE	Meters DEPTH	WT.	VIS SEC.	CORR. 122°F PV	YP	GELS 0	10	pH BECK ☒ STRIP ☐	FLUID LOSS 100 PSI API	500 PSI 300 °F HT-HP	CL ☒ CACL ☐ NACL ☐	ALKALINITY PF	PM	MF	CA ppm	RETORT % OIL	% SOL	% WATER	V.G. METER READING 122°F 600 R.P.M.	300 R.P.M.	200 R.P.M.	100 R.P.M.	6 R.P.M.	3 R.P.M.	Bbl CEC		$ TOTAL MUD COST
19/7	2165	1.25	47	16	17	5	20	10.5	17.0	-	22000	.25	1.5	.7	300	0	18	88	49	33					35		76,695.46
20	2165	1.25	50	16	18	5	21	10.5	17.2	-	22000	.25	1.5	.7	300	0	12	88	50	34					35		76,695.46
21	2165	1.25	50	16	18	5	22	10.5	17.0	-	22000	0.2	1.5	.7	360	0	12	88	50	34					35		76,695.46
22	2165	1.25	50	16	19	5	24	10.5	17.0	-	22000	0.2	1.1	.75	400	0	12	88	51	35					35		76,695.46
									RIG ON STRIKE																		
15/8	2165		MIXING SATURATED SALT																								76,695.46
16	2165		MIXING SATIRATED SALT																								86,733.32
17	2165	1.23	75	24	22	3	4	11.0	6.6	-	190000	.9	3.4	1.1	Tr	0	15	85	70	46							99,992.37
18	2165	1.23	75	21	23	3	3	11.0	6.4	-	188000	.9	3.5	1.1	Tr	0	15	85	65	44							100,512.14
19	2185	1.20	45	15	12	2	2	10.5	6.2	-	163000	.5	3.2	.6	120	0	13	87	42	27	20	12	2	1	75		100,537.52
20	2277	1.23	45	15	10	2	2	10.5	6.0	18.0	170000	1.0	3.6	1.1	Tr	0	15	85	40	25	18	11	2	1	10.0		105,893.98
21	2400	1.23	48	16	13	2	2	10.5	9.8	23	173000	1.1	3.0	1.3	Tr	0	15	85	45	29	21	14	2	1	12.5		113,455.85
22	2400	1.23	51	17	14	3	4	10.5	5.2	16.4	172000	.7	2.6	.9	Tr	0	15	85	48	31	24	17	2	1	12.5		115,239.03
23	2454	1.35	58	25	19	3	4	10.5	4.4	14	162000	1.5	3.8	1.8	Tr	0	19	81	69	44	36	28	3	2	15.0		124,380.18
24	2459	1.50	65	27	17	3	4	10.5	3.9	13.4	172000	1.4	3.4	1.9	Tr	0	21	79	71	44	32	20	3	2	15.0		134,991.70
25	2469	1.50	50	29	14	3	4	10.5	4.8	14.8	162000	1.0	3.2	1.5	Tr	0	24	76	72	43	31	19	3	2	15.0		144,922.54
26	2536	1.41	47	27	19	3	4	10.5	5.0	12.4	152000	1.0	3.2	1.6	Tr	0	22	78	73	46	35	22	3	2	12.5		150,672.97
27	2570	1.40	48	24	17	3	4	10.5	4.7	11.0	161000	.9	3.0	1.3	Tr	0	21	79	65	41	31	20	3	2	12.5		153,222.56
28	2596	1.40	48	22	16	3	4	10.5	4.9	11.8	161000	.6	2.8	1.0	Tr	0	21	79	60	38	28	17	3	2	12.5		154,562.55
29	2612	1.40	49	23	14	3	4	10.5	4.5	11.6	163000	.6	2.8	1.0	Tr	0	21	79	60	37	27	16	3	2	12.5		158,131.04
30	2673	1.40	50	24	13	3	4	0.5	4.2	11.6	164000	.6	2.8	1.0	Tr	0	22	78	61	37	26	17	3	2	12.0		159,783.19
31	2713	1.40	52	28	17	4	6	10.5	4.4	12.0	154000	.6	2.8	1.0	Tr	0	20	80	73	45	32	20	3	2	11.5		161,781.18

Rig on Strike.

Cl*

YP*

DATE SPUD: 21 June 1980

DATE T.D.: 9 December 1980

COST:

DAILY MUD PROPERTIES

Well: Statoil 15/12-3

1980 DATE	Meters DEPTH	S.G. WT.	VIS SEC.	CORR. 122°F PV	YP	GELS 0	10	pH BECK ☒ STRIP ☐	FLUID LOSS 100 PSI API	500 PSI 300 °F HT-HP	CL ☒ CACL ☐ NACL ☐	ALKALINITY PF	PM	MF	CA ppm	RETORT % OIL	% SOL	% WATER	V.G. METER READING @ 122°F 600 R.P.M.	300 R.P.M.	200 R.P.M.	100 R.P.M.	6 R.P.M.	3 R.P.M.	Bbl CEC		$ TOTAL MUD COST
1/9	2772	1.41	50	31	21	3	7	10.5	4.6	12.4	115200	.7	3.0	1.4	Tr	0	21	79	83	52	34	22	5	3	11.0		166,052.07
2	2784	1.40	47	27	14	3	6	10.5	5.0	12.8	146000	.7	2.8	1.3	Tr	0	19	81	68	41	29	17	4	2	10.0		166,655.81
3	2784	1.40	54	32	18	4	7	10.5	5.5	14.0	144000	.7	3.0	1.1	Tr	0	20	80	82	50	38	24	5	2	10.0		166,825.20
4	2784	1.40	53	31	17	3	7	10.5	5.4	14.0	144000	.7	3.0	1.1	Tr	0	20	80	79	48	37	24	5	2	10.0		166,825.20
5	2784	1.39	52	28	16	3	6	10.5	5.5	15.0	142000	.6	2.8	1.0	Tr	0	20	80	72	44	32	21	4	2	10.0		166,825.20
6	2784	1.38	51	29	15	3	6	10.5	5.8	15.0	142000	.6	2.8	1.0	Tr	0	20	80	73	44	32	20	4	2	10.0		166,825.20
7	2784	1.40	50	35	21	4	8	11.0	8.3	17.0	150000	1.0	3.4	1.4	Tr	0	21	72	91	56	41	28	5	3	9.0		167,209.04
8	2784	1.40	58	36	22	4	8	10.5	5.2	18.0	163000	0.6	2.4	0.9	Tr	0	20	80	94	58	39	29	5	3	9.0		178,464.74
9	2784	1.41	54	34	18	4	8	10.5	5.0	17.6	158000	0.6	2.6	1.0	Tr	0	20	80	86	52	38	20	5	3	9.0		150,928.59
10	2784	1.42	50	33	17	3	6	10.5	4.8	16.0	158000	0.6	2.6	1.0	Tr	0	20	80	73	40	29	19	4	2	9.0		150,928.59
11	2784	1.50	51	32	17	3	6	10.5	4.6	16.0	156000	0.6	2.6	1.0	Tr	0	20	80	81	49	36	22	5	3	10.0		150,928.59
12	2784	1.50	70	31	14	3	5	10.5	4.8	15.2	160000	0.6	3.1	1.0	Tr	0	22	78	76	45	33	20	3	2	10.0		150,928.59
13	2784	1.50	72	31	15	3	4	10.3	4.6	15.6	160000	0.5	3.2	0.9	Tr	0	22	78	77	46	34	22	3	3	10.0		150,928.59
14	2784	1.50	76	28	14	3	4	10.6	4.6	15.4	170000	0.2	3.6	0.4	Tr	0	22	78	70	42	30	19	3	2	10.0		199,560.53
15	2784	1.50	63	29	15	3	5	10.4	5.6	16.0	170000	0.2	3.2	0.4	Tr	0	22	78	73	44	31	18	3	2	10.0		203,795.60
16	2784	1.50	73	31	18	4	6	10.6	5.6	15.6	154000	0.5	4.4	1.0	Tr	0	22	78	79	48	33	16	4	3	10.0		210,663.49
17	2784	1.50	63	30	11	3	8	19.7	7.7	21.9	165000	0.8	5.0	1.2	Tr	0	22	78	71	41	18	17	3	2	10.0		212,889.02
18	2472	1.50	62	29	15	3	8	10.6	6.0	17.8	158000	0.5	4.4	0.9	Tr	0	22	78	73	44	31	18	3	2	10.0		216,875.44
19	2488	1.50	60	30	16	3	8	11.0	5.9	22.0	88000	0.4	3.6	0.6	Tr	0	20	80	76	46	33	21	3	2	10.0		231,628.58
20	2491	1.50	53	29	19	3	11	10.7	5.9	24.0	87000	0.3	3.6	0.5	Tr	2	22	76	77	48	35	22	3	2	10.0		257,842.10
21	2503	1.50	56	26	25	5	24	10.7	6.6	25.0	85000	0.2	2.8	0.4	Tr	2	21	77	77	51	40	30	6	4	10.0		260,310.60
22	2511	1.50	44	16	20	5	17	9.7	6.4	21.0	88000	0.2	1.8	0.3	520	2	22	76	52	36	30	25	6	4	7.5		273,864.58
23	2524	1.50	47	15	25	7	17	10.7	6.1	24.0	89000	0.4	3.2	0.6	300	2	20	78	55	40	37	36	27	22	10.0		276,173.44
24	2549	1.50	46	16	25	7	13	10.6	6.5	24.4	90000	0.3	3.2	0.4	320	2	20	78	57	41	36	34	18	16	10.0		279,026.16
25	2623	1.50	44	12	24	5	12	10.5	5.8	23.0	90000	0.4	3.5	0.5	280	2	21	77	48	36	31	29	13	11	10.0		285,730.61
26	2655	1.50	43	12	23	4	11	10.2	5.2	23.0	89000	0.5	3.3	0.6	280	2	21	77	47	35	29	27	17	16	10.0		287,298.82
27	2715	1.50	53	14	32	5	25	10.5	6.0	24.0	87000	0.5	3.2	0.7	200	2	22	76	60	46	39	32	17	15	10.0		298,934.41
28	2774	1.50	51	15	26	4	22	10.5	5.6	3.0	89000	0.5	3.1	0.7	200	2	21	77	56	41	34	27	16	14	9.5		309,755.05

DATE SPUD: 21st June, 1980

DATE T.D.: 9th December 1980

COST:

DRESSER

DAILY MUD PROPERTIES

Well: Statoil 15/12-3

1980 DATE	Meters DEPTH	S.G. WT.	VIS SEC.	CORR. 122°F PV	YP	GELS 0	10	pH BECK ☒ STRIP ☐	FLUID LOSS 100 PSI API	500 PSI 300°F HT-HP	CL ☒ CACL ☐ NACL ☐	ALKALINITY PF	PM	MF	CA ppm	RETORT % OIL	% SOL	% WATER	V.G. METER READING @ 122°F 600 R.P.M.	300 R.P.M.	200 R.P.M.	100 R.P.M.	6 R.P.M.	3 R.P.M.	Bbl CEC		$ TOTAL MUD COST
29	2803	1.50	48	12	24	4	22	10.5	5.4	23.0	89000	0.5	3.0	0.6	160	2	21	77	48	36	29	26	15	13	9.5		311,674.95
30	2825	1.50	51	15	26	5	24	10.8	6.0	24.0	89000	0.5	3.0	0.6	200	2	21	-7	56	41	31	26	15	13	9.5		313,301.61
1/10	2853	1.50	48	18	24	4	23	10.5	6.5	24.0	88000	0.4	2.9	0.6	200	2	21	77	60	42	34	25	14	12	9.5		319,412.70
2	2883	1.50	49	19	25	4	21	10.6	6.4	23.0	88000	0.5	3.0	0.7	180	2	22	76	63	44	36	28	15	12	9.5		326,534.13
3	2903	1.50	49	18	26	5	24	10.5	6.0	20.0	89000	0.5	3.2	0.7	180	2	22	76	62	44	35	28	15	13	9.0		327,210.35
4	2944	1.50	50	18	27	5	25	10.6	6.0	20.0	87000	0.5	2.5	0.7	180	2	22	76	63	45	57	28	15	13	9.0		331,459.23
5	2964	1.50	47	17	24	4	20	10.0	6.2	20.0	86000	0.4	2.3	0.5	180	2	21	77	58	41	34	26	14	12	9.0		333,385.52
6	2990	1.50	47	18	24	5	21	10.2	6.2	19.0	88000	0.4	2.0	0.5	180	2	22	76	6.0	42	34	25	14	12	9.0		340,301.41
7	3043	1.50	49	18	26	5	26	10.6	6.5	20.0	86000	0.5	2.0	0.7	80	2	22	76	62	44	35	28	14	12	9.0		344,645.20
8	3043	1.50	46	17	23	4	19	10.4	6.0	19.0	86000	0.5	1.9	0.6	80	2	22	76	57	40	32	27	14	12	9.0		349,548.00
9	3078	1.50	48	18	26	5	24	10.5	6.0	19.0	86000	0.5	1.9	0.7	80	2	22	76	62	44	35	28	14	12	9.0		351,370.96
10	3128	1.50	52	19	27	6	26	10.5	6.4	21.6	85000	0.5	2.2	0.8	TR	2	22	76	65	46	38	29	12	11	10.0		355,799.60
11	3132	1.50	55	20	25	7	26	10.4	6.4	18.0	85000	0.3	2.0	0.7	120	2	22	76	65	45	36	27	12	11	10.0		357,139.25
12	3179	1.50	50	18	27	6	27	10.0	6.7	17.9	88000	0.3	1.8	0.8	120	2	23	75	63	45	37	28	13	12	11.0		360,249.86
13	3233	1.50	52	19	27	6	27	10.6	6.6	18.2	89000	0.5	2.2	0.9	Tr	2	22	76	65	46	37	28	14	12	11.0		362,209.95
14	3233	1.50	50	19	23	6	27	10.6	6.8	18.0	90000	0.5	2.0	1.1	Tr	2	23	75	61	42	34	25	13	11	11.0		362,464.53
15	3249	1.50	54	19	23	6	29	10.4	6.4	18.4	89000	0.5	2.0	1.0	Tr	2	23	75	61	42	34	23	13	12	11.0		364,686.18
16	3252	1.50	56	20	20	6	25	10.4	6.0	17.4	90000	0.5	1.7	1.0	40	2	23	75	60	40	31	22	12	10	11.0		365,139.70
17	3256	1.50	53	20	25	6	26	10.3	6.4	17.0	90000	0.5	2.0	1.0	Tr	2	23	75	65	45	36	27	14	12	11.0		366,814.23
18	3263	1.50	56	20	23	6	27	10.6	6.0	17.2	90000	0.7	2.3	1.2	Tr	2	23	75	63	43	34	26	13	12	11.0		367,520.98
19	3279	1.50	51	19	23	7	28	10.7	6.2	17.4	89000	0.3	1.8	0.8	320	2	22	76	61	42	34	25	10	9	11.0		368,852.36
20	3279	1.50	55	18	21	7	30	10.5	5.8	18.6	168000	0.3	2.0	0.5	360	1	24	75	57	39	31	22	9	8	9.0		376,417.14
21	3282	1.50	50	20	22	6	29	10.4	6.7	18.0	167000	0.3	2.2	0.6	280	1	25	74	62	42	34	23	12	10	9.0		389,762.81
22	3306	1.50	50	23	20	5	22	10.0	5.6	4.4	75000	0.2	1.5	0.4	400	1	26	73	66	43	35	26	12	10	9.0		395,437.53
23	3359	1.50	54	25	26	5	27	9.5	5.6	4.0	180000	0.2	1.5	0.4	400	1	27	72	76	51	43	34	10	8	9.0		400,718.94
24	3361	1.50	50	23	20	5	20	9.5	5.4	4.0	180000	0.2	1.5	0.4	400	1	26	73	66	43	35	26	12	10	9.0		401,815.43
25	3361	1.50	60	22	21	5	21	9.0	5.4	3.0	180000	0.3	1.3	0.4	400	1	26	73	55	33	28	21	12	10	9.0		401,815.43
26	3361	1.51	62	22	24	5	23	9.0	4.2	3.0	180000	0.3	1.3	0.4	400	1	26	73	68	46	39	29	12	10	9.0		402,919.91

DATE SPUD: June 21st, 1980

DATE T.D.: December 9th, 1980

COST:

DAILY MUD PROPERTIES

Well: 15/12-3

1980 DATE	Meters DEPTH	S.G. WT.	VIS SEC.	CORR. 122°F PV	YP	GELS 0	10	pH BECK ☒ STRIP ☐	FLUID LOSS 100 PSI API	500 PSI 300 °F HT-HP	CL ☒	ALKALINITY PF	PM	MF	CA ppm	RETORT % OIL	% SOL	% WATER	V.G. METER READING @ 122°F 600 R.P.M.	300 R.P.M.	200 R.P.M.	100 R.P.M.	6 R.P.M.	3 R.P.M.	Bbl CEC		$ TOTAL MUD COST
27/10	3361	1.50	65	23	24	5	25	9.0	5.5	14.0	180000	.4	1.3	.5	400	1	26	73	70	47	38	31	14	12	9.0		402,919.91
28	3361	1.50	61	20	23	5	22	10.3	8.5	15.0	180000	.6	1.6	.8	400	2	27	71	63	43	37	30	11	10	9.0		407,635.88
29	3361	1.46	59	20	21	5	22	10.0	9.0	16.0	170000	.5	1.4	.7	1500	1	27	72	61	41	35	28	11	10	9.0		412,933.73
30	3361	1.48	60	20	21	5	21	10.0	9.5	17.0	175000	.3	1.1	.5	1500	1	27	72	62	41	33	26	12	11	9.0		412,933.73
31	3361	1.48	60	20	21	5	21	10.0	10.0	18.0	175000	.3	1.1	.5	1500	1	27	72	62	41	33	26	12	11	9.0		416,185.73
1/11	3361	1.48	60	20	21	5	21	10.0	10.0	18.0	175000	.3	1.1	.5	1500	1	27	72	62	41	33	26	12	11	9.0		417,269.73
2	3361	1.49	55	19	20	4	20	10.0	10.0	18.0	175000	.3	1.1	.4	1500	1	26	73	58	39	31	25	11	10	9.0		417,265.73
3	3361	1.49	56	20	20	4	20	10.0	10.5	19.0	172000	.3	1.0	.4	1800	1	26	73	60	40	31	26	11	10	8.5		417,811.73
4	3361	1.49	54	19	20	4	19	10.2	10.5	18.0	172000	.3	1.0	.5	1800	1	26	73	59	39	30	24	11	10	8.5		417,811.73
5	3361	1.50	45	23	20	4	24	10.0	10.5	18.0	170000	.3	1.0	.4	1800	1	25	74	66	43	33	21	4	3	8.5		417,811.73
6	3370	1.50	41	16	10	4	17	10.1	10.0	19.0	173000	.3	1.0	.4	1800	1	26	73	42	26	19	12	2	1	8.5		417,811.73
7	3370	1.50	42	15	9	2	20	10.2	12.0	20.0	174000	.3	1.0	.5	1800	1	25	74	39	24	18	11	3	2	8.5		419,302.23
8	3370	1.50	43	16	9	2	21	10.0	12.6	21.0	160000	.2	1.0	.5	1800	1	25	74	41	25	18	11	3	2	8.5		419,302.23
9	3370	1.50	43	16	11	2	22	10.4	13.0	21.8	164000	.4	1.4	.6	1880	1	25	74	43	27	20	13	4	3	8.5		419,519.03
10	3370	1.50	42	16	10	2	22	10.3	12.8	22.0	163000	.4	1.4	.6	1800	1	25	74	42	26	19	12	4	2	8.5		419,519.03
11	3373	1.50	41	15	10	5	24	12.0	18.6	27.0	166000	1.9	15.0	1.2	600	1	25	74	40	25	19	12	6	4	8.5		419,519.03
12	Mixing Oil Faze.....																										

DATE SPUD: DATE T.D.: COST:

DAILY MUD PROPERTIES

OPERATOR: STATOIL

CONTRACTOR: ROSS

WELL: 15/12-3

PAGE: 8½"OILMUD PT2

REPORT No.	DATE 1980	DEPTH Meters	WT. S.G.	VISCOSITY SEC.	VISCOSITY CPS.	CORR. 115°F PV	CORR. 115°F YP	GELS 0	GELS 10	STAB. VOLTS	FLUID LOSS Temp 250°F PSI 500	MP	CL Mg/L	SALT % BY WT.	ACTIVITY Am MUD	ACTIVITY As SHALE	RETORT % OIL	RETORT % WATER	RETORT % SOLIDS	OIL/WATER RATIO	
122	12/11	3373		MIXING OILFAZE.																/	
123	13	3373	1.70	60	47	32	30	19	25	2000	4.4	.1	-				67	4	29	94 / 6	
124	14	3439	1.70	53	37	31	12	6	9	1500	2.2	.7	14,000				65	5	30	93 / 7	
125	15	3442	1.70	54	40	30	20	10	15	1200	1.8	1.0	18,000				66	5	29	93 / 7	
126	16	3579	1.70	49	35	30	11	8	14	1300	1.2	1.6	8,000				65	6	29	92 / 8	
127	17	3608	1.70	54	41	34	14	9	14	1200	1.2	1.9	19,000				65	6	29	92 / 8	
128	18	3692	1.70	49	33	27	12	7	9	1240	1.4	2.1	20,000				63	6	31	91 / 9	
129	17	3777	1.71	52	32	26	13	8	10	1340	1.4	2.7	20,000				64	6	30	91 / 9	
130	20	3838	1.71	51	33	28	11	8	12	1340	1.6	2.4	22,000				64	7	29	90 / 10	
131	21	3935	1.71	50	33	27	12	8	13	1120	1.8	2.8	25,000				65	6	29	92 / 8	
132	22	3966	1.75	53	36	30	11	8	14	1060	2.2	2.4	26,000				63	6	31	91 / 9	
133	23	4104	1.80	56	40	33	14	8	15	1020	1.8	2.6	26,000				61	5	34	92 / 8	
134	24	4157	1.80	55	37	30	11	6	12	1140	1.8	2.6	26,000				61	5	34	92 / 8	
135	25	4234	1.85	58	47	40	13	6	13	1180	1.4	2.2	26,000				59	5	36	92 / 8	
136	26	4317	1.86	59	47	40	12	8	15	1040	1.6	2.8	33,000				62	4	34	94 / 6	
137	27	4319	1.86	60	46	40	11	8	15	1040	1.6	2.9	33,000				62	4	34	94 / 6	
138	28	4335	1.86	58	44	39	10	6	10	1020	1.8	2.9	33,000				62	4	34	94 / 6	
139	29	4343	1.85	65	37	31	12	6	10	1080	2.8	2.8	42,000				65	3	32	95 / 5	
140	30	4346	1.86	75	40	34	12	6	11	1220	2.6	2.9	46,000				65	3	32	95 / 5	
141	1/12	4388	1.85	54	39	34	10	6	11	1080	2.2	3.4	50,000				64	3	33	95 / 5	
142	2	4398	1.85	58	37	32	11	6	11	1080	2.4	3.9	45,000				64	3	33	95 / 5	
143	3	4401	1.87	87	38	34	8	6	11	1180	2.6	2.8	47,000				64	3	33	95 / 5	
144	4	4407	1.88	64	37	33	9	6	10	1080	3.2	3.2	38,000				65	3	32	95 / 5	
145	5	4424	1.86	62	42	36	11	6	11	1220	3.6	2.2	38,000				65	3	32	95 / 5	
146	6	4424	1.86	62	42	36	11	6	11	1300	3.6	2.2	38,000				65	3	32	95 / 5	
147	7	4424	1.86	62	42	36	11	6	11	1300	3.6	2.2	38,000				65	3	32	95 / 5	
148	8	4424	1.86	82	41	36	10	6	11	1020	2.6	2.1	30,000				63	5	32	93 / 7	
149	9	4434	1.86	74	37	32	10	5	10	1300	3.0	2.0	32,000				65	3	32	95 / 5	
150	10	4450	1.86	64	40	36	9	5	9	1300	3.0	2.0	32,000				65	3	32	95 / 5	
151	11	4450	1.86	64	40	36	9	5	9	1300	3.0	2.0	32,000				65	3	32	95 / 5	
152	12	4450	1.86	64	40	36	9	5	9	1300	3.2	1.8	32,000				65	3	32	95 / 5	
153	13	3232	1.85	74	37	32	10	5	10	1100	3.6	1.6	34,000				63	5	32	93 / 7	

DAILY MUD PROPERTIES

OPERATOR: STATOIL

CONTRACTOR: ROSS

WELL: 15/12-3

PAGE 8½"OILMUD PT2

REPORT No.	DATE 1980	DEPTH Meters	WT. S.G.	VISCOSITY SEC.	VISCOSITY CPS.	CORR. 115°F PV	CORR. 115°F YP	GELS 0	GELS 10	STAB. VOLTS	FLUID LOSS Temp 250°F PSI 500	MP	CL Mg/L	SALT % BY WT.	ACTIVITY Am MUD	ACTIVITY As SHALE	RETORT % OIL	RETORT % WATER	RETORT % SOLIDS	OIL/WATER RATIO	
154	14/12	3232	1.25	45																/	
155	15	2150	1.25	45																/	
156	16	2050	1.25	45																/	
157	17	2052	1.25	45																/	
158	18		1.25	45																/	

DAILY MATERIALS CONSUMPTION

WELL STATOIL 15/12 - 3

DATE 1980	DEPTH Meters	Barite MT	Bentonite MT	Caustic	Lime	Soda Ash	Spersene	CMC Low Vis	Drilling Detergent	Drispac	Magco-Polysal	XC-Polymer	Salt	Nut Plug	DAILY MUD COST $	REMARKS
20/6	-		15	10											4717.10	Handle anchors. Mix 1000 bbls spud mud
21/6	173			2											23.08	Spud in. Drill 36" hole to 173m
22/6	173		12	10											3796.76	Run 30". Run riser. Drill 17½ pilot hole
23/6	219														-	Lose returns around 30". Pump cmt.
24/6	565		12	15	11										3907.37	Drill 17½ pilot hole w/seawater bent.
25/6	565	2													237.60	Log 17½ - RIH to open to 26
26/6	565	4.5	4	3		1									1549.70	Open 20 26"-Short trip p/o for casing
27/6	565		12	2		2									2857.82	Run casing cmt - run stack
28/6	565		No additions												nil	Test stack - pull, rerun.
29/6	565		No additions												nil	Test stack, o.k. RIH w/BHA
30/6	830			28		1	10	10							1107.58	Drill CMC-1/off test-drilling
1/7	894	10.5	7.7	57	4	1	41	34	1					10	6265.70	Drilling - swab on trip
2/7	1052			20	8		25	10	1						1768.08	Trip for bit - drilling
3/7	1130		10	25	34	1	4	48							5548.01	Drilling/Surveys
4/7	1347	6	12	19	17	1		37							5936.17	Trip for bit - drilling/survey
5/7	1440	11.3		28	17			22	1						3456.50	Drilling/survey
6/7	1574	5.4		20	10		8	12							1776.42	Drilling/survey. Pump b/down
7/7	1707	4.9		35	13		34	12	1						2858.24	Drilling - trip for bit.
8/7	1855	15.2		22	16		12	7	1						3325.07	Drilling/surveys.
9/7	1947	63.7		27	22		11	30							10241.98	Drilling-Circ. for bit trip.
10/7	1950	2.4			1			1							359.10	RIH-Drop BHA. Fishing
11/7	1950														-	Fishing. POOH w/fish
12/7	2024	16.2		61	19		45	20	2					10	5944.54	RIH w/bit - drilling
13/7	2122	34.6		10	15		10	36	2					20	8051.33	Drilling/survey / wiper trip
14/7	2165	12.4		16			15	2						21	2658.66	Bit trip - drilling
15/7	2165			17			28							10	901.11	Wiper trip. Cir. to cond.hole for log.
16/7	2165	6.7		20			22								1474.78	Log hole.Circ. to cond. hole. POOH
17/7	2165														-	Run/land cmt. 13 3/8" csg
18/7	2165														-	Run seal ass., test BOP. Tag cmt.
19/7	2165														-	Displ. riser, hang off, pull riser
20/7	2165														-	Rig on strike

DAILY MATERIALS CONSUMPTION

WELL Statoil 15/12-3

DATE 1980	DEPTH meters	Barite M.T.	Bentonite MT SX*	Caustic	Lime	Soda Ash	Spersene	CMC L.V.	Drilling Detergent	Drispac	Magco Poly Sal	XC-Polymer	Salt	Nut Plug	DAILY MUD COST	REMARKS
21/7	2165														0	Rig on Strike
		RIG ON STRIKE														
14/8	2165														0	Engineer arrives on rig
15/8	2165			58		4							1200		10,037.86	Begin building sat. salt mud
16/8	2165									66			475		13,259.05	Finish mixing
17/8	2165	3								1					519.77	Attempt to run wear bushing
18/8	2168			2											25.38	Tag. cmt. Displace mud drill 3m
19/8	2256	14		25						11			220		5.356.46	POOH change BHA RIH drill ahead
20/8	2400			22						27			436		7.561.87	Drilling hole packs. of at 2403 Ream
21/8	2400	1.75		11						9			15		1.783.18	Ream. Trip for bit Ream Raise m d wt
22/8	2436	43.85		30						15			144		9.141.16	Raise mud wt. to 1.35 Ream Drill
23/8	2459	63		11						11		1	85		5.150.43	Hole packs off. Raise mud wt. t 150
24/8	2481	65		6						12					9.930.84	Ream. Drill w/Turbo Lose partial
25/8	2517			30						29			485		5.150.43	POOH to shoe cut mud wt to 1.40 Ream
26/8	2570			11						8			240		3.149.59	Drill, survey POOH for BHA
27/8	2593									8				9	1.839.99	R.I.H. DRLG AOD n/Ling
28/8	2606	7.3		12						10			125		3.568.46	DRLG Trip for BHA- DRLG
29/8	2664	3.3		6						8					1.652.18	DRLG - Short Trip-DRLG
30/8	2713	6								7			30		1.997.99	DRLG - 2 Survons - DRLG
31/8	2765			11						12			310		4.270.09	DRLG
1/9	2784	1.3	13*	8						1					607.74	DRLG - Set Plug to pull stack
2/9	2784		10*	1											165.32	Pull stack
3/9	2784														-o-	Work on stack
4/9	2784														-o-	Work on stack
5/9	2784														-o-	Work on Stack
6/9	2784			2		1									43.84	Drill CMT. Plug
7/9	2784	11.4		7		6	2			36			535		11.205.70	Wash & Riam in hole
8/9	2784	30.3	16.9	3		1				21			144		12.463.85	Ream to Bott. POH-stuck
9/9	2784														-o-	Work on stuck pipe.
10/9	2784														-o-	Back- POOH w/fish
11/9	2784	13.2													1.646.57	RIH Jarfish - POOH w/d fish

DAILY MATERIALS CONSUMPTION

WELL Statoil 15/12-3

DATE 1980	DEPTH Meters	Barite M.T.	Bentonite MT SX*	Caustic	SSP	Alstearate	Soda Ash	Spersene	CMC L.V.	D.D.	Bit Lube	Drispac	Magco Poly Sal	XC- Polymer	Salt	Nut Plug	Magcolube	DAILY MUD COST $	REMARKS
12/9	2784																	-o-	RIH Jar on fish-POOH w/sash
13/9	2784	17.3										19			225	17		6.985.37	Fishing Circ raise wt to 1.50
14/9	2784	22		11								4			100			4.235.07	Fishing - POOH w/D Fish
15/9	2784	24		24								13			175	17		6.867.89	RIH w/bit circ-cond. lde POOH
16/9	2784	15.7	15*	3														2.225.38	Set cmt. plug Test BOP
17/9	2472		3wtt	3			1	3				20						3.986.42	Tag cmt. make 850 bbl batch-displacement.
18/9	2472	85.6										28						14.753.14	Cond .Mud.Drillcmt. Wipertrip
19/9	2492	22.6												4	150		28	26.213.52	Trip drill w/kick off assembly cond.-mud.
20/9	2503	5												3	100			2.468.50	Kick off POOH RIH w/new turbine
21/9	2511	47											60		100		4	13.553.98	Drilling w/turbine
22/9	2520			6									36					2.308.86	POOH RIH w/drlg assembly drill
23/9	2538	15.4		5									14					2.852.72	POOH RIH w/turbine drlg
24/9	2610			10									50	3			3	6.704.45	Drill wiper trip POOH for washout
25/9	2654			4										2			1	1.568.21	POH w/out RIH drilling.
26/9	2712	47.0		25							2		15	7	158		1	11.635.80	Drilling w/turbo
27/9	2768	16.0		21							3		18	17	175			10.820.64	Drilling-survey-drilling
28/9	2803			10										5				1.919.90	Drlg-Poh test Bops.
29/9	2821			9							2	3		3				1.626.66	Test Bops RIH-Drlg.
30/9	2848	2.0		7				3			1	4	50	3	125			6.111.09	Drlg-Trip for Bit-Drlg
1/10	2878	20.0		22				25			1	10		6	40			7.121.43	Drlg Ah&Ao
2/10	2899	3.0		10				10										676.22	Drlg-Trip for Bit- Drlg
3/10	2939	9.0		12	2	1		14				6		5				4.248.88	Drlg ahead.
4/10	2964			9	2	1		18						4				1.926.29	Drlg - Trip for bit
5/10	2990	40.0		9	1	1		18						4				6.915.89	RIH w/new bit - Drlg
6/10	3038	13.0		17	1	1		24						5	30			4.343.79	Drlg
7/10	3043	3.0		6	1			4					50	1	120			4.902.80	Hang off - wow
8/10	3077	2.0		10	1			8						3	30			1.822.96	RIH Drlg
9/10	3120	14.0		12	1			12						6				4.428.64	Drilling ahead
10/10	3131	8.0		6		1		6										1.339.65	Drlg POOH RIH w/turbin
11/10	3166	2.6		22				14					20		125			3.110.61	Ream in BHA Drill ahead
12/10	3231	9.0		29	2			17							4			1.960.09	Drlg wiper trip

DAILY MATERIALS CONSUMPTION

WELL Statoil 15/12-3

DATE 1980	DEPTH Meters	Barite M.T.	Bentonite MT	Caustic	SSP	Al Stearate	Soda Ash	Spersene	CMC L.V.	D.D.	Bit Lube	Drispac	Magco Polysal	XC-Polymer	Salt	Nut Plug	Magcolube	DAILY MUD COST $	REMARKS
13/10	3233			6				6							8			234.58	Circ. B/V POOH for bit/BHA RIH
14/10	3244			11	2	2		5					24	1				2.221.65	RIH Drill ahead.
15/10	3257			3		3								1				453.61	Drilling Bit trip
16/10	3256	4		4										3				1.674.44	Drilling trip for core assembly
17/10	3263	4		7		1												706.75	Cut core no.1 POOH w/same RIH w/bit
18/10	3276			7	1	2						2		2				1.331.38	Ream rathole drilling circ BIU
19/10	3279	1		17								9	23		500			7.564.78	Drop survey POOH RIH to shoe begin - raising el-
20/10	3279			3								2	34	6	1073			13.345.67	Cond mud stage into hole- Drlg ahead.
21/10	3286			8								12	7		350			5.674.72	Drill into salt POOH to shoe saturate- mud.
22/10	3345			4								9			243			5.281.41	Drlg in salt

DAILY MATERIALS CONSUMPTION

WELL 15/12-3

DATE 1980	DEPTH Meters	Barite MT	Bentonite Gel (bulk) MT	Salt	Polysal	Kelzanxc	Caustic	Oilfaze	SE-11	DV-33	VG-69	Lime			DAILY MUD COST $	REMARKS
23/10	3361			47		2									1096.49	Drill to Csg depth - logging.
24/10	3361	- NO ADDITIONS			-										-	Logging
25/10	3361			100	5		2								1104.48	Logging RIH w/bit
26/10	3361	- NO ADDITIONS			-										-	Wiper trip - Run 9-5/8 casing.
27/10	3361	12.0	4.0	240			2							7 3	4715.94	Land casing- cmt 1st stage.
28/10	3361	-NO ADDITIONS-													5297.88	Cmt 2nd stage - Seal falure.
29/10	3361	-NO ADDITIONS-													-	Seal OK - DV tool drilled
30/10	3361	24.0													3252.00	Stage in w/RTTS Look for leak.
31/10	3361	8.0													1084.00	RIH to float - Run CBL.
1/11	3361	-NO ADDITIONS-													-	Drill out float - Wait on Matls.
2/11	3361	4.0													542.00	Wait on Matls POOH.
3/11	3361	-NO ADDITIONS-													-	Set Ez drill - Pers paco to squeeze.
4/11	3361	-NO ADDITIONS-													-	Squeeze - Trip - WOC
5/11	3370	-NO ADDTIONS-													-	Drill cmt shoe T/off tests.
6/11	3370	11.0													1490.50	Run junkbasket;csq scrapper.
"	"															Run retainer.
7/11	3370														-0-	Sting into retainer. Press up
"	"															w/no leak off POOH.
8/11	3370	1.6													216.80	Test BOP drill out retainer.
"	"															Form int. test 1.
9/11	3370														-o-	RIH open ended. Cmt. squeeze
10/11	3373														-o-	WOC trip Drill out cmt+3m hole circ.
11/11	3373														-o-	Form int test Pump pits.Build oilfaz
12/11	3373	134						1045	4	5	1	120			75,694.62	Build 1600 bbls oilfaze.
13/11	3419	89.4							2	3	55				23,693.34	Displace oilfaze.Drill in salt.
14/11	3442	12.9						100	1	1		370			9,759.37	Drill in salt trip for bit.
"	"															Mix 150 bbl premix.
15/11	3547	13.5								4		150			5,982.09	Work on junk. Drill ahead.
16/11	3608	3.6							1	1					487.80	Drop survey. Trip for bit.
17/11	3692	16.9													4,159.57	Work junk basket. Drill in salt.
18/11	3764	2.5							1	1	10	30			3,594.37	Survey,short trip.Drill.Drop survey. POOH.

DAILY MATERIALS CONSUMPTION

WELL: 15/12-3

REPORT No.	DATE 1980	DEPTH Meters	MAGCOBAR mt	VERT OIL ☐ OIL FAZE ☒	VG-69	SE-11	DV-33	DV-22	LIME	NaCl ☐ CaCl₂ ☐	BRINE WATER	Sea WATER bbl	OIL		DAILY MUD COST $	TOTAL MUD COST $	REMARKS
122	12/11	3373													- 0 -	419,519.03	Dump-Clean tanks.Mix Oil faze mud.
123	13	3373	134	1045	1	4	5		120			27			75,694.62	495,213.65	Build 1600 bbls Oilfaze mud.
124	14	3439	89.38	100	55	2	3								23,693.34	518,906.99	Displace at shoe.Drill ahead in salt.
125	15	3442	12.9			1	1		370						9,759.37	528,666.36	Drill ahead.Bit trip.Mix 150 bbls vol.
126	16	3579	13.5				4		150						5,982.09	534,648.45	Work junk.Drill ahead in salt
127	17	3608	3.6												487.80	535,136.25	Bit trip. Test BOP.
128	18	3692	16.9			1	1								4,159.57	539,295.82	Drill ahead in salt.
129	19	3777	2.5		10	1	1		30						3,594.37	542,890.19	Drill ahead.Short trip. Drop survey.
130	20	3838	7.2				3								975.60	543,865.79	Bit trip.Work junk.Drill ahead.
131	21	3935				0.5			30						3,272.79	547,138.58	Drill.Short trip.Drill ahead
132	22	3966	5.7												772.35	547,910.93	Bit trip.Raise mud density Drill.
133	23	4104	4.6		15		2								4,293.92	552,204.85	Short trip.Drill ahead.
134	24	4157	14.6												1,978.30	554,183.15	Short trip.Raise density to 1.80 trip.
135	25	4234	22.9		4	1	0.5								5035.14	559,218.29	RIH.Drill ahead.Short trip. Raise density to 1.85.
136	26	4317				1	0.5		40						1,587.86	560,806.15	Drill ahead.
137	27	4319													- 0 -	560,806.15	Drop survey.Trip for bit Test BOP.
138	28	4335			10	1	1								3,134.42	563,940.57	Trip. Drill.
139	29	4343				1									982.91	564,923.48	Drill.Trip.Lost mud.
140	30	4346	12.9	135			1								8,908.13	573,831.61	Rebuilt vol. Drilled.
141	1/12	4388	16.3	70	10		1								7,613.06	581,444.67	Drilled. POOH.
142	2	4398				2	4								5,512.66	586,957.33	POOH. RIH. Drilled.
143	3	4401			NO MATERIAL USAGE										0	586,957.33	POOH. WOW. POOH.
144	4	4407					1								886.71	587,844.04	RIH. Drilled.
145	5	4424		20	30										4,723.80	592,567.84	Drill. Treat rheology.
146	6	4424			5										632.40	593,200.24	Work on stack.

DAILY MATERIALS CONSUMPTION

WELL: 15/12-3

REPORT No.	DATE 1980	DEPTH Meters	MAGCOBAR mt	VERT OIL ☐ OIL FAZE ☒	VG-69	SE-11	DV-33	XC-Polymer	Lime	NaCl ☐ CaCl₂ ☐	BRINE WATER	Sea WATER bbl	OIL	Baryte SX.	DAILY MUD COST $	TOTAL MUD COST $	REMARKS
148	8/12	4424			8										1,011.84	594,212.08	Test.Disp.Riser.Circ.
149	9	4434	5			1½	2								3,925.28	598,137.36	Cored. POOH. RIH.
150	10	4490	3				1								1,293.21	599,430.57	Drilled to TD. Logged.
151	11	4450	40	(correction)											5,420.00	604,850.57	Logged.
152	12	4450													0	604,850.57	Logged. RIH to CMNT.
153	13	3232												200	1,270,00	606,120.57	CMNT. Rebuild mud wt.
154	14	3232	64					16							14,409.00	620,529.57	RIH.Lay down DP.POOH.
155	15	2150	37					2							5,730.70	626,260.27	Set packer.Displ.Oil mud.
156	16	2052	5					3							1,753.30	628,013.57	Perf.POOH.Set packer.
157	16	2052	13					5							3,554.00	632,203.07	P+A Operations.

MATERIAL CONSUMPTION BY INTERVAL

36" HOLE INTERVAL 111m - 173m.

PRODUCTS	UNIT SIZE	UNITS	COST $
Bentonite (Wyoming)	MT	15	4831.80
Caustic Soda	25 kg	12	152.28
Total			4984.08

MATERIAL CONSUMPTION BY INTERVAL

26" HOLE INTERVAL 171m - 565m.

PRODUCT	UNIT SIZE	UNITS	COST $
Magcobar	MT	6.5	810.81
Magcogel (Wyoming)	MT	28	9,019.36
Caustic Soda	25 kg	28	355.32
Lime	20 kg	11	42.35
Soda Ash	50 kg	1	18.46
Total			10,246.30

MATERIAL CONSUMPTION BY INTERVAL

17½" HOLE INTERVAL 552m - 2165m.

PRODUCT	UNITSIZE	UNITS	COST $
Magcobar	MT	190.3	23,738.02
Magcogel (wyoming)	MT	41.7	13,432.40
CMC L.V.	25 kg	281	15,699.47
Spersene	50 lb	265	4,640.15
Caustic Soda	25 kg	407	5,164.83
Lime	20 kg	175	673.75
Soda Ash	50 kg	7	129.22
Nut Plug	25 kg	71	1.385.21
DD	55 gal	9	4,383.32
Total			69,246.37

MATERIAL CONSUMPTION BY INTERVAL

12-1/4" HOLE INTERVAL 2151m - 3361m.

PRODUCT	UNIT SIZE	UNITS	COST $
Magcobar	MT	655.1	81,717.17
Magcogel (wyoming)	MT	23.9	7,698.67
Magcogel (Wyoming)	50 kg	38	580.26
Spersene	50 lb	192	3.361.92
Caustic Soda	25 kg	639	8,108.91
Soda Ash	50 kg	13	239.98
Salt	50 kg	8662	66,610.78
Drispac	50 lb	424	61,713.20
XC-Polymer	50 lb	106	38,011.60
Magco Polysal	25 kg	406	25,180.12
Magcolube	55 gal	35	28,008.75
Bit Lube	55 gal	9	7,202.25
SSP	55 gal	14	0
Al. Stearate	25 kg	10	625.00
Sodium Sulfite	50 kg	3	141.60
Inhibitor A101	55 gal	7	5,297.88
Nut Plug	25 kg	80	1,560.80
Total			336,058.89

MATERIAL CONSUMPTION BY INTERVAL

8½" HOLE INTERVAL 3351m - 4450m

PRODUCTS	UNIT SIZE	UNITS	COST $
Magcobar	MT	404.98	54,874.79
Oilfaze	50 lb	1370	63,663.90
VG-69	25 kg	148	18,719.04
Lime	20 kg	740	2,989.60
DV-33	55 gal	32	28,374.72
SE-11	55 gal	17	16,709.47
Sub Total			185,331.15
Magcobar	MT	119	16,124.50
Magcobar	50 kg	200	1,270.00
XC-Polymer	50 lb	26	9,323.60
Sub Total			26,718.10
Total			212,049.25

MATERIAL CONSUMPTION BY INTERVAL

TOTAL MATERIALS CONSUMPTION

PRODUCTS	UNIT SIZE	UNITS	COST $
Magcobar	MT	1375.88	177,265.29
Magcobar	50 kg	200	1,270.00
Magcogel (Wyoming)	MT	108.60	34,982.23
Magcogel (Wyoming)	50 kg	38	580.26
Caustic Soda	25 kg	1086	13,781.34
Lime	20 kg	926	3,705.70
Soda Ash	50 kg	21	387.66
CMC L.V.	25 kg	281	15,699.47
Drispac	50 lb	424	61,713.20
Magcopolysal	25 kg	406	25,180.12
XC-Polymer	50 lb	132	47,335.20
Spersene	50 lb	457	8,002.07
Salt	50 kg	8662	66,610.78
Magcolube	55 gal	35	28,008.75
Bit Lube	55 gal	9	7,202.25
SSP	55 gal	14	0
Al. Stearate	25 kg	10	625.00
Sodium Sulphite	50 kg	3	141.60
Inhibitor A101	55 gal	7	5,297.88
Nut Plug	25 kg	151	2,946.01
Oilfaze	50 lb	1370	63,663.90
VG-69	25 kg	148	18,719.04
DV-33	55 gal	32	28,374.72
SE-11	55 gal	17	16,709.47
Total			632,584.89

Note: Price change during end of 12-1/4" Interval.

WELL SUMMARY

COST PER INTERVAL

36"	HOLE	MUD COST	$ 4,984.08
		METERS DRILLED	62
		COST PER METER	$ 80.38
26"	HOLE	MUD COST	$ 10,246.30
		METERS DRILLED	394
		COST PER METER	$ 26.00
17½"	HOLE	MUD COST	$ 69,246.32
		METERS DRILLED	1613
		COST PER METER	$ 42.93
12-1/4"	HOLE	MUD COST	$ 336,058.82
		METERS DRILLED	1210
		COST PER METER	$ 277.73
8½"	HOLE	MUD COST	$ 186,071.52
		METERS DRILLED	1099
		COST PER METER	$ 169.31

TOTAL MUD COST	$ 606,607.04
TOTAL METERS DRILLED	4339
TOTAL COST PER METER	$ 139.80

TOTAL MUD COST FOR PLUGGING AND ABONDONING PROCEDURE	$ 25,448.10

WELL SUMMARY

TIME DISTRIBUTION

36" HOLE	DAYS DRILLING	1
	DAYS LOGGING, RUNNING AND CEMENTING CASING	1
	OTHER	0
26" HOLE	DAYS DRILLING	3
	DAYS LOGGING, RUNNING CEMENTING CASING	1
	OTHER	
17½" HOLE	DAYS DRILLING	13
	DAYS LOGGING, RUNNING AND CEMENTING CASING	2
	OTHER	32
12-1/4" HOLE	DAYS DRILLING	47
	DAYS LOGGING, RUNNING AND CEMENTING CASING	4
	OTHER	21
8½" HOLE	DAYS DRILLING	23
	DAYS LOGGING, RUNNING AND CEMENTING CASING	2
	OTHER	11

NUMBER OF BITS

36" HOLE	1 BIT
26" HOLE	12 BITS
17½" HOLE	6 BITS
12-1/4" HOLE	22 BITS
8½" HOLE	14 BITS

WELL SUMMARY

TOTAL VOLUME MUD AND DILUTION

36" HOLE	1000 BBLS
26" HOLE	3059 BBLS
17½" HOLE	6233 BBLS
12-1/4" HOLE	11146 BBLS
TOTAL WATERBASE	21438 BBLS
8½" HOLE	2150 BBLS
TOTAL OILBASE	2150 BBLS
P AND A OPERATIONS	1450 BBLS
WATER BASE	

WELL SUMMARY

VOLUME SUMMARY 12-1/4" HOLE

TOTAL VOLUME UTILIZED	11146 BBLS
VOLUME LOST TO SOLIDSCONTROL/CUTTINGS	3488 BBLS
VOLUME LOST TO 9-5/8" CSG. AND CEMENTATION	764 BBLS
VOLUME LOST TO DUMPING AND CLEANING PITS *	2506 BBLS
VOLUME LOST TO OILFAZE DISPLACEMENT	930 BBLS
VOLUME LOST TO LOST CIRCULATION	295 BBLS
VOLUME LOST ACCIDENTALLY **	3163 BBLS

* Operations involving mud conditioning and the building of the Oilfaze system.

** Trips, connections, leaking valves etc.

WELL SUMMARY

VOLUME SUMMARY 8½" HOLE

VOLUME BUILT	2150 BBLS
VOLUME LOST TO CUTTINGS *	92 BBLS
VOLUME BURNT	1480 BBLS
VOLUME LEFT BELOW PLUGS	571 BBLS

* Note: 44 m^3 of hole drilled with an average of 333 l/m^3 oil on cuttings at the primary shaker.

WELL SUMMARY

BARITE CONSUMPTION 12-1/4" HOLE

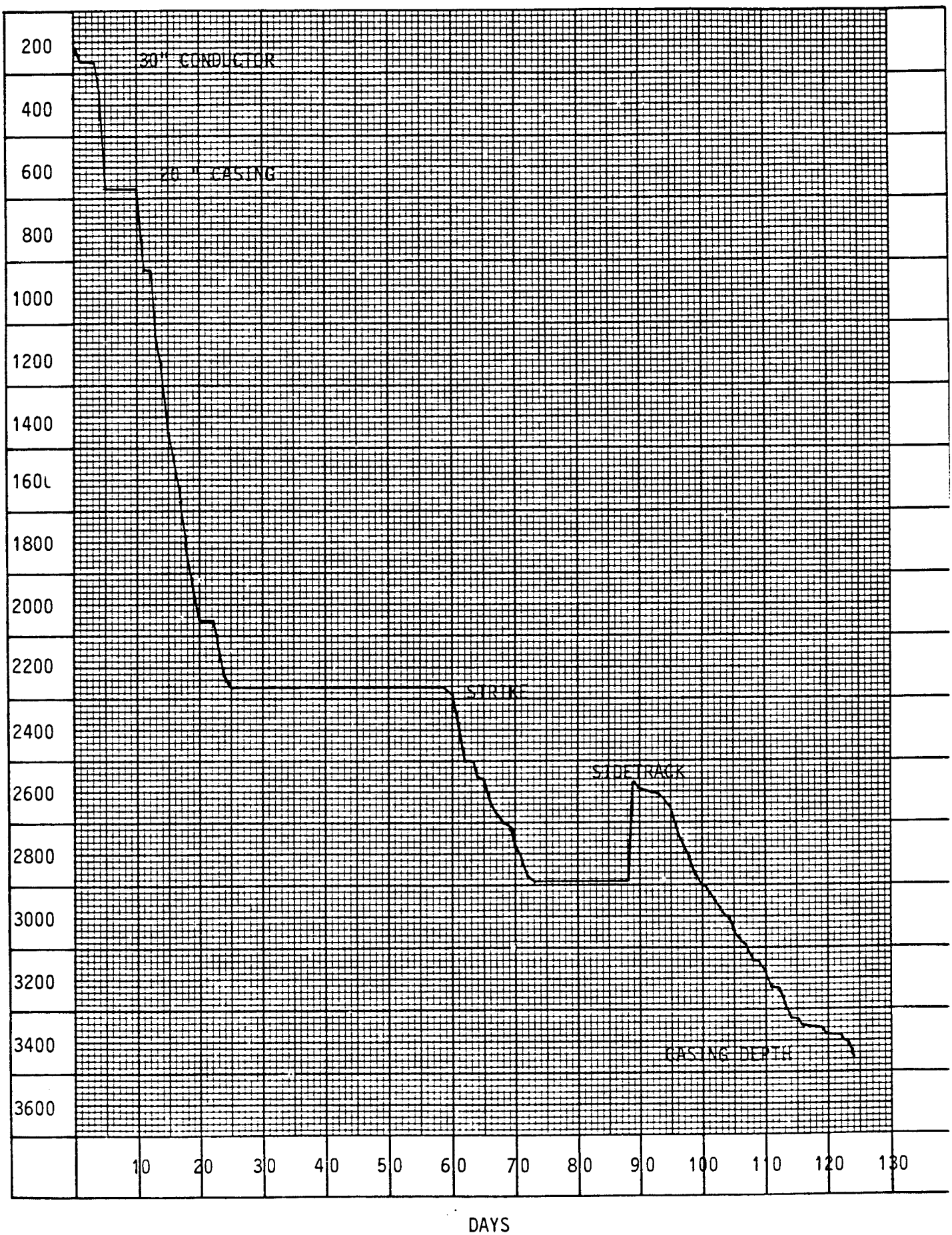
'he barite consumption was higher than expected but can be accurately accounted for through the volumes utilized. The following figures show the barite required to increase the densities of the base muds to the densities of the active muds in use. The densities of the base muds were a function of the mg/l chloride content at the time of use.

BASE MUD MG/L CHLORIDES	BASE MUD DENSITY	ACTIVE MUD DENSITY	BARITE REQUIRED PPBBL	NEW VOLUME BUILT BBLS	BARITE USED MT
160,000	1.17	1.50	175	1445	115
160,000	1.17	1.40	119	1595	86
89,000	1.10	1.50	214	3620	352
188,000	1.20	1.50	162	980	72
					625 MT

DRESSER

PLOT

WELL: 15/12-3 PLOT NAME: DAYS VS. DEPTH

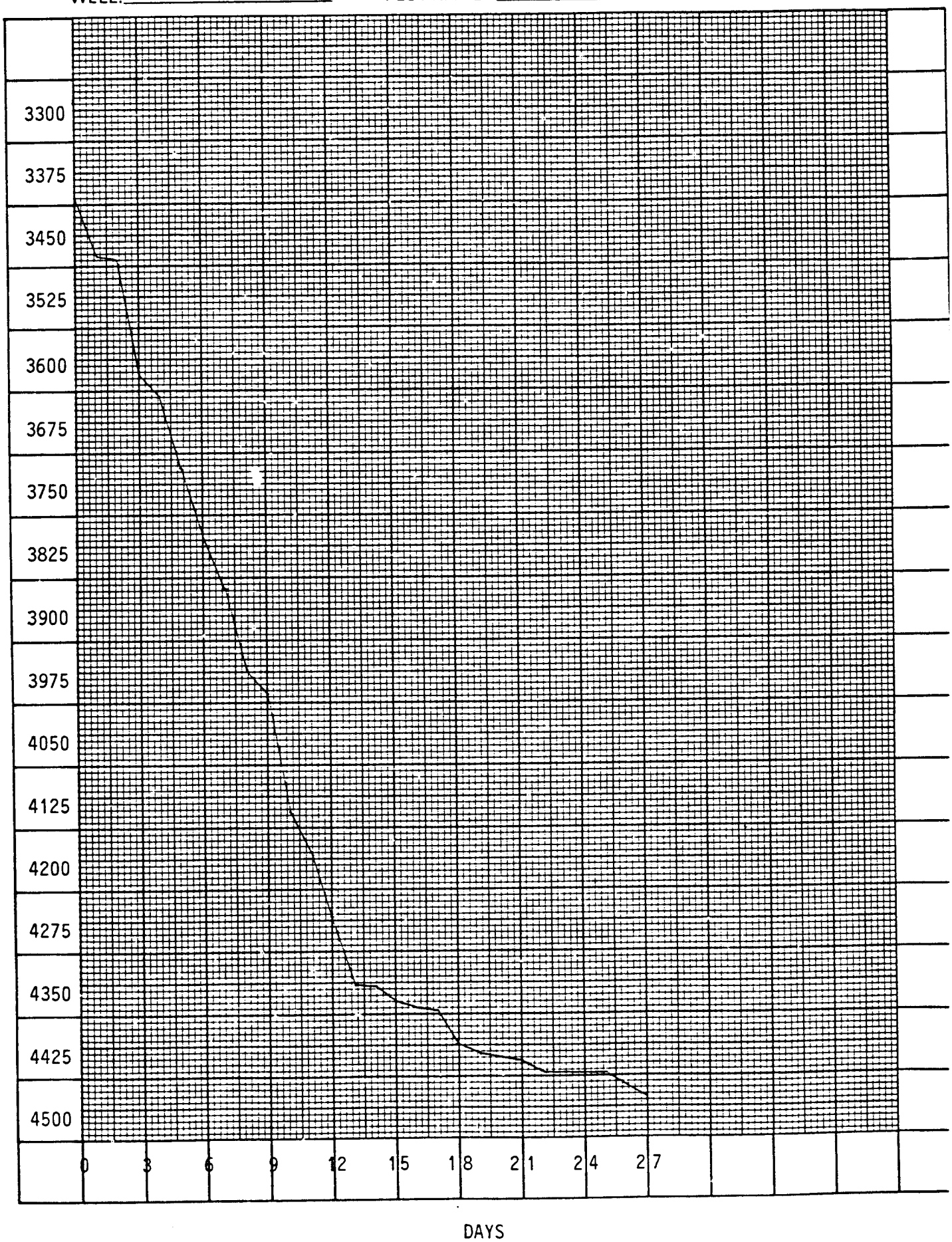


DRESSER

PLOT

WELL: 15/12-3

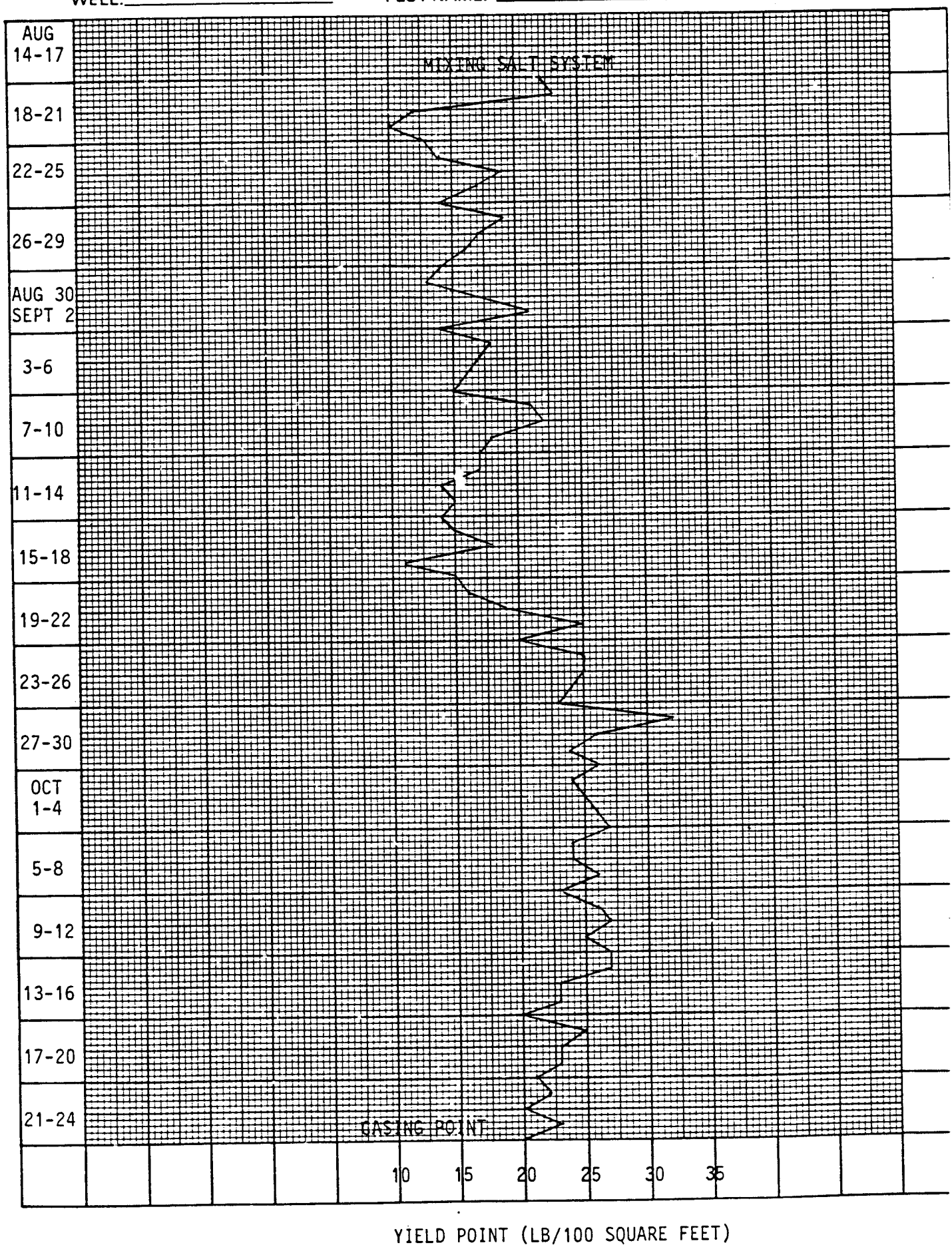
PLOT NAME: DAYS VS. DEPTH (8½" INTERVAL)



DRESSER

PLOT

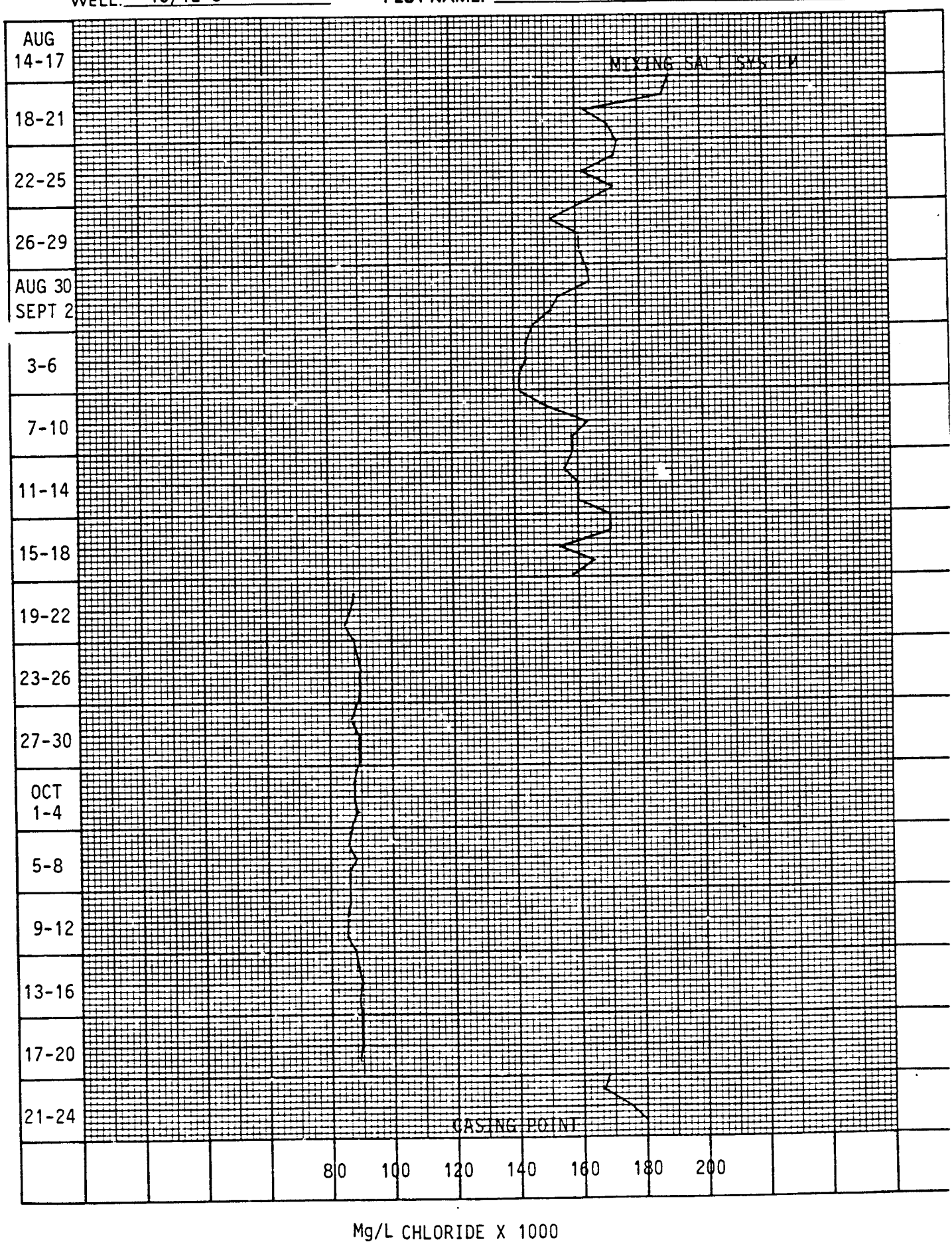
WELL: 15/12-3 PLOT NAME: YIELD POINT VS. DAYS



DRESSER

PLOT

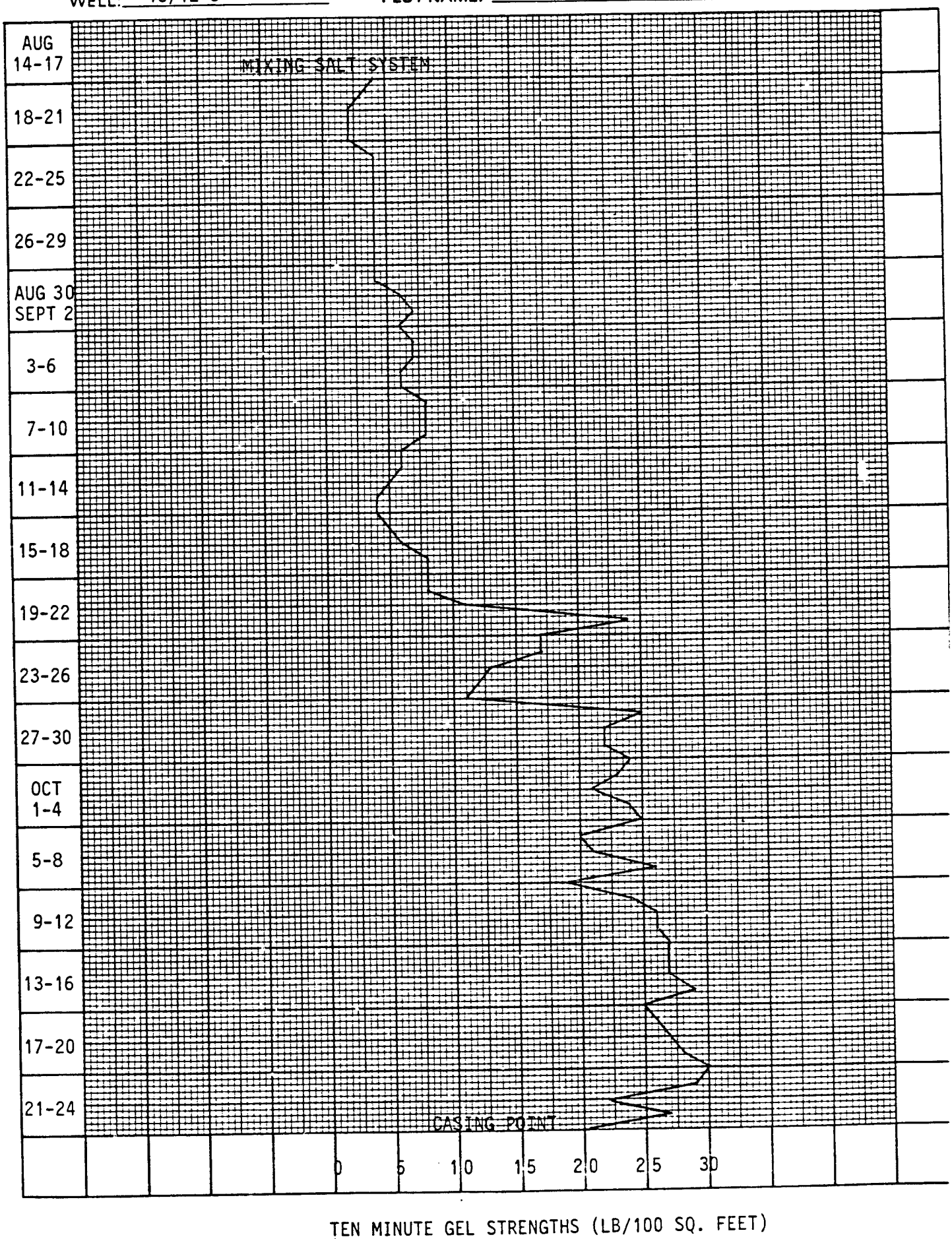
WELL: 15/12-3 PLOT NAME: CHLORIDES VS. DAYS



DRESSER

PLOT

WELL: 15/12-3 PLOT NAME: TEN MINUTE GEL STRENGTHS VS. DAYS

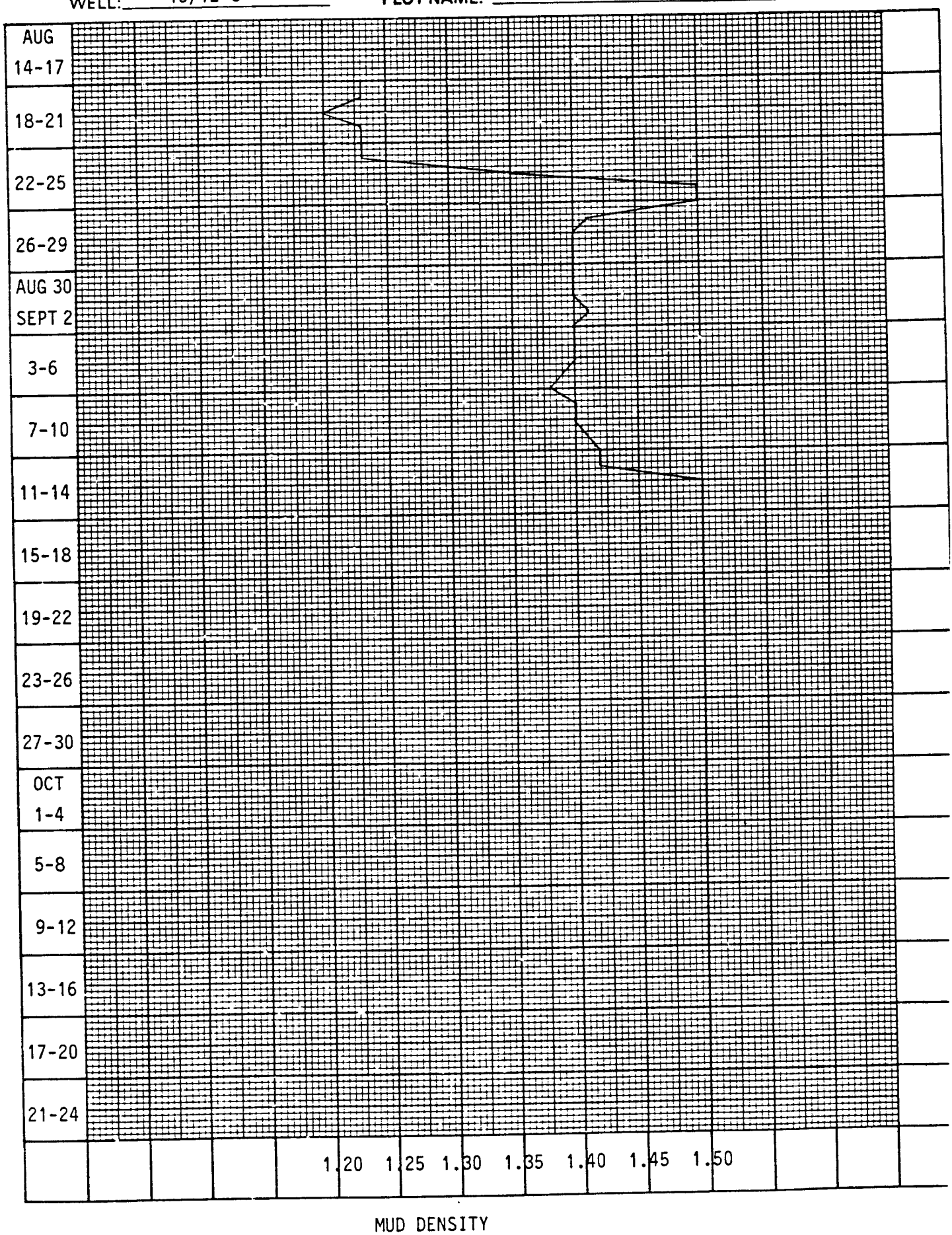


DRESSER

PLOT

WELL: 15/12-3

PLOT NAME: MUD DENSITY VS. DAYS



DAILY OPERATIONS LOG

DATE 1980	DEPTH METERS	
20 June	0	Handle anchors, mix 1000 bbls spud mud.
21 June	173	Spud in. Drill 36" hole spotting hi vis slugs every connection. Fill hole w/hi vis mud, make wiper trip. Fill hole again w/hi vis mud. Run 30" conductor.
22 June	173	Run and cmt. 30" conductor at 171m. Run riser w/pin connector. RIH w/17½ bit. Build 925 bbls hi vis mud.
23 June	260	Tag cmt. at 167m. Drill out shoe and drill ahead w/seawater to 192m and lose returns around outside of 30". Set cmt. plug at 192m. Tag plug at 186m and drill ahead w/full returns using seawater bentonite mud.
24 June	565	Drill 17½" hole in claystone/shale to 565m. Conduct wiper trip. Add occasional sack of lime to increase funnel viscosity. Build 800 bbls prehydrated bentonite.
25 June	565	Log hole. Pull riser. RIH w/26" bit and open 17½" hole to 26" w/seawater, spotting 30 bbl hi vis mud every 3 connections.
26 June	565	Open 17½" hole to 26" w/seawater, while spotting 30 bbl hi vis mud every 3 connections. At 565m, displace hole w/ 1000 bbls hi vis mud. Wiper trip to shoe - 3 meters fill. Spot 150 bbl 1.25 sp gr. pill and POOH.
27 June	565	Run 20" csg and cmt. same at 552m. Prepare to run B.O.P.
28 June	565	Run and test B.O.P. Pull B.O.P. for repair.
29 June	565	Run and land B.O.P. Run wear bushing and test surface equipment m/v BHA and RIH w/17½" bit.

DAILY OPERATIONS LOG

DATE 1980	DEPTH METERS	
30 June	830	Drill cmt. and shoe w/seawater. Drill 3m new hole and displace w/mud. Conduct leak off test. Drill ahead.
1 July	894	Drill to 894m. Cir. and start to POOH. Hole swabbing. RIH and circ. POOH to shoe and circ. Circ. Nut Plug to clean stabilizers. RIH to bottom. Circ. POOH.
2 July	1052	RIH w/new bit. Drill ahead. Drop survey. POOH to shoe to retrieve survey.
3 July	1130	Drilling ahead. Drop survey and POOH to shoe to recover same.
4 July	1347	Drill to 1252m. Trip for bit. Drill ahead. On survey at 1347m hole tight 3 stands off bottom. Ream to bottom and circ.
5 July	1440	Drill ahead. Survey at 1440. Hole tight for 4 stands. Ream 4 stands and circulate.
6 July	1574	Drill to 1447. POOH to shoe for pump repair. RIH and drill ahead.
7 July	1707	Drill ahead to 1668. Trip for bit. Drill ahead.
8 July	1855	Drilling ahead. POOH to shoe to recover a survey. Ream to bottom.
9 July	1950	Drill ahead. Circ. B/U and POOH for new bit.
10 July	1950	POOH. Drag 1905 - 1792. Rig repair. RIH w/new bit. Drop BHA down hole. Attempt to screw into fish. POOH. RIH open ended cont. engage fish. POOH.

DAILY OPERATIONS LOG

DATE 1980	DEPTH METERS	
11 July	1440	RIH w/fishing assembly. Engage and jar on fish. POOH w/fish and L/D same. P/V new BHA.
12 July	2024	RIH w/new bit. Drill ahead in claystone/shale. Circ. 50 bbl Nut Plug pill for suspected balled bit.
13 July	2122	Drill ahead in claystone/shale to 2055. Drop survey. Conduct 10 stand wiper trip. Unable to retrieve survey. Circ. 25 bbl Nut Plug pills for suspected balled bit. Drill ahead to 2122. Circ. B/U for it trip.
14 July	2165	POOH. RIH w/new bit. Tight hole at 2010m. 10m fill. Drill ahead in claystone/shale to 2165 csg depth. Circ. B/U. Circ. B/U. Circ. 40 bbl Nut Plug pill at 2122 for suspected balled bit. Add 150 bbls reserve mud for displacement dilution.
15 July	2165	POOH for wiper trip. Tight hole at 2130. Ream to 2098. POOH to csg shoe. RIH and wash 2158 - 2165. Circ. 40 bbl Nut Plug pill for suspect balled bit. Circ. to cond. hole for logging. Add 150 bbls reserve mud for displacement.
16 July	2165	Log hole - no problems. RIH to 2153m and ream tight spot to 2156m. RIH to 2164 - 1m fill. Circ. to cond. hole. POOH.
17 July	2165	Run 13 3/8" csg and land and cmt. at 2121. Lose 200 bbls returns during displacement. Dump 100 bbls cmt. contaminated mud.
18 July	2165	Run seal assembly and test B.O.P. RIH w/12 1/4" bit. Tag cmt. at 2085m. Displace riser w/seawater and prepare to hang off.
19 July	2165	Hang off. Pull riser. Rig on strike.

DAILY OPERATIONS LOG

DATE 1980	DEPTH METERS	
14 Aug	2165	Engineer arrives on rig. Dump clean active pits . Transfer 450 bbls reserve mud to active pits. Clean reserve pits. Begin building saturated salt mud in reserve pits.
15 Aug	2165	Rig up and begin running riser package and riser. Save old mud in slug tank and dump active pits. Mix saturated salt mud in active pits.
16 Aug	2165	Finish building saturated salt mud. Mud built to saturation to allow seawater additions for volume during displacement. Test choke - kill lines, BOP and surface lines. Running wear bushing.
17 Aug	2165	Unable to seat wear bushing. Wash BOP w/jetsub using sea water - spot 50bbl mud. Run and seat tapered wear bushing. Run and seat normal wear bushing.
18 Aug	2185	RIH to 2085 - tag cmt. Drill cmt. W/seawater while displacing old mud. While drilling cmt. 2137-2147, displace seawater w/saturated salt mud. Drill out shoe and wash to 2165. Drill 3 meters new hole to 2168. Conduct formation integrity test to 1.75. Drill to 2185. Circ B/V. POOH to change BHA. While circ - drilling add seawater to lower mud weight to 1.20 from 1.23 and to build volume.
19 Aug	2277	RIH w/new bit and BHA. Drill in shale. Conduct survey at 2255.

Cont ' d .....

DAILY OPERATIONS LOG

DATE 1980	DEPTH METERS	
20 Aug	2403	Drill in shale to 2347 circ 1/2 hour. Drop survey, hole packs off while pulling to shoe. Pull six stands. RIH and ream four singles. Drill to 2403 make conn. and conduct slow pump rate. Hole packs off. Pump out three singles circ B/V. Ream to bottom.
21 Aug	2400	Ream to bottom. Pump slug, hole packs off. Work free POOH for bit change. RIH tight spot at 2318. Reaming nine singles to bottom. On B/V observe large shale splinters. Begin to increase mud density to 1.25 from 1.20.
22 Aug	2476	While reaming continue to raise mud density to 1.35. Drill in shale to 2410 . Fill on conn. circ. 60 bbl hi vis pill which brings up large vol of large shale cavings. Drill to 2429 - make wiper trip to 2271. Hole tight 2403-2390. RIH and ream 2 singles to bottom. Drill ahead in shale - anhydrite.
23 Aug	2459	Drill in shale - anhydrite to 2458, circ B/V . Drop survey hole packs off. Pump out 5 singles circ and raise mud density to 1.40 from 1.35. Make wiper trip to shoe. RIH to 2400 and ream 5 singles while raising mud density to 1.50 circ 60 bbl hi vis pill and observe no increase in shale cavings/cuttings POOH. Tight spot at 2435. RIH w/turbine.

Cont ' d .....

DAILY OPERATIONS LOG

DATE 1980	DEPTH METERS	
24 Aug	2488	RIH w/turbine to 2440. Ream to 2449 where bit is stuck work free- ream to bottom. Drill in shale to 2470 circ B/V for sample. Drill in marl-limestone to 2488. Lose partial returns- approx 100 bbls. Pull to csg shoe and begin to cut mud density from 1.50 to 1.30 on operators instructions.
25 Aug	2543	Lower mud density to 1.40 from 1.50 on operators instructions using dilution and centrifuge. RIH - hit tight spot at 2400. Ream from 2396 to bottom. Drill ahead in limestone.
26 Aug	2570	Drill in limestone to 2554. circ for survey. Stick pipe and work free at 2500 while pulling to shoe. RIH to 2530 - ream to 2554 circ drop survey again. Tight spot at 2538 while POOH to shoe. RIH to 2444. Wash - ream to bottom. Drill in limestone to 2570 circ B/V POOH to change BHA. No drag.
27 Aug	2596	RIH w/new bit to 2550. Wash - ream to bottom. Drilling ahead in limestone.

Cont ' d .....

DAILY OPERATIONS LOG

DATE 1980	DEPTH METERS	
28 Aug	2612	Drlg - Short trip - Drlg - Circ. - Drop survey - Pull to shoe - tight spot at 2410 m - POOH test turbine RIH w/bit no. 13 & turbo wash/ream 2538-2597 m - Drlg.
29 Aug	2673	Drlg to 2620 m - Short trip for survey - Tight 2580 m Wash/ream 2585 bottom drlg.
30 Aug	2713	Drill to 2713 m - Drop survey - Pull to shoe & retrieve misrun RIH 8 m fill circ for 2nd survey - Drop survey - Pull to shoe - Retrieve - RIH - Drlg.
31 Aug	2772	Drilling 2713 m - 2772 m - Mixed 200 BBI premix.
1 Sep	2784	Drilled to 2784 m - Dropped survey - POOH for bit/BHA. Attempt to pull wear bushing preparatory to test BOPs. Retriever would not pass BOPs - RIH o/ended set cement plug - Hole pressured up during rev Circ - Lost 80 bbls Circ normal way.

Cont ' d .....

DAILY OPERATIONS LOG

DATE 1980	DEPTH METERS	
2 Sep	2784	Circ. Recovered some mud from formation. Set 2nd plug. Rev circ. POOH. P/U BHA. Circ and WOC. Tag cmt. Press test casing. POOH. Displaced riser. Rig up and pull riser.
3 Sep	2784	Pull riser and stack. Work on BOPs.
4 Sep	2784	Work on BOPs.
5 Sep	2784	Work on BOPs. Test same. Run stack and riser.
6 Sep	2784	Run stack and riser. Test BOPs. OK. RIH with bit. Drill cmt.
7 Sep	2784	Wash and ream to 2253m. Pull to shoe and condition mud. (Chlorides 165000 w/loss <5cc. Wash and ream to 2400m.
8 Sep	2784	Wash and ream and RIH to bottom. Circ. 2 rounds. Start out of hole. Stuck at 2634 m. No circ. jar on fish.
9 Sep	2784	Run string shots in attempt to back off.
10 Sep	2784	Back off. Jars parted. POOH w/fish. P/U o/shot etc. RIH.
11 Sep	2784	RIH. Engage fish at 2465 m. Jar down to 2477 m. Unable to re-engage fish after conn. POOH w/o-shot. Raise mud density to 1.50 from 1.42.

Cont ' d .....

DAILY OPERATIONS LOG

DATE 1980	DEPTH METERS	
12 Sep	2784	POOH. Redress 0-shot. RIH to 2464 m. Break circ. Engage fish jar down to 2502 m. Unable to circ through fish. Back off at safety joint and POOH to shoe to WOW.
13 Sep	2784	WOW. RIH. Engage fish and jar down to 2513 m. Break circ and lose approx. 95 bbls to formation before gaining full returns. Back off fish to POOH. Re-engage fish. Unable to run wireline through fish. Back off fish. Circ. B/U.
14 Sep	2784	POOH. w/o-shot. RIH w/new bit. Engage and jar fish down to 2554. Unable to circ through fish. Back off fish and POOH w/o-shot.
15 Sep	2784	RIH w/bit. Break circ and tag fish. Circ B/U and condition mud. POOH to shoe. RIH. No problems. POOH. Build 77 bbls Bentonite slurry for cmt plug.
16 Sep	2784	POOH. Run wireline logs. RIH open ended. Tag fish at 2547. Circ B/U - no cmt observed. POOH.
17 Sep	2472	RIH, tag cmt at 2472 m. No fill. Circ. B/U. POOH to shoe circ. and cond. mud to operator specs of 90,000 mg/l cl from 158.000 mg/l cl and yield point of 15 to 25. 850 bbls of fresh water 1.50 density mud were build to facilitate the mud conditioning.
18 Sep	2488	Continue circ. at shoe, make 850 bbls batch displacement w/fresh water mud to lower cl to operator specs.

Cont'd .....

DAILY OPERATIONS LOG

DATE 1980	DEPTH METERS	
18 Sep	2488	RIH 5 stands and cond. mud. Make wiper trip to shoe. RIH to 2472 and drill cmt. to 2488. Circ. B/U, make wiper trip to shoe w/max drag of 80,000 lbs. Circ, 50 bbls Hi Vis pill which brings up small increase in cuttings/cavings make wiper trip to shoe - no drag. Circ. 50 bbls Hi Vis pill - no increase in cuttings cavings. POOH no drag.
19 Sep	2492	POOH RIH w/turbine and kick off asembly. Drlg. in limestone. Add Magcolube to Statoil specs. of 1.5 - 2.0%. Maintain yieldpoint at 18 + 25 w/XC Polymer on Statoil's instructions.
20 Sep	2503	Drill w/kick off assembly to 2503. POOH to change turbine RIH w/kick off assembly. No drag, no fill.
21 Sep	2511	Drill in limestone to 2511. Drop survey and POOH while drlg circ. using Magcopolysal for fluid loss control and XC Polymer for rheology control while allowing Drispac to be diluted and shear degraded as per Statoil's specs.
22 Sep	2527	POOH w/kick assembly - no drag. M/V drlg BHA RIH. Wash/ream new BHA 2488 - 2511. Circ. for survey, POOH to shoe RIH. Drill in limestone/chalk. Circ. 50 bbl Hi Vis pill at 2520 w/no increase in cuttings/cavings.
23 Sep	2549	Drill in limestone chalk to 2538. POOH for suspected washout. RIH w/turbine no drag, no fill.

cont'd....

DAILY OPERATIONS LOG

DATE 1980	DEPTH METERS	
24 Sep	2623	Drill w/turbine in limestone/chalk to 2623. POOH for suspected washout.
25 Sep	2655	POOH w/suspected washout. Found same in H.W.D.P. POOH. Check turbine - OK - RIH Drlg. Survey misrun - Survey
26 Sep	2715	Retrieve survey RIH No drag No fill - Drilling w/Turbine
27 Sep	2774	Drlg. Work on pumps. Drlg. Survey - Trip to shoe to retrieve survey. No drag, no fill - Drlg.
28 Sep	2803	Drlg. POOH. Lay down 19 jnts. Service turbine -Test BOP's.
29 Sep	2825	Test BOP's RIH - No tight hole no fill - Drlg.
30 Sep	2853	Trip for bit - No drag, no tight hole,no fill - Drlg.

Cont ' d .....

DAILY OPERATIONS LOG

DATE 1980	DEPTH METERS	
1 Oct	2883	Drilling ahead.
2 Oct	2903	Drlg. Trip for bit M/u Hang off tool, Stand in Derrick No drag, no tight hole No fill - Drilling.
3 Oct	2944	Drilling ahead.
4 Oct	2964	Drilling - POOH for bit - Tight spot at 2790m.
5 Oct	2990	RIH w/new bit. No tight hole no fill - Drilling. Dumped excess reserve mud.
6 Oct	3043	Circ. for sample at 3000m - Drilling
7 Oct	3043	Circ. POOH - Test BOP's m/u new BHA RIH. Hang off W.O.W.
8 Oct	3078	WOW - Displace riser to mud RIH. No tight hole. No fill Drilling
9 Oct	3126	Drlg. ahead in shale. Circ. B/U at 3098 after gas peak of 158 units. Drill ahead.
10 Oct	3132	Drill to 3132 in shale. Circ. B/U drop survey. POOH. RIH w/new BHA and turbine. Ream in BHA from 3033.
11 Oct	3179	Ream to 3132 Drill ahead w/turbine.

cont'd...

DAILY OPERATIONS LOG

DATE 1980	DEPTH METERS	
12 Oct	3233	Drlg in shale w/turbine to 3221 where circ. B/U after drlg break. Drill to 3233 circ. B/U drop survey make wiper trip to csg. shoe.
13 Oct	3233	Circ. B/U twice POOH to change bit and BHA. Lay down turbine. RIH w/bit and new BHA.
14 Oct	3249	RIH. Drilling wash to 3238. Circ. B/U for sample. Drill ahead in shale limestone - sandstone.
15 Oct	3252	Drill to 3252 circ. B/U POOH. P/V drill collars. RIH w/new bit.
16 Oct	3256	RIH to 3230 - wash - ream to 3252. Drill to 3256 POOH RIH w/core assembly.
17 Oct	3263	RIH cut core number 1 to 3263. POOH w/core - 100% recovery. M/U new BHA and bit. RIH.
18 Oct	3279	RIH to 3256. Ream rat hole to 3263. Drill in Dolomite-Anhydrite to 3279. Circ. B/U.
19 Oct	3279	Drop survey POOH m/v BHA and new bit. RIH to csg. shoe and hang off to restring blocks. At this time the surface active mud was conditioned to 170,000 mg/l Cl from 89,000 mg/l Cl. To maintain the mud density at 1.50, 325 bbls of saturated brine was prepared. The shaker tanks were dumped of 150 bbls.

Cont ' d .....

DAILY OPERATIONS LOG

DATE 1980	DEPTH METERS	
20 Oct	3279	Circ. at the shoe and cond. mud to 170,000 mg/l Cl^-. Stage into hole at intervals of 2550, 2915 and 3279. After system fully conditioned, drill ahead in anhydrite.
21 Oct	3306	Drill into salt at 3285. Circ. B/U POOH to csg. shoe. and circulate and conditioned mud to salt saturation. Stage into hole at 2550, 2915 and 3235 conditioning mud to saturation. Drill ahead in salt while by-passing one shaker to maintain free salt in mud system.
22 Oct	3359	Drill in salt to 3306 POOH to 3280 circ. move pipe. RIH to bottom. POOH two stands, tight at 3275. RIH to bottom. Circ. POOH two stands, break circ. RIH. Drill to 3331. Circ. POOH to 3280. Circ. B/U. RIH to bottom - no fill, no drag. Drill in salt. String in saturated brine as needed for dilition. By pass one shaker and maintain free salt in the mud system.

Cont'd.....

DAILY OPERATIONS LOG

DATE 1980	DEPTH METERS	
23 Oct	3361	Drill to 3361m - Circ - Pull 4STDS - Circ botts up. RIH no fill POOH. Rig up and run logs - ISF/SONIC/GR. Dumped one reserve pit for cement job.
24 Oct	3361	Wireline logging - FTC/CNC/GR - HOT - ISF/SONIC/GR-55c.
25 Oct	3361	Wireline logging - CST (3 Runs) - CBL - make up casing hanger.
26 Oct	3361	RIH wash 3335-3361 work junk basket - pull up to 3305 - Circ bottoms up. RIH-POOH-Rig up & run 9-5/8" casing.
27 Oct	3361	Run & land 9-5/8" casing - Circ - Pump 150 BBL mud w/inhibitor and oxygen scavenger - Pump gel pre flush - Cement 1st stage drop dart - Circ thru ports - WOC.
28 Oct	3361	WOC - Pump inhibited mud & gel pre flush - Cement 2nd stage. Layout landing string - RIH w/seal assy. Attempt test. No go. Retrieve seal assy.
29 Oct	3361	Wash well head. RIH w/new seal assy. Set same. Test OK RIH w/bit. Drill DV tool. Test no go.
30 Oct	3361	POOH RIH w/RTTS tool stage in hole testing above and below packer. Pressure held above packer but not below down to float - POOH.

Cont ' d .....

DAILY OPERATIONS LOG

DATE 1980	DEPTH METERS	
31 Oct	3361	RIH w/bit to float. Circ. Run leak-off test (1.65 S.G. again) POOH. Rig up and run CBL. RIH w/bit.
01 Nov	3361	Drill out float wash to shoe. No cement. Pressure up to 750 PSI. Circ. and wait on materials.
02 Nov	3361	Circ. & wait on materials. POOH.
03 Nov	3361	RIH w/bit and scraper. Circ. POOH. Set EZ. drill on wire line RIH w/stinger. Prepare for squeeze job.
04 Nov	3361	Run squeeze job. Circ out POOH w/stinger. RIH w/bit Circ & WOC.
05 Nov	3370	Circ. Drill cement, retainer + shoe. Circ. Perform leak off test (2.15 SG EQ). Drill 3 m new hole. Perform 2nd l/off test (2.17 SG EQ). Circ. Perform 3rd l/off test.
06 Nov	3370	Run wireline junk basket. Run csg. scrapers. Circ. B/V POOH. Run wireline cmt. retainer.
07 Nov	3370	RIH w/stinger. Tag retainer at 3322. Sting into retainer and check injection rate. Pressure up to 3300 PSI w/out leak off. POOH test BOP.

Cont'd .....

DAILY OPERATIONS LOG

DATE 1980	DEPTH METERS	
8 Nov	3373	Test BOP RIH w/bit and drill out retainer and 3 meters formation. Perform form . int. test . Leaks off at sg. 1.67 density POOH RIH open ended.
9 Nov	3373	RIH open ended to 3347 circ - set 150m balanced plug. POOH to 2905 and conduct braiden head cmt. squeeze. Hold back press while WOC.
10 Nov	3373	W.O.C. Bleed off and POOH RIH w/bit to 3205 and circ while W.O.C. RIH and tag cmt. at 3210 Drill cmt 3210-3333. RIH to shoe - no cmt- RIH to bottom - 6m fill. POOH to shoe circ.
11 Nov	3373	Perform form. int. test to sg 2.00 density w/out leak off. POOH to 3344. Dump and clean mud tanks and surface lines. Repair and replace valves in mud room. POOH 4 stds and hang off. Begin mixing Oilfaze oil mud.
12 Nov	3373	Finish mixing 1550 bbls Oilfaze. Change kelly. Prepare to displace oilfaze.
13 Nov	3419	While circ at csg shoe, displace Oilfaze mud dumping water base mud at the flowline. RIH to 3373 and drill ahead in salt.
14 Nov	3442	Drill to 3442 make bit trip. Mix 150 bbls diesel and basic package premix for dilution/reserve.

Cont'd .....

DAILY OPERATIONS LOG

DATE 1980	DEPTH METERS	
15 Nov	3547	RIH and work basket. Drill ahead in salt.
16 Nov	3608	Drill in salt to 3608. Circ drop survey. P.O.O.H. for new bit. Test BOP.
17 Nov	3672	RIH to bottom work junk basket. Drill ahead in salt.
18 Nov	3764	Drill ahead to 3697 circ, drop survey, make 13 std. wiper trip. Retrieve survey RIH and drill to 3777. Drop survey P.O.O.H. for new bit.
19 Nov	3838	RIH w/new bit. Work junk on bottom. Drill ahead.
20 Nov	3935	Make short trip at 3870. 3 meter fill. Drill ahead to 3935. Circ. and P.O.O.H. for new bit.
21 Nov	3966	P.O.O.H. RIH w/new bit to 3922. Wash and ream to bottom. Raise mud density to 1.75 from 1.71 and drill ahead.
22 Nov	4104	Make short trip at 4023. Drill ahead to 4104. P.O.O.H. for survey and short trip. Tight hole 3935-3924. Raise mud density in surface system to 1.80 from 1.75.
23 Nov	4157	Complete short trip. Increase density of mudsystem to 1.80 from 1.75. Drill ahead. Hole tight on connection. Drop survey and P.O.O.H. for new bit.
24 Nov	4234	RIH to 4132 - wash - ream to bottom. Drill ahead to 4234. While drilling, increase mud density to 1.85 from 1.80. Drop survey, make short trip. Drill ahead.

DAILY OPERATIONS LOG

DATE 1980	DEPTH METERS	
25 Nov	4311	Drill ahead in salt and shale w/no problems.
26 Nov	4319	Drill in salt and shale. Drop survey and P.O.O.H. for new bit. Test BOP. RIH.
27 Nov	4334	RIH Drilled ahead.
28 Nov	4335	Drilled to 4335. P.O.O.H. changed bit RIH. Drilled ahead losing mud at diverter and shakers. Mixed fresh mud.
29 Nov	4345	Losses continued. Circ off bottom and mixed new volume. Drilled. P.O.O.H. RIH. Drilled.
30 Nov	4388	Drilled ahead to 4388. P.O.O.H.
1 Dec	4398	P.O.O.H. changed bit. RIH drilled ahead.
2 Dec	4401	Drilled to 4401. P.O.O.H. RIH to shoe. WOW.
3 Dec	4407	WOW RIH drilled.
4 Dec	4424	Drilled treat mud for rheology with VG69. Drilled to 4424. Circ. Drop survey. P.O.O.H.
5 Dec	4424	RIH with bit. Hung off, displaced riser using gelled spacer, then seawater. Pulled riser. Worked on ball joint.
6 Dec	4424	Worked on ball joint. RIH with the stack and riser.

DAILY OPERATIONS LOG

DATE 1980	DEPTH METERS	
7 Dec	4434	Finished testing. Displaced riser. RIH reamed last 4 singles no problems. CIRC. Bottoms up. POOH. to core.
8 Dec	4434	RIH to core. Mud treated for stability control. Cored to 4434. POOH 100-o/o recovery. RIH with a diamond bit.
9 Dec	4450	RIH resumed drilling is 4450. T.D. circ made a wiper trip to shoe. No problems. POOH to log.
10 Dec	4450	RIH with logs, all to T.D. No problems. Reserve mud centrifuged to lower water content prior to burning.
11 Dec	4450	Finished logging. RIH circ. Prior to setting cement plugs.
12 Dec	4450	Pumped cement plug. Displaced. Had back pressure. Mud wt in pits cut to 1.70. Circ out cement. Re wt system to 1.85. Set cement plug. POOH to 3400. Set 2nd plug. POOH. Mud was water contaminated. Burnt off 300 bbls reserve mud.
13 Dec	4450	RIH laid down drill pipe. RIH tugged plug. POOH. to run packer. Mixed up 840 bbls of water base mud 1.25 RD. 45 vis.

Cont ' d .....

DAILY OPERATIONS LOG

DATE 1980	DEPTH METERS	
14 Dec	4450	Set packer. RIH displaced oil mud with the water base. Remixed 200 bbls of water base.
15 Dec	4450	RIH. perforated. POOH RIH set retainer. Made up stinger. RIH hung off due to weather. Burnt 1100 bbls of oil mud.
16 Dec	4450	WOW RIH squeezed cement. Lost 250 bbls mud. POOH . Rebuilt 260 bbls 1.25 mud.
17 Dec	4450	P + A operations.

WELL SUMMARY

APPENDIX

The following figures were compiled by Dresser Magcobar's Technical Services Department in Houston Texas. They will help to illustrate the problems encountered in the 12-1/4" section while the hole was packing off. The figures indicate various cuttings transport effiencies as derived from the changing drilling and hole parameters of this interval.

WELL SUMMARY

MAGCOBAR ENGINEERING
M.I.D.A.S. COMPUTER APPLICATIONS
HOUSTON, TEXAS

TRANSPORT VELOCITY PREDICTION

MUD DENSITY (S.G.)	1.21
PLASTIC VISCOSITY (CPS)	15
YIELD POINT (LBS/100 SQ FT)	11
DEPTH (FEET)	7348
FLOW RATE (GPM)	508
HOLE DIAMETER (INCHES)	17.500
PIPE DIAMETER (INCHES)	8.000
BULK DENSITY (GM/CC)	2.300

TRANSPORT VELOCITY AND EFFICIENCY

CUTTINGS SIZE (IN)	REY. NO.	ANN. VEL. (FT/MIN)	SLIP VEL. (FT/MIN)	TRANS. VEL. (FT/MIN)	TRANS. EFF.	BOTTOMS UP (MINUTES) MUD	BOTTOMS UP (MINUTES) CUTTINGS
.2500	832.	51.4	8.0	43.4	84.4	143.0	169.5
.5000	832.	51.4	21.2	30.2	58.8	143.0	243.2
1.0000	832.	51.4	44.0	7.4	14.3	143.0	998.7

ESTIMATED HOLE SIZE AND BIT SIZE ARE EQUAL.

REQUIRED MESH SIZES

CUTTINGS SIZE	REQUIRED MESH
.2500	12
.5000	12
1.0000	12

WELL SUMMARY

MAGCOBAR ENGINEERING
M.I.D.A.S. COMPUTER APPLICATIONS
HOUSTON, TEXAS

TRANSPORT VELOCITY PREDICTION

MUD DENSITY (S.G.)	1.21
PLASTIC VISCOSITY (CPS)	15
YIELD POINT (LBS/100 SQ FT)	11
DEPTH (FEET)	7348
FLOW RATE (GPM)	508
HOLE DIAMETER (INCHES)	17.500
PIPE DIAMETER (INCHES)	5.000
BULK DENSITY (GM/CC)	2.300

TRANSPORT VELOCITY AND EFFICIENCY

CUTTINGS SIZE (IN)	REY. NO.	ANN. VEL. (FT/MIN)	SLIP VEL. (FT/MIN)	TRANS. VEL. (FT/MIN)	TRANS. EFF.	BOTTOMS UP (MINUTES) MUD	BOTTOMS UP (MINUTES) CUTTINGS
.2500	816.	44.3	8.0	36.2	81.9	166.0	202.8
.5000	816.	44.3	21.2	23.1	52.2	166.0	318.3
1.0000	816.	44.3	44.0	.2	.5	166.0	-----

ESTIMATED HOLE SIZE AND BIT SIZE ARE EQUAL.

REQUIRED MESH SIZES

CUTTINGS SIZE	REQUIRED MESH
.2500	12
.5000	12
1.0000	12

WELL SUMMARY

MAGCOBAR ENGINEERING
M.I.D.A.S. COMPUTER APPLICATIONS
HOUSTON, TEXAS

TRANSPORT VELOCITY PREDICTION

MUD DENSITY (S.G.)	1.41
PLASTIC VISCOSITY (CPS)	34
YIELD POINT (LBS/100 SQ FT)	18
DEPTH (FEET)	9016
FLOW RATE (GPM)	635
HOLE DIAMETER (INCHES)	12.250
PIPE DIAMETER (INCHES)	5.000
BULK DENSITY (GM/CC)	2.300

TRANSPORT VELOCITY AND EFFICIENCY

CUTTINGS SIZE (IN)	REY. NO.	ANN. VEL. (FT/MIN)	SLIP VEL. (FT/MIN)	TRANS. VEL. (FT/MIN)	TRANS. EFF.	BOTTOMS UP (MINUTES) MUD	BOTTOMS UP (MINUTES) CUTTINGS
.2500	1587.	124.4	4.5	119.9	96.4	72.5	75.2
.5000	1587.	124.4	11.7	112.7	90.6	72.5	80.0
1.0000	1587.	124.4	30.0	94.4	75.9	72.5	95.5

ESTIMATED HOLE SIZE AND BIT SIZE ARE EQUAL.

REQUIRED MESH SIZES

CUTTINGS SIZE	REQUIRED MESH
.2500	12
.5000	12
1.0000	12

WELL SUMMARY

MAGCOBAR ENGINEERING
M.I.D.A.S. COMPUTER APPLICATIONS
HOUSTON, TEXAS

TRANSPORT VELOCITY PREDICTION

MUD DENSITY (S.G.)	1.40
PLASTIC VISCOSITY (CPS)	27
YIELD POINT (LBS/100 SQ FT)	20
DEPTH (FEET)	8202
FLOW RATE (GPM)	706
HOLE DIAMETER (INCHES)	12.250
PIPE DIAMETER (INCHES)	5.000
BULK DENSITY (GM/CC)	2.300

TRANSPORT VELOCITY AND EFFICIENCY

CUTTINGS SIZE (IN)	REY. NO.	ANN. VEL. (FT/MIN)	SLIP VEL. (FT/MIN)	TRANS. VEL. (FT/MIN)	TRANS. EFF.	BOTTOMS UP (MINUTES) MUD	BOTTOMS UP (MINUTES) CUTTINGS
.2500	1679.	138.3	4.2	134.1	97.0	59.3	61.2
.5000	1679.	138.3	10.7	127.6	92.3	59.3	64.3
1.0000	1679.	138.3	28.1	110.2	79.7	59.3	74.4

ESTIMATED HOLE SIZE AND BIT SIZE ARE EQUAL.

REQUIRED MESH SIZES

CUTTINGS SIZE	REQUIRED MESH
.2500	12
.5000	12
1.0000	12

WELL SUMMARY

MAGCOBAR ENGINEERING
M.I.D.A.S. COMPUTER APPLICATIONS
HOUSTON, TEXAS

TRANSPORT VELOCITY PREDICTION

MUD DENSITY (S.G.)	1.50
PLASTIC VISCOSITY (CPS)	27
YIELD POINT (LBS/100 SQ FT)	17
DEPTH (FEET)	8068
FLOW RATE (GPM)	572
HOLE DIAMETER (INCHES)	12.250
PIPE DIAMETER (INCHES)	5.000
BULK DENSITY (GM/CC)	2.300

TRANSPORT VELOCITY AND EFFICIENCY

CUTTINGS SIZE (IN)	REY. NO.	ANN. VEL. (FT/MIN)	SLIP VEL. (FT/MIN)	TRANS. VEL. (FT/MIN)	TRANS. EFF.	BOTTOMS UP (MINUTES) MUD	BOTTOMS UP (MINUTES) CUTTINGS
.2500	1585.	112.1	4.2	107.8	96.2	72.0	74.8
.5000	1585.	112.1	11.0	101.1	90.2	72.0	79.8
1.0000	1585.	112.1	28.5	83.6	74.6	72.0	96.6

ESTIMATED HOLE SIZE AND BIT SIZE ARE EQUAL.

REQUIRED MESH SIZES

CUTTINGS SIZE	REQUIRED MESH
.2500	12
.5000	12
1.0000	12

WELL SUMMARY

MAGCOBAR ENGINEERING
M.I.D.A.S. COMPUTER APPLICATIONS
HOUSTON, TEXAS

TRANSPORT VELOCITY PREDICTION

MUD DENSITY (S.G.)	1.34
PLASTIC VISCOSITY (CPS)	25
YIELD POINT (LBS/100 SQ FT).....	19
DEPTH (FEET)	8051
FLOW RATE (GPM)	572
HOLE DIAMETER (INCHES)	12.250
PIPE DIAMETER (INCHES)	5.000
BULK DENSITY (GM/CC)	2.300

TRANSPORT VELOCITY AND EFFICIENCY

CUTTINGS SIZE (IN)	REY. NO.	ANN. VEL. (FT/MIN)	SLIP VEL. (FT/MIN)	TRANS. VEL. (FT/MIN)	TRANS. EFF.	BOTTOMS UP (MINUTES) MUD	BOTTOMS UP (MINUTES) CUTTINGS
.2500	1274.	112.1	4.6	107.5	95.9	71.8	74.9
.5000	1274.	112.1	12.1	100.0	89.2	71.8	80.5
1.0000	1274.	112.1	31.6	80.5	71.8	71.8	100.0

ESTIMATED HOLE SIZE AND BIT SIZE ARE EQUAL.

REQUIRED MESH SIZES

CUTTINGS SIZE	REQUIRED MESH
.2500	12
.5000	12
1.0000	12

WELL SUMMARY

MAGCOBAR ENGINEERING
M.I.D.A.S. COMPUTER APPLICATIONS
HOUSTON, TEXAS

TRANSPORT VELOCITY PREDICTION

MUD DENSITY (SG)	1.22
PLASTIC VISCOSITY (CPS)	15
YIELD POINT (LBS/100 SQ FT)	14
DEPTH (FEET)	7805
FLOW RATE (GPM)	508
HOLE DIAMETER (INCHES)	12.250
PIPE DIAMETER (INCHES)	5.000
BULK DENSITY (GM/CC)	2.300

TRANSPORT VELOCITY AND EFFICIENCY

CUTTINGS SIZE (IN)	REY. NO.	ANN. VEL. (FT/MIN)	SLIP VEL. (FT/MIN)	TRANS. VEL. (FT/MIN)	TRANS. EFF.	BOTTOMS UP (MINUTES) MUD	BOTTOMS UP (MINUTES) CUTTINGS
.2500	1316.	99.5	6.4	93.1	93.6	78.4	83.8
.5000	1316.	99.5	17.1	82.4	82.8	78.4	94.7
1.0000	1316.	99.5	43.6	56.0	56.2	78.4	139.5

ESTIMATED HOLE SIZE AND BIT SIZE ARE EQUAL.

REQUIRED MESH SIZES

CUTTINGS SIZE	REQUIRED MESH
.2500	12
.5000	12
1.0000	12

WELL SUMMARY

MAGCOBAR ENGINEERING
M.I.D.A.S. COMPUTER APPLICATIONS
HOUSTON, TEXAS

TRANSPORT VELOCITY PREDICTION

MUD DENSITY (S.G.)	1.21
PLASTIC VISCOSITY (CPS)	15
YIELD POINT (LBS/100 SQ FT)	11
DEPTH (FEET)	7348
FLOW RATE (GPM)	508
HOLE DIAMETER (INCHES)	12.250
PIPE DIAMETER (INCHES)	5.000
BULK DENSITY (GM/CC)	2.300

TRANSPORT VELOCITY AND EFFICIENCY

CUTTINGS SIZE (IN)	REY. NO.	ANN. VEL. (FT/MIN)	SLIP VEL. (FT/MIN)	TRANS. VEL. (FT/MIN)	TRANS. EFF.	BOTTOMS UP (MINUTES) MUD	BOTTOMS UP (MINUTES) CUTTINGS
.2500	1694.	99.5	8.0	91.5	91.9	73.8	80.3
.5000	1694.	99.5	21.2	78.4	78.7	73.8	93.8
1.0000	1694.	99.5	44.0	55.5	55.8	73.8	132.4

ESTIMATED HOLE SIZE AND BIT SIZE ARE EQUAL.

REQUIRED MESH SIZES

CUTTINGS SIZE	REQUIRED MESH
.2500	12
.5000	12
1.0000	12

WELL SUMMARY

MAGCOBAR ENGINEERING
M.I.D.A.S. COMPUTER APPLICATIONS
HOUSTON, TEXAS

TRANSPORT VELOCITY PREDICTION

MUD DENSITY (S.G.)	1.21
PLASTIC VISCOSITY (CPS)	15
YIELD POINT (LBS/100 SQ FT)	11
DEPTH (FEET)	7805
FLOW RATE (GPM)	508
HOLE DIAMETER (INCHES)	12.250
PIPE DIAMETER (INCHES)	5.000
BULK DENSITY (GM/CC)	2.300

TRANSPORT VELOCITY AND EFFICIENCY

CUTTINGS SIZE (IN)	REY. NO.	ANN. VEL. (FT/MIN)	SLIP VEL. (FT/MIN)	TRANS. VEL. (FT/MIN)	TRANS. EFF.	BOTTOMS UP (MINUTES) MUD	BOTTOMS UP (MINUTES) CUTTINGS
.2500	1694.	99.5	8.0	91.5	91.9	73.8	80.3
.5000	1694.	99.5	21.2	78.4	78.7	73.8	93.8
1.0000	1694.	99.5	44.0	55.5	55.8	73.8	132.4

ESTIMATED HOLE SIZE AND BIT SIZE ARE EQUAL.

REQUIRED MESH SIZES

CUTTINGS SIZE	REQUIRED MESH
.2500	12
.5000	12
1.0000	12

IV MARINE REPORT

IV MARINE REPORT

1. Weather and anchoring tension summary.

77.5 hours or 1.71% of the time on this location were spent waiting on weather.

During these 189 days no anchoring problems were experienced.

The plug back and the anchor handling was some delayed due to bad weather.

LOCATION WEATHER DATA SUMMARY

statoil
Den norske stats oljeselskap a.s

IV. 2.

WELL: 15/12-3 RIG: NORDRAUG

TIME PERIOD: FROM 19.6. TO 24.12 -1980

READINGS PR. MONTH: 30.

WIND

dir. \ m/sec.	0 – 5	5 – 10	10 – 15	15 – 20	20 – 25	25 – 30	> 30	total
N	3	4	5	5	5	1	1	24
NNE					1			1
NE	1	3	4	3			1	12
ENE		1						1
E	2	3	4		1	2		12
ESE		1	3	1				5
SE	1	2	3	5	1			12
SSE				1	3	1		5
S	2	5	11	3	3			24
SSW		2	3	2		1		8
SW		3	3	15	5	1		27
WSW		2			1		2	5
W		3	3	7	5			18
WNW						2		2
NW	1	5	9	6	5	3		29
NNW			2	1	1			4
total								

WAVE

dir. \ height (m)	0 – 1	1 – 2	2 – 3	3 – 5	5 – 7	7 – 10	> 10	total
N	5	7	6	4	7	8	4	41
NNE				1				1
NE	3	6	2	1	2			14
ENE								
E	1	3	1	2	2	1		10
ESE					2			2
SE		2	3	3		4		12
SSE								
S	3	12	5	3	4	3	1	31
SSW				1	2			3
SW	1	9	3	9	4	4		30
WSW								
W	3	1	2	6	7	4		23
WNW						1		1
NW	1	5		3	3	4	2	18
NNW					1	1	1	3
total								

4.00.23

IV 3. NAVIGATION REPORT

RIG MOVE OF "NORDRAUG" TO WELL 15/12-3

1. Final position (ED 1950)

   58° 14'36,59"N 01°53'45,67"E

   Accuray: 10 meters
   Rig heading: 314°

   Deviation from intended position: 46m - 357°

2. Observed Decca Main Chain readings.

Chain	: Vestlandet OE	Chain	: N-Skotich 6C
Red	: B 02.3	Red	: A 21.9
Green	: H 43.8	Green	: J 42.1
Purple	: C 56.0	Purple	: C 69.2

3. Navigation/positioning method.

   a) Navigation: Pulse/8 navigation system with HP computer and plotter.
   Navigation contractor: Decca Survey Norway A/S, Bergen.
   Personnel: Bjarne Bugge

   b) Positioning: JMR-4 Satelitte positioning system.
   Positioning contractor: Decca Survey Norway A/S, Bergen.
   Personnel: Erling Johannesen/Svein Viken

4. Duration of the rig move

Personnel and equipment onboard:	16. june 1980 at 16.15 hrs
Left Sandefjord:	17. june 1980 at 22.00 hrs
1.5N. miles SE of location:	19. june 1980 at 15.15 hrs
Dropped first anchor (on.4):	19. june 1980 at 16.20 hrs
Stopped anchorhandling due to bad weather:	20. june 1980 at 00.15 hrs

Commenced anchorhandling again:	20. June 1980 at 13.20 hr
Dropped last pigg-back anchor (no. 1)	20. June 1980 at 22.00 hr
All anchors pretensioned to 350 000 lbs ready for drilling:	20. June 1980 at 22.30 hr

5. Techniques/problems.

The transit distance from Sandefjord to well location 15/12-3 was approx. 330 n.miles and the average speed was 7.5 knots.

The operation was performed according to Statoil's procedures without any navigational problems. The anchorhandling was stopped 20. June at 00.15 hours due to bad weather, at this time 3 anchors were dropped. At 13.20 hours the same day the anchorhandling was restarted, and completed without problems.

Discreapency between Pulse/8 position and sat.nav. position was 36m - 175° (Pulse/8 position South of Sat. nav. position).

V LOGGING SUMMARY

LOGGING SUMMARY AND PERFORMANCE

Run 1.:	171 - 565	ISF-BHC-GR
Run 2.:	565 - 2165	ISF-BHC-GR, FDC-CNL-GR
Run 3.:	2165 - 2554	ISF-BHC-GR, FDC-CNL-GR
Run 4.:	2150 - 3361	ISF-BHC-GR, FDC-CNL-GR, HDT, WSS, CST, CBL
Run 5.:	3350 - 4448.5	DIL-BHC-GR, FDC-CN-GR, SEISMIC CHECK SHOTS, CNL-BHC-GR, CST

Run number refer to each depth interval and are applicable to the ISF-BHC-GR only. Other logs will have different run numbers, but can be identified by depth interval.

Run 4.: Sonic tool failed downhole. New tool was borrowed from rig nearby and lgos successfully rerun.

Run 5.: Sonic and CNL failed downhole. After new tools arrived from shore, logs were successfully re run.

CST: The sidewallcores experienced extremely bad recovery. Out of 120 shots attempted in the hole a total of 30 cores were recovered.

On this well a total of 30 hours and 45 minutes were lost due to tool problems. Some of the logs have reduced quality.

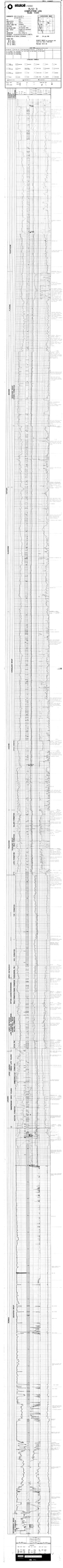
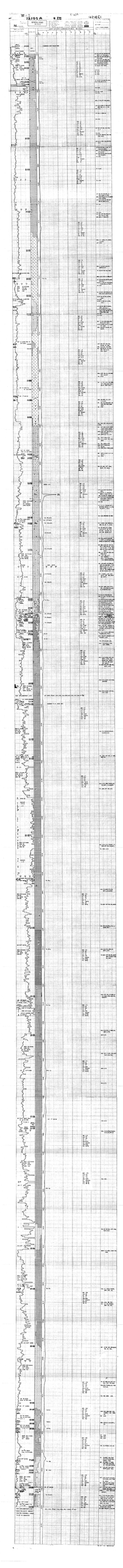
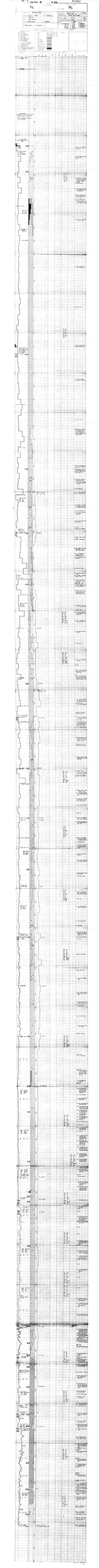
statoil

COMPLETION LOG
30/6-7

COMPANY: STATOIL A/S
WELL: 30/6-7
FIELD: GULLFAKS
COUNTY: OFFSHORE
STATE: NORWAY
LOCATION: 58°56'00"N 02°17'00"E
ELEVATION: KB: 25.00 m
DATE: 01.06.88
DRILLING MEASURED FROM: KB
DRILLING CONTRACTOR: SEDCO 707
DRILLING FLUID: SEA WATER / HI-VIS PILL
DATE: 01.06.88
TOTAL DEPTH: 1010.0 m
DATE: 01.06.88
CASING: 30" @ 195.00 m
13 3/8" @ 1000.00 m
PERFORATIONS: NONE
PRODUCTION TESTS: NONE
REMARKS: DRILLED WITH SEA WATER AND HI-VIS PILLS.
DRILLING TIME: 1 DAY
DRILLED BY: SEDCO 707
COMPLETED: 01.06.88

1	2	3	4	5	6
7	8	9	10	11	12
13	14	15	16	17	18
19	20	21	22	23	24

1	2	3	4	5	6
7	8	9	10	11	12
13	14	15	16	17	18
19	20	21	22	23	24

1	2	3	4	5	6
7	8	9	10	11	12
13	14	15	16	17	18
19	20	21	22	23	24

1	2	3	4	5	6
7	8	9	10	11	12
13	14	15	16	17	18
19	20	21	22	23	24