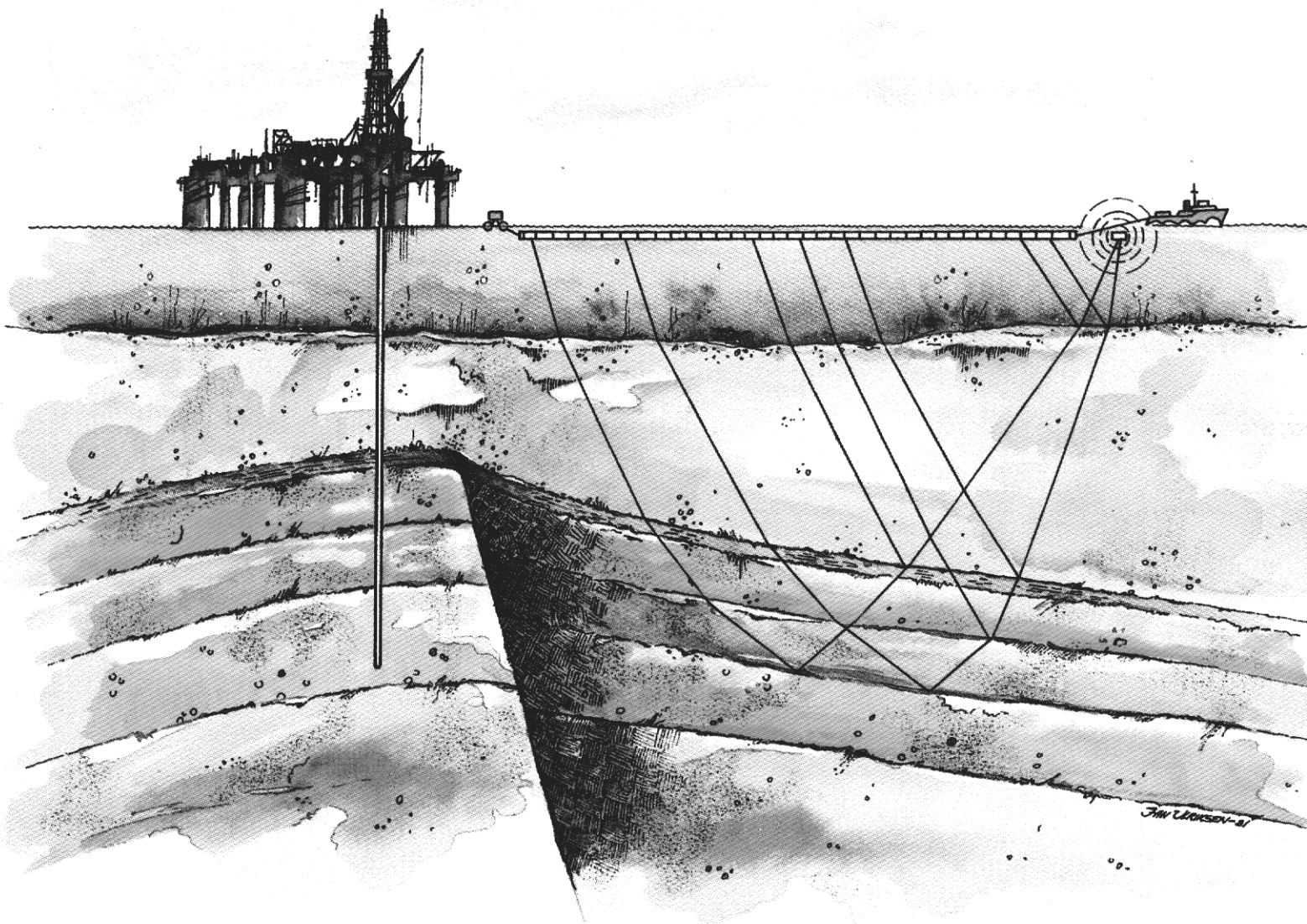
statoil



GULLFAKS-DIVISJONEN

SLUTTRAPPORT

BRØNN 34/10-27 PL 050

Statoil / Norsk Hydro / Saga Petroleum

statoil

Tittel/Undertittel

SLUTTRAPPORT BRØNN 34/10-27

Org.enhet	Kontraktnr./Prosjektnr.
RUV	
Rapportnr./Revisjon	**Sted/Dato**
	BERGEN 30.07.86

statoil

Gradering	Distribusjon
☒ FORTROLIG ☐ STRENGT FORTROLIG	☐ Fri distribusjon ☐ Kan distribueres fritt i Statoil ☒ Ingen distribusjon uten tillatelse fra ansvarlig avdeling

Tittel/Undertittel

SLUTTRAPPORT BRØNN 34/10-27

Fagområde/Emneord

GRUNN GASS BRØNN GULLFAKS A

Oppdragsgiver

PBR - GRUNNGASS PROSJEKT

Org.enhet

RUV

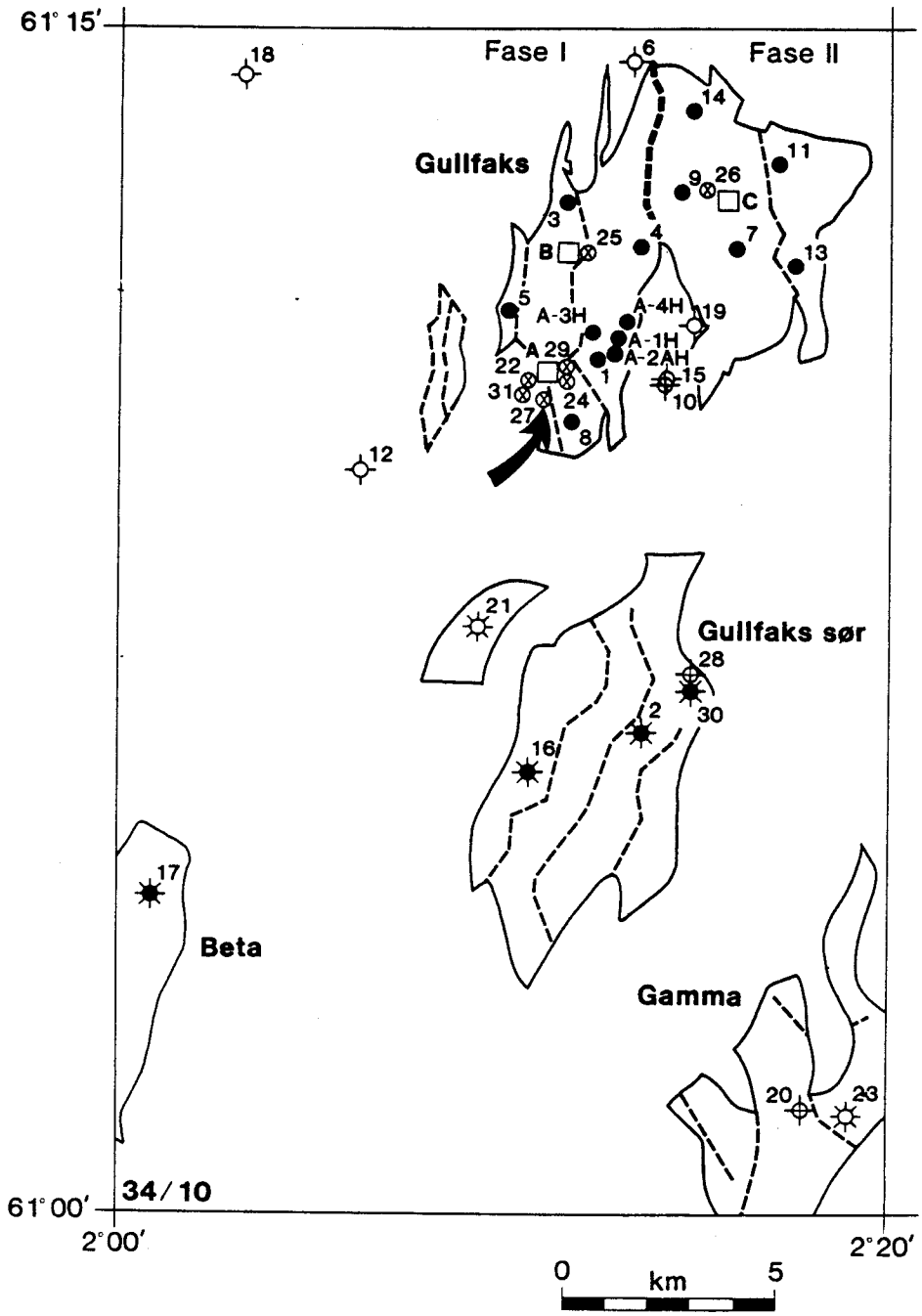
Kontraktnr./Prosjektnr.	Rapportnr./Revisjon

Utarbeidet av

KARI JANNE KORNSTAD, RUV
RUSSEL McDOWELL RUV
TOVE RØRHUUS, BOR-DUSAVIK

Antall sider	Antall vedl.	Antall kopier	Tekstoperatør
		20	50

Org. enhet	Sted/Dato
RUV/BOR-DUSAVIK	Bergen, 30.07.1986
Godkjent av RUV, GULLFAKS DIVISJONEN	**Signatur** Steinar Mehle 1/8-86
Godkjent av BOR DUSAVIK	**Signatur** Bor Dusavik
Godkjent av	**Signatur**



Sluttrapport

34/10–27

Statoil Bergen

Juni 1986

PL 050

STATOIL - NORSK HYDRO - SAGA PETROLEUM

SLUTTRAPPORT

BRØNN 34/10-27

FORORD:

Vi gjør oppmerksom på at kapittel IV og kapittel V er skrevet på engelsk. Disse delene har ikke blitt oversatt på grunn av kapasitetsmessige problemer.

Steinar Mæhle

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I GENERELLE OPPLYSNINGER

RUV/GULLFAKS
K.J. Kornstad

I GENERELLE OPPLYSNINGER

1.1 Brønnidentifikasjon

a) Brønn nr : 34/10-27

b) Brønn type : Grunn gass brønn ved Gullfaks A posisjonen

c) Brønnlokasjon

i) Land : Norge

ii) Lisens : PL 050

iii) Koordinater

Geografiske : 61° 10' 31.12" N
02° 11' 23.96" Ø

UTM : N 6 782 746
Ø 456 430

iv) Vanndyp : 135 m

d) Rigg data

i) Riggens navn : West Venture

ii) Boredekk (BD) - Midlere havnivå (MHN) : 32 m

1.2 Hensikten med brønnen

Brønnen ble planlagt for å kartlegge og drenere mulige grunne gassforekomster mellom 310 m og 317 m (MHN) nær Gullfaks A plattformposisjonen.

1.3 Resultater av brønnen

I brønn 34/10-27 ble det boret gjennom en grunn gass sand i intervallet 313.5 m - 315.1 m MHN (345.5 m - 347.1 m BD).

Gass sonen var tynnere enn forventet og det ble ikke utført noen produksjonstest i brønnen.

Brønnen ble avsluttet ved 450 m MHN (482 m BD).

1.4 Brønnhistorie

a) Generelt

i)	Borestart	: 2. desember 1985
ii)	Ferdig dato	: 31. januar 1986
iii)	Sluttstatus	: Plugget og forlatt, grunn gass brønn.

b) Kontraktorer

i)	Borerigg	: West Venture
ii)	Borekontraktor	: Smedvig

iii)	Boreslam	: Promud
iv)	Boreslamslogging	: Exploration Logging
v)	Elektrisk borehulls-logging	: Schlumberger
vi)	Sementering	: Dowell
vii)	Foringsrør	: TOS
viii)	Rigg posisjonering	: Geoteam
ix)	Bunnundersøkelser	: Geoteam Nor/Survey
x)	Logging under boring (LUB)	: Exploration Logging
xi)	Forsyningsfartøy	: Statoil's flåte
xii)	Overvåkingsfartøy	: Statoil's flåte
xiii)	Helikoptertransport	: Helikopter Service A/S
xiv)	Dykkertjeneste	: Stolt Nielsen

c) <u>Foringsrør</u>

30"	ved	206.5 m MHN	(238.5 m BD)
20"	ved	229 m MHN	(261 m BD)
13 3/8"	ved	276 m MHN	(308 m BD)
9 5/8"	ved	362 m MHN	(394 m BD)

d) Logging

i) Boreslamslogging

En Gemdas logge-enhet fra Exploration Logging stod for utførelsen av boreslamloggingen.

Følgende parametre ble registrert:

- Borehastighet
- Aktuelt boredyp
- Retur dyp
- Kraft på borekronen
- Vridning
- Rotasjonshastighet
- Pumpetrykk
- Boreslamsstrøm inn og ut
- Boreslams temperatur inn og ut
- Boreslams resistivitet ut
- Boreslams tetthet inn og ut
- Total gass
- Gass-kromatografi
- DXC-eksponenten
- Lengde- og tidsforbruk av gjeldende borekrone
- Litologi-beskrivelse
- "Shows"-beskrivelse

ii) LUB - logging under boring

Exlogs DLWD-utstyr ble brukt fra 266 m BD til 405 m BD i 17 1/2" og 8 1/2" pilothull-seksjoner.

Utstyret registrerte gamma strålingen, resistiviteten i formasjonen, samt avviket på borehullet. Tilsammen ble instrumentene kjørt tre turer i borhullet.

Logging under boring ble ikke benyttet i forbindelse med boring av 36" og 26" hull, fra havbunnen til 266 m BD.

iii) Elektrisk borehullslogging

Den elektriske borehullsloggingen ble utført av Schlumberger.

Type logg	Logg nr.	Intervall (m BD)
ISF-BHC-MSFL-GR	1A	308-400
DLL-GR-SP	1A	308-397
LDL-CNL-GR	1A	308-401
RFT-GR	1A	343-346
CST-GR	1A	315-390
ISF-BHC-MSFL-GR	2B	394-479
LDL-CNL-GR	2B	394-480
CBL-VDL-GR	2A	196-382

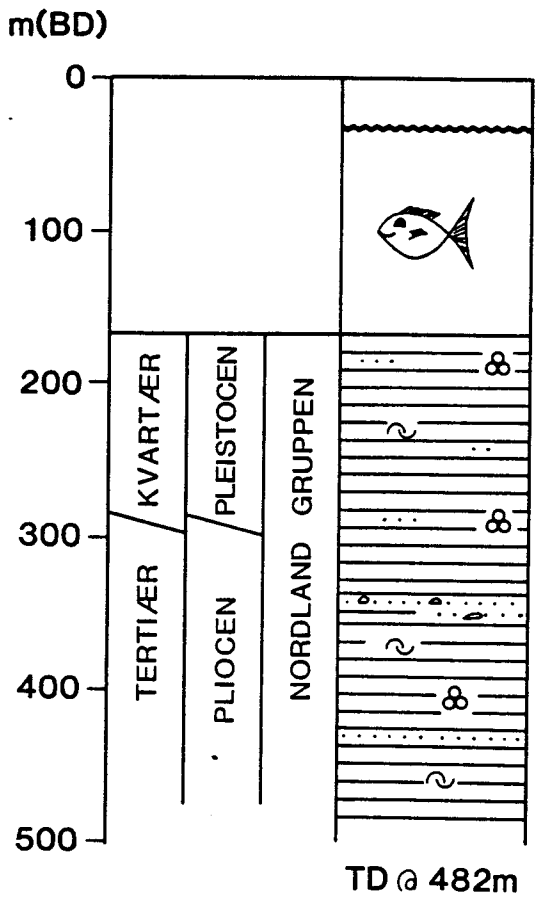
e) Sideveggskjerner

Det ble tatt 30 sideveggskjerner i intervallet 315-390 m BD. 29 sideveggskjerner kom til overflaten og 1 ble mistet.

II GEOLOGISK RAPPORT

RUV/GULLFAKS
K.J. Kornstad

34/10-27



Statoil Gullfaks-divisjonen		Tittel: Litologi kolonne 34/10-27	
Konstr KJK	Dato 100786	Fig.nr 2.1.1	Rev 0
Tegn MSH	Ark.nr		

2.1 Stratigrafi

Tabellen nedenfor viser de kronostratigrafiske toppene i brønnen.

TOPPER	DYP (M MHN)	DYP (m BD)
Kvartær (havbunn)	135	167
Pleistocen	135	167
Tertiær	258	290
Pliocen	258	290
TD	450	482

Overgangen Pleistocen - Pliocen er tatt fra LUB-loggen da det ikke er kjørt noen elektriske logger på dette dypet.

Fig 2.1.1 viser generell stratigrafi.

Sluttlogg, LUB-logg og "Formation Evaluation Log" for brønnen finnes som vedlegg bakerst i rapporten.

2.2 Litologisk beskrivelse

Brønnen er boret gjennom mørk til middels grå, noe kalk - og siltholdig bløt leire i veksling med enkelte sandlag. Sanden består av klar til grå kvarts, og kornstørrelsen varierer fra fin til grov. Kornene er vanligvis subrunded til angulær og sorteringsgraden varierer fra dårlig til god. Det er rapportert spor av bergartsframenter, skallfragmenter og foraminiferer.

VEDLEGG 2.1: BORKAKSBESKRIVELSE

WELLSITE SAMPLE DESCRIPTION

WELL: 34/10-27
FIELD: GULLFAKS
AREA: NORTH SEA
COUNTRY: NORWAY
COMPANY: STATOIL
GEOLOGIST: S. BJERKENES/A. SEIM/T. BARTNES

K.B.E.: 32 meters
HOLE SIZE: 17 1/2"
DATE: 06.12.1985

DEPTH	LITH.%	LITHOLOGIC DESCRIPTION	Shows&Remarks
270	100	CLAY: DK GRY, SFT, STKY, SOL	VERY CONTAM. BY
	TR	FORMS AND SHELL FRAGS	CMNT
	TR	SD: CLR-TRANSL QTZ, CRS-FN, SUBANG-ANG, POOR SRTD, PRTLY AS LITH GRAINS, BLK	NO SHOWS
275	100	CLY: A/A	
	TR	SD: A/A	"
	TR	FORAMS AND SHELL FRAGS A/A	
280	100	CLY: A/A	
	TR	SD: A/A	"
	TR	FORAMS AND SHELL FRAGS A/A	
285	100	CLY: A/A, PRTLY SDY	LESS CONT BY
	SL TR	SD: A/A, BUT LESS CRS GRAINS	CMNT, ELSE A/A
	SL TR	FORAMS AND SHELL FRAGS A/A	
290	100	CLY: A/A	NO SHOW
	SL TR	SD: A/A	
	SL TR	FORAMS	
295	100	CLY: A/A	
	SL TR	SD: A/A	"
	TR	FORAMS	
300	100	CLY: A/A	"
	GD TR	SD: CLR QTZ, MED, PRTLY FN, POOR SRTD, SUBANG-ANG, OCC SUBRND, OCC BLK LITH GRAINS (METAM.)	
	TR	FORAMS AND SHELL FRAG	
305	100	CLY: A/A	
	GD TR	SD: A/A, MORE RND	"
	TR	FORAMS AND SHELL FRAGS.	
310	100	CLY: A/A	
	TR	SD: A/A	"
	SL TR	FORAMS AND SHELL FRAGS	
313	100	CLY: A/A	
	TR	SD: A/A, BUT OCC CRS LITH GRAINS	"
	TR	FORAMS AND SHELL FRAGS.	

WELLSITE SAMPLE DESCRIPTION

WELL: 34/10-27
FIELD: GULLFAKS
AREA: NORTH SEA
COUNTRY: NORWAY
COMPANY: STATOIL
GEOLOGIST: S. BJERKENES/A. SEIM/T. BARTNES

K.B.E.: 32 meters
HOLE SIZE: 8 1/2"
DATE: 06.12.1985

DEPTH	LITH.%	LITHOLOGIC DESCRIPTION	Shows&Remarks
315	A/A		VERY CONTAM. BY CMNT AND $CACO_3$
320	A/A		"
325	A/A		"
330	A/A		"
335	A/A	BUT CLY IS PROBABLY SL LIGHTER GRY, PRTLY COLOURED BY THE $CACO_3$	SL LESS $CACO_3$
340	100 SL TR	CLY: MED GRY, SOFT, SOL, STKY, SL SDY SD: CLR-SMKY QTZ, MED-FN, FAIR SRTD, SUBRND, PRTLY DK GRY-BLK CRS LITH GRAINS (METAM. ROCKS)	NO SHOWS
345	90 10 TR	CLY: A/A SD: A/A, OCC CRS SHELL FRAGS	"
346	100 SL TR SL TR	CLY: A/A SD: A/A SHELL FRAGS	"
347	100 TR SL TR TR	CLY: MED-DK GRY, SL SLTY, SFT, SOL, STICKY, LAM, OCC INBD W/SLT LENSES DROP STONES SD: A/A SHELL FRAGS	SAMPLE TAKEN FROM JUNK BASKET
350	100 TR	CLY: A/A SD: A/A	NO SHOWS
355	100 TR	CLY: A/A SD: A/A	"
360	100 SL TR	CLY: A/A SD: A/A	"
365	100	CLY: A/A, LESS SDY	"
370	100	CLY: A/A	"

WELLSITE SAMPLE DESCRIPTION

WELL: 34/10-27
FIELD: GULLFAKS
AREA: NORTH SEA
COUNTRY: NORWAY
COMPANY: STATOIL
GEOLOGIST: S. BJERKENES/A. SEIM/T. BARTNES

K.B.E.: 32 meters
HOLE SIZE: 8 1/2"
DATE: 06.12.1985

DEPTH	LITH.%	LITHOLOGIC DESCRIPTION	Shows&Remarks
375	100	CLY: A/A	"
380	100	CLY: A/A	"
385	100	CLY: A/A	"
390	100	CLY: A/A	"
395	100	CLY: A/A	"
400	100	CLY: A/A	NO SHOWS
	TR	FORAMS	
	TR	SHELL FRAGMENTS	
402	100	CLY: A/A	
	TR	SD: A/A	BOTTOMS UP
405	100	CLY: MED GRY, SL SLTY, SDY I/P, SFT, SOL, CALC, SL STKY, PRTLY W/CRS-FN LITH GRAINS OF METAM ROCKS, SUBRND-ANG	NO SHOWS
	TR	SHELL FRAGS	
410	100	CLAY: A/A	"
	TR	SHELL FRAGS	
415	100	CLAY: A/A, BUT LESS LITH GRAINS	"
420	100	CLAY: A/A, BUT LESS LITH GRAINS, MORE SLTY	"
425	100	CLAY: A/A	
	SL TR	SD: CLR-SMKY QTZ, FN-MED SUBRND, FAIR SRTD.	"
432,5	100	CLAY: A/A	
	GT TR	SD: A/A, ALSO W/CRS LITH GRAINS, ANG-SUBRND	"
	TR	SHELL FRAGS.	
435	100	CLAY: A/A	
	SL TR	SHELL FRAGS	"
440	100	CLAY: A/A	"

WELLSITE SAMPLE DESCRIPTION

WELL: 34/10-27
FIELD: GULLFAKS
AREA: NORTH SEA
COUNTRY: NORWAY
COMPANY: STATOIL
GEOLOGIST: S. BJERKENES/A. SEIM/T. BARTNES

K.B.E.: 32 meters
HOLE SIZE: 8 1/2"
DATE: 06.12.1985

DEPTH	LITH.%	LITHOLOGIC DESCRIPTION	Shows&Remarks
445	100	CLAY: A/A	"
	TR	SHELL FRAGS	
450	100	CLAY: A/A	"
455	100	CLAY: A/A	"
460	100	CLAY: A/A	"
465	100	CLAY: A/A	"
470	100	CLAY: A/A	"
475	100	CLAY: A/A	"
	TR	SHELL FRAGS.	
480	100	CLAY: A/A	"
482	100	CLAY: A/A	"

VEDLEGG 2.2: SIDEVEGGSKJERNE BESKRIVELSE

statoil
Den norske stats oljeselskap a.s
LET

SIDEWALL CORE DESCRIPTION

Country: NORWAY	Area: NORTH SEA		Field: GULLFAKS
Well no.: 34/10-27			
K.B.E. 32 meters	Company: STATOIL/HYDRO/SAGA		
Hole size: 12 1/4"	Geologist: S. BJERKENES		Date: 11.12.85
Ref. Log for shot levels: ISF/SONIC-MSFL-GR + LDL/CNL-GR			

Shot no	Depth (mKB)	Rec (mm)	Lithological Description Rock name, mod. lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed. structures, accessories, fossils, porosity, contamination	Remarks Shows, factors affecting recovery, etc.
30	315	50	CLAY: DK, GRY, SFT, MICROMIC, SL SLTY, CALC	NO SHOWS
29	322	20	CLAY: A/A PRTLY SDY, SOLUBLE	"
28	326	20	CLAY: A/A	"
27	330	15	CLAY: A/A, V SOLUBLE, STKY	V. BAD SAMPLE "
26	332	15	CLAY: A/A	"
25	335	35	CLAY: A/A, W/FOSS FRAGS	"
24	338	15	CLAY: A/A, NO VIS FOSS FRAGS.	"
23	340	35	CLAY: A/A	"
22	343	20	CLAY: A/A	"
21	343,5	20	CLAY: A/A, BUT V SDY-SLTY	"
20	344	45	SLT/V FN SD: MED GRY, ARGIL, SFT, CALC, SUBRND, QTZ GRAINS	NO SHOWS, GOOD SAMPLE
19	346	45	SD: ARGIL, MED GRY, CLR-SMKY QTZ, V FN SUBANG, CALC, FAIR SRTD, FRI, PRTLY W/CRS LITH GRAINS, SUBRND-ANG, OCC RND, GRAINS ARE MOSTLY DK METAM. ROCKS (MICASHISTS, AMFIBOLITE)	"
18	346,5	50	SD. A/A	"
17	347	40	CLAY: SLTY, MED GRY, SFT, STKY, SOL, CALC.	"
16	347,5	30	CLAY: DK GRY, SFT, SL STKY, SL MICROMIC, CALC, W/CRS FRAG OF SHELL OR OTHER FOSS.	"
15	350	20	CLAY: MED GRY, SFT, SOL, STKY, CALC.	BAD SAMPLE
14	350,5	50	CLAY: DK GRY, FRM-SFT, SL STKY, CALC MICROMIC	GOOD SAMPLE
13	351	47	CLAY: A/A BUT SL SFTER	"
12	352,5	35	CLAY: A/A	"
11	355	35	CLAY: A/A, BUT SFT, STKY, SOL, TR OF FOSS FRAGS.	"
10	358	LOST		
9	361	30	CLAY: A/A	SOMEWHAT BAD SAMPLE
8	364	25	CLAY: A/A	BAD SAMPLE
7	367	50	CLAY: MED GRY, SFT, SL STKY SL MICROMIC, TR OF FOSS FRAGS, TR OF LITH GRAINS (METAM, SHISTS), CALC	GOOD SAMPLE
6	373	45	CLAY: MED GRY, SFT, STKY, CALC	"
5	376	45	CLAY: A/S	SOMEWHAT BAD SAMPLE
4	378	40	CLAY: A/A	"
3	382	40	CLAY: A/A, PRTLY W/BLK ORG. MATTER	GOOD SAMPLE
2	385	30	CLAY: A/A	BAD SAMPLE
1	390	30	CLAY: A/A	"

III PETROFYSISK/RESERVOARTEKNISK EVALUERING

RUV/GULLFAKS
R.McDowell

3.1 Petrofysisk evaluering

Loggene fra brønn 34/10-27 viser følgende resultater:

	Sand 1	Sand 2
Dybde intervall:		
	342.8 - 343.7 M RKB	345.5 - 347.1 M RKB
RKB = - 32 M(MSL)		
Tykkelse:	0.9 m	1.6 m
Leireinnhold:	0%	0%
Gjennomsnitts porøsitet:	32%	34%
Gjennomsnitts vannmetning:	100%	50%
gassmetning:	0%	50%

Verdiene må betraktes som usikre på grunn av kompleks mineralogi og mulig tungmineral innhold.

Porøsitet er beregnet fra tetthetsloggen basert på ligningen:

$$\emptyset = \frac{(RHOMA-RHOB) + V_{sh}(RHOSH-RHOMA)}{(RHOMA-RHOMF)}$$

HVOR

$\emptyset$ = Porøsitet

RHOMA = Matriks tetthet = 2.65 g/cc

V_{sh} = Leireinnhold
RHOSH = Leire tetthet
RHOMF = Væske tetthet = 1.05 g/cc

Matriks tetthet er beregnet fra gjennomsnitts mineralogi fra 34/10-29 kjerne XRD-analyser. Kjerner fra samme sonen i 34/10-29, viser ingen leireinnhold.

Indonesia-ligningen ble benyttet til beregning av vannmetning:

$$\frac{1.0}{\sqrt{RT}} = \left[\frac{VSH^{(1.0-\frac{VSH}{2.0})}}{\sqrt{R_{SH}}} + \frac{\phi^{\frac{M}{2.0}}}{\sqrt{a \cdot R_W}}\right] \cdot S_W^{\frac{N}{2}}$$

Hvor

RT = Korrigert formasjonsresistivitet
R_{sh} = Leireresistivitet
a = Litologi faktor = 0.62
Rw = Vannresistivitet = 0.4 ohm m
Sw = Vannmetning
N = Metningseksponent = 2
M = Sementeringsfaktor = 2.15

Rw fra tidligere analyser (34/10-31) ble benyttet.

IV DRILLING REPORT

4.1 Summary

4.1 Summary, well: 34/10-27

The semisubmersible drilling unit West Venture was moved to new location 34/10-27 the 28th of November 1985 at 19.10 hours. The planned drilling time was 20 days including plugging and abandonment.
The total actual time was 15 days + 17 hours included temporary plugging and abandonment.

The primary objectives of this well was to investigate and drain possible shallow gas sands between 310 m and 315 m (MSL) at the platform A location on the Gullfaks Field.

Waterdepth: 135 m, 167 m RKB
30" casing set at 238.5 m
20" casing set at 261.0 m
13 3/8" casing set at 308.0 m
9 5/8" casing set at 394.0 m
8 1/2" hole to TD, 482.0 m

Electric logs through the 12 1/4" hole section showed only 1-1.2 m thich possible shallow gas sand.
It was decided to move the rig 85 m NE and drill a new well closer to the well 34/10-24.
The well was temporary plugged and abandoned and the rig was transferred to well: 34/10-29.

Summary, well 34/10-27 Reentry

West Venture was moved from 34/10-29 to 34/10-27 at 14.55 hours the 26th of January 1986. The well was permantly plugged in 4 days and 4.5 hours. The rig was transferred to well 34/10-31.

4.2 Drilling operations in intervals

4.2 Drilling operations in intervals

The semisubmersible drilling unit West Venture was moved to new location 34/10-27 and spudded in the 2th of December 1985 at 18.00 hours. Respudded at 22.30 hours due to very poor penetration.

Final position: N 61° 10' 30,8"
E 02° 11' 24,5"

36" hole: 167 - 240,5 m

The 36" hole was drilled using a 26" bit and 36" holeopener in 15,5 hours. The 30" casing was run and cemented successfully at 238,5 m, 3 m stick up. Tagged cement 4 m above the shoe. Drilled out cement and shoe.

26" hole: 240,5 - 266 m

Drilled new formation to 266 m after cleaning out rathole below 30" casing. Ran and cemented 8 joints of 20" casing with shoe at 261 m. Ran BOP and riser. Tested 20" casing to 100 bar.

17 1/2" hole: 266 - 312 m

Tagged cement at 246 m, 15 m above the shoe. Drilled cement, float, shoe and 46 m new formation. Made a wiper trip to 20" casing shoe. No fill on bottom. Ran and cemented 13 3/8" casing with shoe at 308 m. Bumped plug with 69 bar, no backflow was observed. Tested 13 3/8" casing to 100 bar.

12 1/4" hole: 312 - 399 m

Tagged cement at 283 m, 25 m above the shoe. Drilled cement, float and shoe and cleaned the rathole. Performed F.I.T. equivalent to 1.27 S.G. mudweight. Displaced hole with 1.12 S.G. KCL mud.

Drilled a 8 1/2" pilot hole to 347 m. Circulated bottom up for samples. Stopped drilling at 347 m due to low gamma ray readings at 344,5 m.
RIH with "junk retriever" and took 0,5 m core. Recovered 100%, clay interbedded with sandstone.

The GR-tool on the MWD is 25 m above the bit, so 1 m thick sand layer was drilled through before it was seen on the MWD-log. Almost impossible to pick "the" coring point in time, so the "core" which was taken turned out to be clay.

Continued drilling 8 1/2" pilot hole to 402 m. Schlumberger ran a total of 5 runs, included RFT and CST. Fired 30 shots. Lost one and retrieved 29 cores. Opened up the pilot hole to 12 1/4" from 312-399 m using a 8 1/2" bit and 12 1/4" hole opener.
Ran 9 5/8" casing. Attempted to circulate casing no returns. Pulled hanger back to surface and found all circulation ports plugged. Cleaned circulation ports. Ran and cemented the casing with shoe at 394 m.
Tested casing to 275 bar.
Total mud losses down hole 6 m^3.

8 1/2" hole: 399 - 482 m

Tagged cement at 362 m, 32 m above the shoe. Drilled cement, float, shoe and 3 m new formation. Performed leak off test equivalent to 1.54 S.G. Drilled 8 1/2" hole to 482 m (TD). Schlumberger ran logs total 3 runs.

Temporary Plugging and Abandonment

Set open hole cement plugs from 482 m to 320 m. Pulled out to 280 m and reverse circulated. Laid down 5" DP while waiting on cement.
RIH with 8 1/2" bit and 9 5/8" scraper, tagged cement at 315 m. Dressed off cement to 330 m. Weight tested cement with 10 tons and pressure tested same to 190 bar.

Displaced the hole with freshwater. Added corrosion inhibitor. Ran and set a bridge plug at 320 m. Pulled riser and BOP. Ran corrosion cap. Inspected seabed with Scorpio and cut guide wires.
Prepaired to move rig 85 m NE.
Rig transferred from 34/10-27 to well 34/10-29 the 14th of December at 12.00 hours.

Permanent Plugging and Abandonment

West Venture was moved from 34/10-29 to 34/10-27 for permanent plugging at 14.55 hours the 26th of January 1986. The rig was positioned and a Scorpio installed guidewires and guidelines for subsea T.V. after nearly one day waiting on weather.

After the rig was repositioned, the corrosion cap was retrieved. Ran BOP and riser. RIH with openended drill pipe and tagged cement at 320 m. Displaced hole with 1.12 S.G. mud. Perforated 9 5/8" casing at 222 m. Cut casing at 241 m and POOH with casing.
Cleaned 13 3/8" casing and set EZSV bridge plug at 230 m. Cut 13 3/8" casing at 197 m, POOH with casing, had one misrun. Cleaned 20" casing. RIH w/cement stinger and tagged bridge plug at 230 m. Set a balanced cement plug from 230 m to 180 m.
Disconnected kill/choke lines and laid down diverter. Pulled BOP and riser. Installed gudie frame. Cut 20" and 30" casing at 173 m. Pulled 20" and 30" casing free. Scorpio checked seabed.
Started to move rig to 34/10-31, at 01.20 hours the 31st of January 1986.

4.3 Extract of daily activities

4.3 Extract of daily activities

85.11.28 The drilling rig West Venture was transferred to well 34/10-27 the 28th of November at 19.00 hours.
Rig under tow to new location.

85.11.29 Under tow to well 34/10-27.

85.11.30 Under tow to well 34/10-27. Started anchor handling. Ran anchors and made a pretension test to 60 tons.

85.12.01 Tensioned anchors in steps to 160 tons. Slacked off to normal tension.
Waited on drilling permission.

85.12.02 Waited on drillig permission. Made up and RIH with 26" bit x 36" H.O. Spudded the well at 18.00 hours. in 135 m waterdepth. Pulled out after 1 m due to very poor penetration. Moved rig 5 m north and respudded at 2230 hours. Drilled 36" hole from 167 m to 171 m.

85.12.03 Continued drilling 36" hole to 240.5 m. Circulated high viscous mud and dropped survey. Pulled out to 177 m and retrieved survey.
RIH to TD and circulated high viscous mud. POOH.
Rigged up and ran 6 joints 30" casing with shoe at 238,5 m. 3 m stick up.

85.12.04 Cemented the casing. Released running tool and POOH. Washed the wellhead on way out. Performed a grouting job. RIH with 26" bit and tagged cement at 234,5 m. Drilled out cement, shoe and new formation to 266 m. Circulated high viscous mud and dropped survey. Pulled into 30" shoe and retrieved survey.

85.12.05 RIH to TD. Pumped high viscous mud and POOH. Washed wellhead on way out. Rigged up and ran 8 joints of 20" casing with shoe at 261 m. Mixed and pumped cement. Bumped plug with 70 bar, no backflow. Released running

tool and POOH. Washed wellhead on way out. Ran BOP and riser. Installed diverter and tested same. Ran BOP test plug.

85.12.06 Pressure tested BOP on yellow pod and function tested on blue pod. Closed shear ram with acoustic system and tested shear ram and 20" casing to 100 bar. Made up and RIH with 17 1/2" bit. Tagged cement at 246 m. Drilled cement, float, shoe and new formation to 312 m. Circulated bottoms up. Made a wiper trip to 20" casing shoe. Dropped survey and POOH. Washed wellhead on way out.
Attempted to retrieve wearbushing. No success.

85.12.07 RIH with jet sub and washed wellhead. RIH and retrieved wearbushing. Ran and cemented 13 3/8" casing with shoe at 308 m. Bumped the plug with 69 bar, no back flow. Backed off running tool and POOH. RIH with seal assembly torque tool. POOH. RIH with seal assembly test tool and pressure tested same to 100 bar. Set wearbushing. RIH with 12 1/4" bit and tagged float at 283 m. Drilled cement, float and shoe.

85.12.08 Cleaned rathole and performed F.I.T. equivalent to 1.27 S.G. Displaced hole with 1.12 S.G. KCL mud. Circulated and conditioned KCL mud. POOH. RIH with 8 1/2" bit and drilled pilot hole from 312 m to 339 m. Circulated bottoms up for samples. Continued drilling pilot hole to 341 m. Circulated bottoms up for samples. No sand. Drilled 8 1/2" hole to 344 m. Circulated bottoms up. Continued drilling to 346 m. Circulated bottoms up. No sand. Continued drilling 8 1/2" pilot hole to 347 m and circulated bottoms up. POOH and laid down MWD tool. RIH with "junk retriever" and took 0,5 m core. POOH. 100% recovery. Made up new bit on new MWD tool.

85.12.09 Tested MWD tool. Tool failed. Picked up used MWD tool and RIH. Drilled 8 1/2" pilot hole from 347 m to 402 m. Circulated hole clean. POOH.
Rigged up Schlumberger and ran logs.
Run no 1: ISF/SONIC, GR, MSFL, CAL, GR
Run no 2: CDL/CNL, CAL, GR
Run no 3: DLL, MSFL, GR
Run no 4: RFT

85.12.10 Continued logging.
Run no 5: CST. Fired 30 shots. Lost one, retrieved 29 cores.
RIH with new BHA. Opened up the pilot hole from 8 1/2" to 12 1/4" from 312 m to 399 m. Circulated bottoms up. Made up a wiper trip to 13 3/8" casing shoe. Circulated hole clean. POOH. Washed wellhead on way out. Laid down bit and holeopener. Attempted to retrieve wearbushing. No success. RIH with jet tool and washed wellhead. POOH. Retrieved wearbushing.
Ran 9 5/8" casing.

85.12.11 Attempted to circulate casing. No returns. Picked up casing 0,25 m. Attempted to circulate casing. No returns. Rigged down surface lines and pulled hanger back to surface. All circulation ports were plugged. Backed out running tool and removed seal assembly. Cleaned circulation ports and made up running tool. RIH. Stopped 1,5 m above wellhead and circulated casing. No losses. Landed casing hanger and circulated casing. No losses. Cemented the casing with shoe at 394 m.
Released running tool and POOH. Set seal assembly. RIH with jet sub and testplug. Washed wellhead and tested seal assembly to 275 bar. POOH. Set wearbushing. Schlumberger ran temperature log. RIH with 8 1/2" bit and tagged cement at 362 m. Drilled cement, float and shoe. Cleaned rathole and drilled 3 m new formation.

85.12.12 Performed leak off test equivalent to 1.54 S.G. Drilled 8 1/2" hole to 482 m. Circulated and dropped survey. Made wiper trip to 9 5/8" casing shoe and retrieved survey. RIH and circulated hole clean. POOH. Rigged up Schlumberger and ran logs.
Run log no 1: ISF, BHC, GR
Unable to go past 324 m. Installed rubber prong on end of the tool
Rerun no 1: ISF, BHC, GR
Run no 2: LDL, CNL, GR
Run no 3: CBL, VDL, GR
RIH with cement stinger. Set cement plug no 1 from 482 m to 390 m. Plug no 2 from 390 m to 320 m. Pulled out to 280 m and reverse circulated.

85.12.13 POOH. Laid down 10 stands 5" DP while WOC. RIH with 8 1/2" bit and 9 5/8" scraper. Tagged cement at 315 m. Drilled cement from 315 m to 330 m. Weight tested cement with 10 tons and pressure tested same to 190 bar. Displaced hole with freshwater, added corrosion inhibitor.
POOH. Laid down BHA.
Ran and set a bridge plug at 320 m. Prepared to pull riser and BOP. Waited on weather for 6 hours.
Pulled riser and BOP.

85.12.14 Prepared to run corrosion cap. Modified running tool and ran corrosion cap. POOH and laid down running tool and bumper sub.
Inspected seabed with Scorpio and cut guide wires.
Prepaired to move rig 85 m NE.
Rig transferred from 34/10-27 to well 34/10-29 at 12.00 hours.

Extract of Daily Activities - Reentry

86.01.26 Moved West Venture from 34/10-29 to 34/10-27 at 14.55 hours. Ran drill collars, jumped Scorpio and positioned rig with drill collars as reference point. Waited on weather for four hours.

86.01.27 Waited on weather for 16.5 hours due to bad weather conditions to operate Scorpio. Jumped Scorpio and installed guide wires and guidelines for subsea TV. Repositioned rig. Retrieved corrosion cap using wear bushing running tool.

86.01.28 Ran BOP and riser. Installed diverter and retrieved wear bushing. RIH with test tool. Pressure tested BOP on yellow pod and function tested on blue pod. Pressure tested upper, lower and spare kelly cocks. RIH with open ended drill pipe and tagged cement at 320 m. Displaced hole to 1.12 S.G. mud. Pressure tested surface lines. Ran Schluberger perforating guns and perforated 9 5/8" casing at 222 m under pressure control with 50 bar on string. Pressure dropped to 22 bar. RIH with 9 5/8" casing cutting assembly to 241 bar.

86.01.29 Cut 9 5/8" casing at 241 m. RIH with 9 5/8" casing spear and pulled casing free with 45 ton overpull. Closed annular and circulated bottoms up through choke line. Flowchecked negative. POOH with 9 5/8" casing and pressure tested 9 5/8" x 13 3/8" annulus to 50 bar. RIH with 12 1/4" bit and scraper, cleaned 13 3/8" casing down to 241 m. Set EZSV bridge plug at 230 m. RIH with 13 3/8" casing cutting assembly and cut 13 3/8" casing at 197 m. RIH with casing spear and attempted to recover casing, max 56 ton overpull. Closed annular and circulated bottoms up. Flowchecked for 10 min. - negative. POOH. - misrun. RIH with casing spear, engaged spear and pulled 13 3/8" casing free with 22 ton overpull. Max gas 5.4%. Flowchecked for 10 min. - negative. Recovered 1 joint of casing,

casing was unscrewed in connection. RIH and recovered two joints of casing.
Pressure tested 20" caisng to 50 bar. RIH with 17 1/2" bit and 26" underreamer to 167 m.

86.01.30 Cleaned 20" casing from 167 m to 177 m. Was not able to got through wellhead with underreamer after connection, POOH and checked underreamer. RIH with bit and underreamer and cleaned 20" hole from 177 m to 196 m. RIH with 3 1/2" tubing cement stinger, tagged bridge plug at 230 m. Set balanced cement plug from 230 m to 180 m. Displaced riser with seawater. Pulled BOP and riser. RIH with 17 1/2" bit and installed guide frame. Tagged cement at 179 m. RIH with 20" and 30" cutting assembly and cut casings at 173 m. Ran wellhead running tool. Stabbed into wellhead. Pulled 20" and 30" casing free with 79 ton overpull.

86.01.31 Scorpio checked seabed while POOH with casing. Started moving rig to 34/10-31 at 1.20 hours the 31st of January 1986.

4.4 Well and subsea schematic

4.4 WELLBORE SCHEMATIC WELL 34/10-27

(Not to scale)

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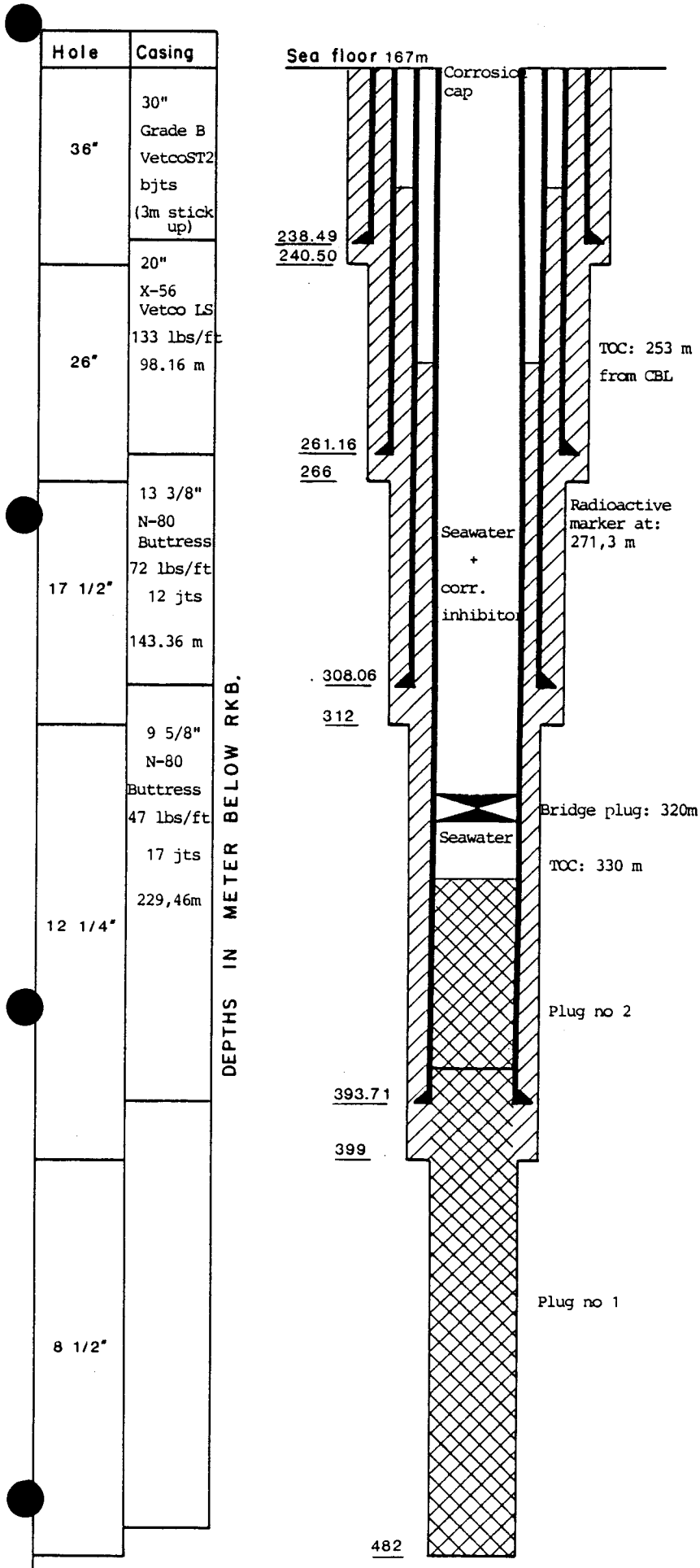
Original:
Tegnet: CA
Dato: 20-6-86

RKB - MSL: 32 m

WATER DEPTH: 135 m



ALL ADDITIVES ARE PER 100 KG CEMENT

Casing cement	Plugs / Squeeze
Lead slurry: 1,56 S.G 21,5 ton "G" cement + 3,2 l D-75 + 93,43 l seawater Tail-in slurry: 1,90 S.G 12,7 ton "G" cement + 3,55 l D-75 + 43,41 l seawater	Grouting job: 2.0 S.G 6 ton "G" cement + 3,2 l D-77 + 43,41 l seawater
Lead slurry: 1,56 S.G 10,1 ton "G" cement + 3,2 l D-75 + 93,4 l seawater Tail-in slurry: 1,90 S.G 12,8 ton "G" cement + 3,55 l D-77 + 43,4 l seawater	
19 m^3 seawater Lead slurry: 1,56 S.G 3,6 ton "G" cement + 3,2 l D-75 + 93,4 l seawater Tail-in slurry: 1,90 S.G 6,6 ton "G" cement + 3,55 l D-77 + 43,4 l seawater	
0,8 m^3 spacer: 1,30 S.G "G" cement + 20% BWOC Emsac + 2% BWOC D-19 + 2,0 l D-75 + 0,7 l D-31LN +243,58 l seawater Slurry: 1,70 S.G 5,4 M^3 cement slurry 4,8 ton "G" cement + 15% BWOC Emsac + 1,25% BWOC D-19 + 0,89 l D-31LN + 0,24 l D-47 + 72,06 l seawater	Plug no 2: 390 - 320 m 27 m^3 cement slurry 1,90 S.G "G" cement + 45,1 l seawater
	Plug no 1: 482 - 390 m 3,4 m^3 slurry 1,90 S.G "G" cement + 45,1 l seawater

4.4 WELLBORE SCHEMATIC WELL 34/10-27 REENTRY

(Not to scale)

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Original:
Tegnet:
Dato:

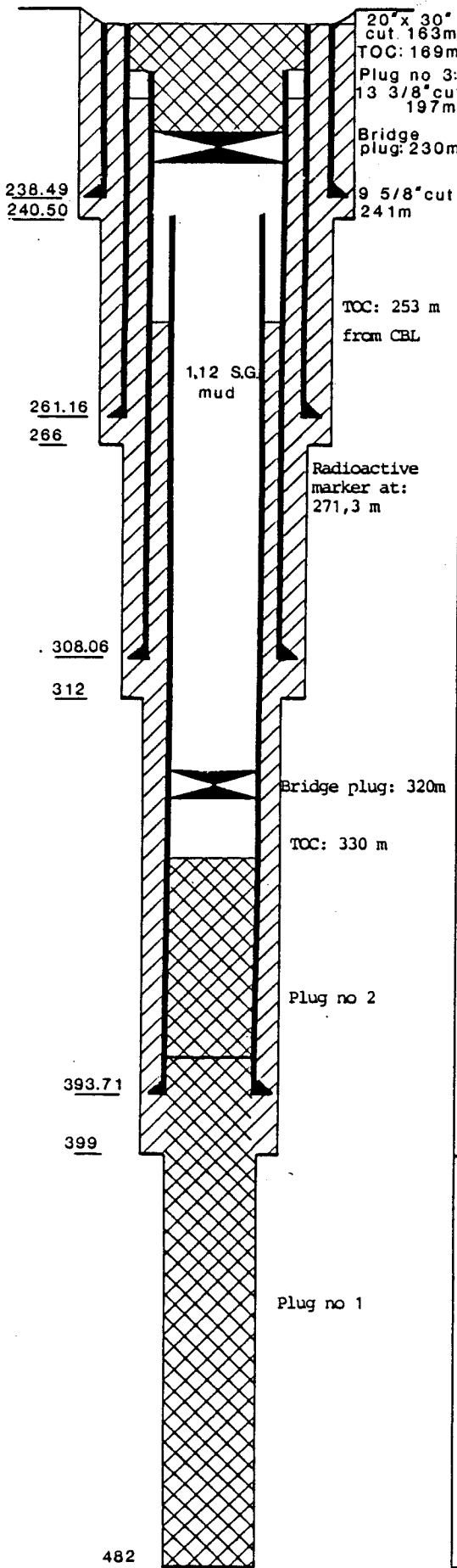
RKB - MSL: 32 m

WATER DEPTH: 135 m

ALL ADDITIVES ARE PER 100 KG CEMENT

Hole	Casing
36"	30" Grade B VetcoST2 bjts (3m stick up)
26"	20" X-56 Vetco LS 133 lbs/ft 98.16 m
17 1/2"	13 3/8" N-80 Buttress 72 lbs/ft 12 jts 143.36 m
12 1/4"	9 5/8" N-80 Buttress 47 lbs/ft 17 jts 229,46m
8 1/2"	

DEPTHS IN METER BELOW RKB.



Casing cement

Lead slurry: 1,56 S.G
21,5 ton "G" cement
+ 3,2 l D-75
+ 93,43 l seawater

Tail-in slurry: 1,90 S.G
12,7 ton "G" cement
+ 3,55 l D-75
+ 43,41 l seawater

Lead slurry: 1,56 S.G
10,1 ton "G" cement
+ 3,2 l D-75
+ 93,4 l seawater

Tail-in slurry: 1,90 S.G
12,8 ton "G" cement
+ 3,55 l D-77
+ 43,4 l seawater

19 m^3 seawater
Lead slurry: 1,56 S.G
3,6 ton "G" cement
+ 3,2 l D-75
+ 93,4 l seawater

Tail-in slurry: 1,90 S.G
6,6 ton "G" cement
+ 3,55 l D-77
+ 43,4 l seawater

0,8 m^3 spacer: 1,30 S.G
"G" cement
+ 20% BWOC Emsac
+ 2% BWOC D-19
+ 2,0 l D-75
+ 0,7 l D-31LN
+243,58 l seawater

Slurry: 1,70 S.G
5,4 M^3 cement slurry
4,8 ton "G" cement
+ 15% BWOC Emsac
+ 1,25% BWOC D-19
+ 0,89 l D-31LN
+ 0,24 l D-47
+ 72,06 l seawater

Plugs / Squeeze

Grouting job: 2.0 S.G
6 ton "G" cement
+ 3,2 l D-77
+ 43,41 l seawater

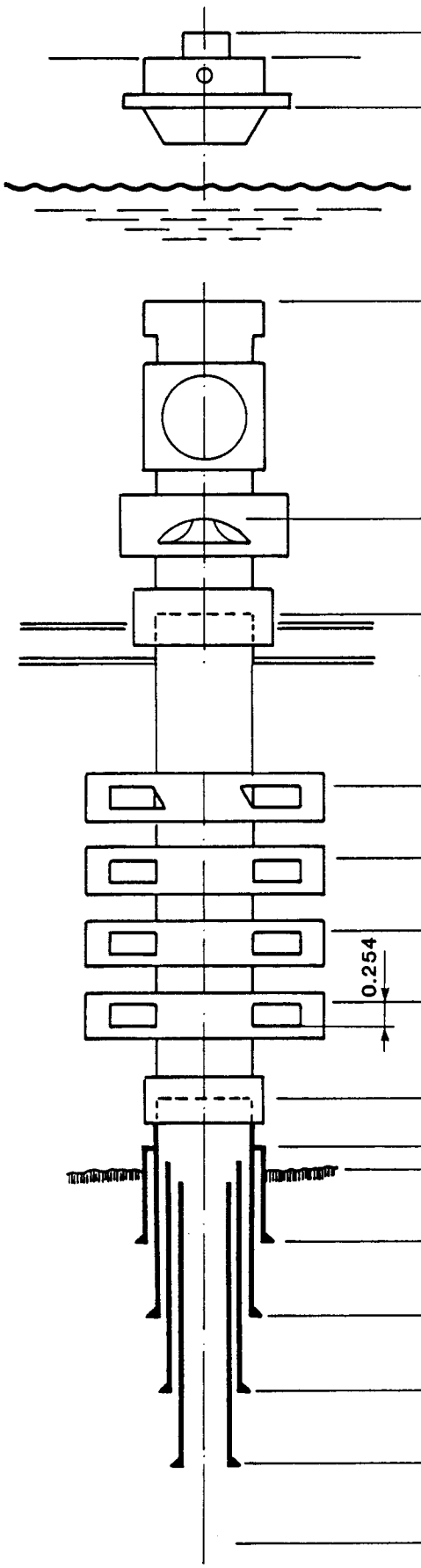
Plug no 3:
230-180m
0.8m^3 Seawater
7 ton cement slurry
1.90 S.G. "G" Cement
+ 3.55 l D-77
+ 43.41 l Seawater

Plug no 2:
390 - 320 m
27 m^3 cement slurry
1,90 S.G
"G" cement
+ 45,1 l seawater

Plug no 1:
482 - 390 m
3,4 m^3 slurry 1,90 S.G
"G" cement
+ 45,1 l seawater

WEST VENTURE 18 3/4" SUBSEA ASSEMBLY — WELL 34/10-27

(NOT TO SCALE)



	M	
	0	RKB
		DIVERTER RISER CONN. FLANGE
	32.000	MEAN SEA LEVEL
	153.911	JOINT RISER CONNECTOR FLANGE
2,67		
	156.381	ANNULAR RUBBER TOP (CLOSED)
2,184		
	158.765	LOWER STACK ASSEMBLY TOP
1.31		
		SHEAR RAM TOP
	160.075	U. P. RAMS TOP
1.1		
	161.088	M. P. RAMS TOP
0.796		
	162.188	L. P. RAMS TOP
1.129		
	162.984	18 3/4" WELLHEAD TOP
1.016		
	164.000	30" HOUSING TOP VETCO SG 6
	167.000	MUD LINE
	238.490	30" SHOE
		20" SHOE
	308.060	13 3/8" SHOE
	393.710	9 5/8" SHOE
		7" SHOE

3-2-4-86

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Original: AR
Tegnet: AM
Dato: 14-2-84

4.5 Formation integrity test

NOMENCLATURE

Brønn no	= Well no
Dybde	= Depth, m
Foring	= Casing
Fartøy	= Rig name
Høyde	= Hight, m
Over vannfl.	= Above sea level
Over sjøb.	= Above sea floor
Tyngde	= Weight
Maks. trykk	= Max. pressure
Boreslam	= Mud
Tetthet	= Density, S.G.
Vis	= Funnel Viscosity, sec/gt.
P.V.	= Plastic Viscosity, cps.
Y.P.	= Yield Point, lbs/100 sq.ft.
Filt	= Filtrate, cc's/30 min
Gel	= Gel, lsb/100 sq. ft.
Kapasitet	= Capacity
Vol/tidsenhet	= Liters/min.
Tilb. str.	= Returns, liters
Antatt styrke	= Predicated formation strenght, S.G.
Obs. spr. strykk	= Surface pressure at leak off, bar
Ekv. formasj. styrke	= Formation integrity (Leak off) S.G.
Volum	= Volume, liters
Trykk	= Pressure, bar
Anmerkninger	= Comments

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FORMASJONSSTYRKETEST

Dato: 8/12-85

Brønn nr.: 34/10-27 **Dybde:** Brønn: 312 m Foring: 308 m Test: 308 m

Fartøy: West Venture **Høyde R.K.B.:** Over vannfl.: 32 m Over sjøb.: 167 m

Foring: Diam.: 13 3/8" Tyngde: 72 lbs/ft Grad: N-80 Maks. trykk: _____

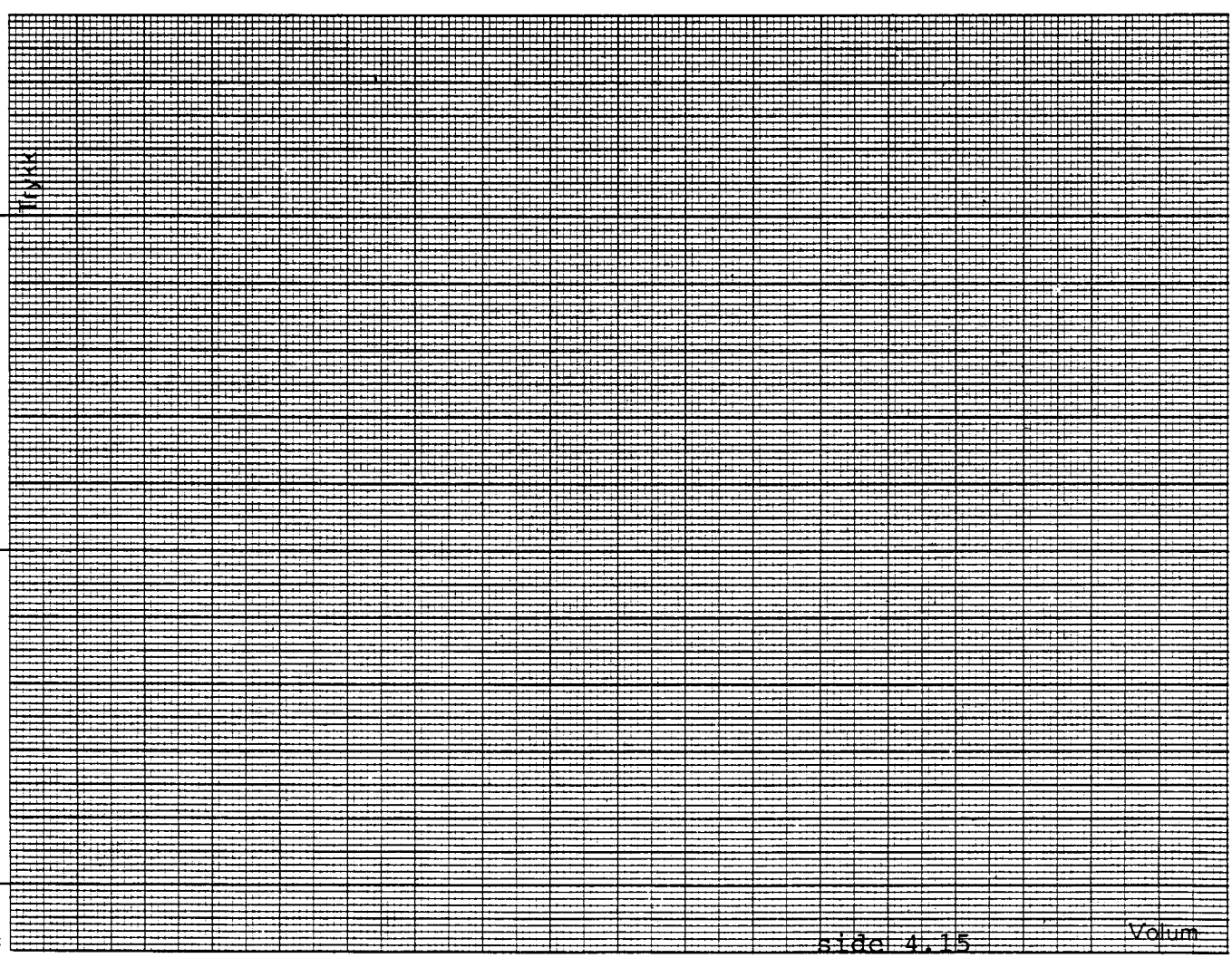
Boreslam: Tetthet: 1 10 S.G Vis: 59 P.V.: 8 Y.P.: 47 Filt: - Gel.: 25/30

Pumpe: Type: _____ Kapasitet: _____ Vol./tidsenh.: _____ Tilb.str.: _____

Antatt styrke: _____ Obs. spr. trykk: _____ Ekv. formasj. styrke: FIT: 1.27 S.G.

Volum/tid	Trykk	Volum/tid	Trykk	Volum/tid	Trykk	Anmerkninger
						Performed F.I.T.
						equivalent to 1.27 S.G.
						mudweight
						Sign.: Odd Vik

Not able to make a plot due to very small volum pumped.



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FORMASJONSSTYRKETEST

Dato: 12/12-85

Brønn nr.: 34/10-27 **Dybde:** Brønn: 405 m Foring: 394 m Test: 394 m

Fartøy: West Venture **Høyde R.K.B.:** Over vannfl.: 32 m Over sjøb.: 167 m

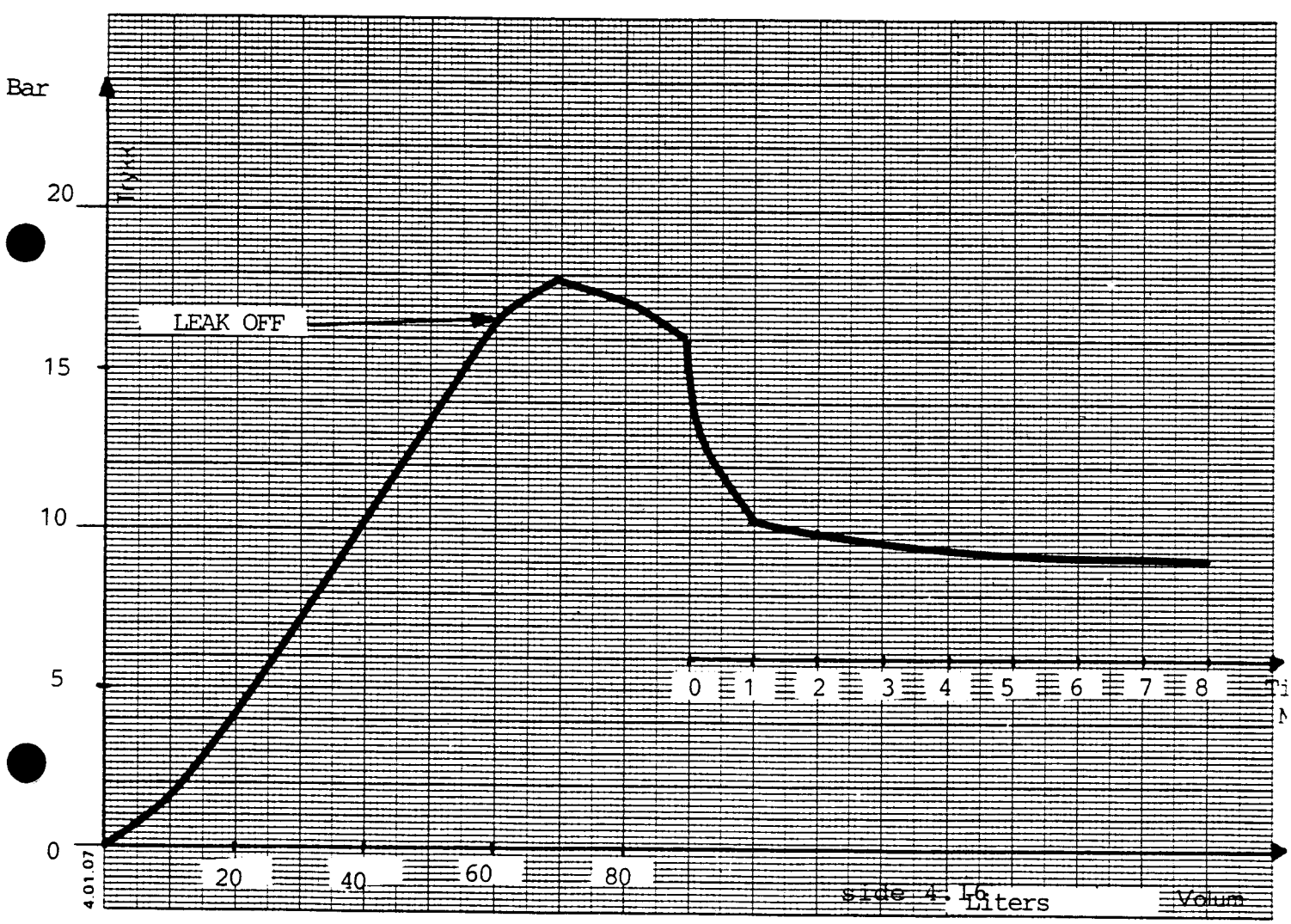
Foring: Diam.: 9 5/8" Tyngde: 47 lbs/ft Grad: N-80 Maks. trykk:

Boreslam: Tetthet: 1.12 S.G Vis: 62 P.V.: 14 Y.P.: 32 Filt: 9.6 Gel.: 14/20

Pumpe: Type: Dowell Kapasitet: 21/stroke Vol./tidsenh.: 401/min Tilb.str.: 40 l

Antatt styrke: 1.37 S.G. Obs. spr. trykk: 16.6 bar Ekv. formasj. styrke: 1.54 S.G.

Volum/tid	Trykk	Volum/tid	Trykk	Volum/tid	Trykk	Anmerkninger
10 l	1.4 bar	90 l	15.9bar			All pressures adjusted
20 l	4.1 bar					1.4 bar for hight
30 l	7.2 bar	0 min	14.5bar	6 min	9.2bar	difference between cmt
40 l	10.3bar	1 min	10.3bar	7 min	9.2bar	unit and RKB.
50 l	13.4bar	2 min	10.0bar	8 min	9.1bar	
60 l	16.6bar	3 min	9.7bar			
70 l	17.9bar	4 min	9.5bar			Sign.: Odd A. Vik
80 l	17.2 bar	5 min	9.3bar			



4.6 Total rig time distribution phase I
Rig time distribution for plugging phase I

Total rig time distribution phase II
Rig time distribution for plugging phase II

Total rig time distribution phase I + II
Rig time distribution for plugging phase I + II

Drilling time vs. depth
Drilling cost vs. depth

TOTAL RIG TIME DISTRIBUTION FOR WELL 34/10-27 Phase I

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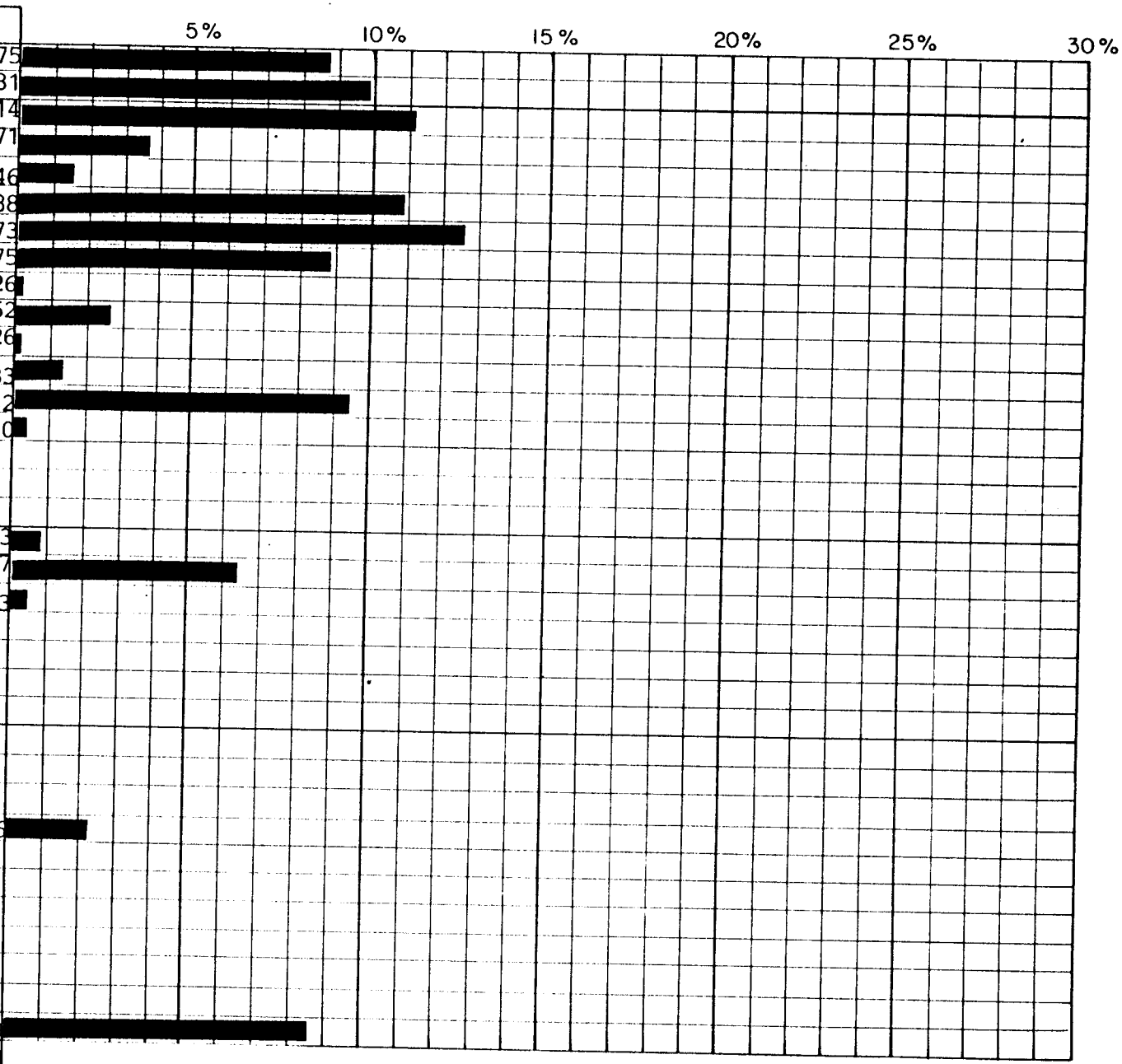
		HRS	%
	Moving	33.0	8.75
	Mooring	37.0	9.81
Drilling operation	Efficient drilling	42.0	11.14
	Other drilling	14.0	3.71
	Hole opening	5.5	1.46
	Regular tripping	41.0	10.88
	Casing and cementing	48.0	12.73
	Sub sea eq. and BOP	33.0	8.75
	Abnormal press. detection	1.0	0.26
	Cond. and circ.	9.5	2.52
	Reaming	1.0	0.26
	Directional survey	5.0	1.33
	Plugging	35.5	9.42
	Formation leak-off test	1.5	0.40
	Maintenance		
	Other		
Formation Evaluation	Coring	3.5	0.93
	El. logging	24.0	6.37
	Circ. for samples	2.0	0.53
	RFT		
	Production testing		
	Other		
Downtime	Rig repairs		
	Rig moving		
	Waiting on weather		
	Sub sea eq. and BOP	8.5	2.26
	Fishing		
	Lost circulation		
	Well control		
	Hole problems		
	Formation evaluation		
	Diving		
	Other	32.0	8.49
TOTAL		377.0	100.0



BOP

RIG TIME DISTRIBUTION FOR PLUGGING, INCL. IN TOTAL RIG TIME DISTRIBUTION.

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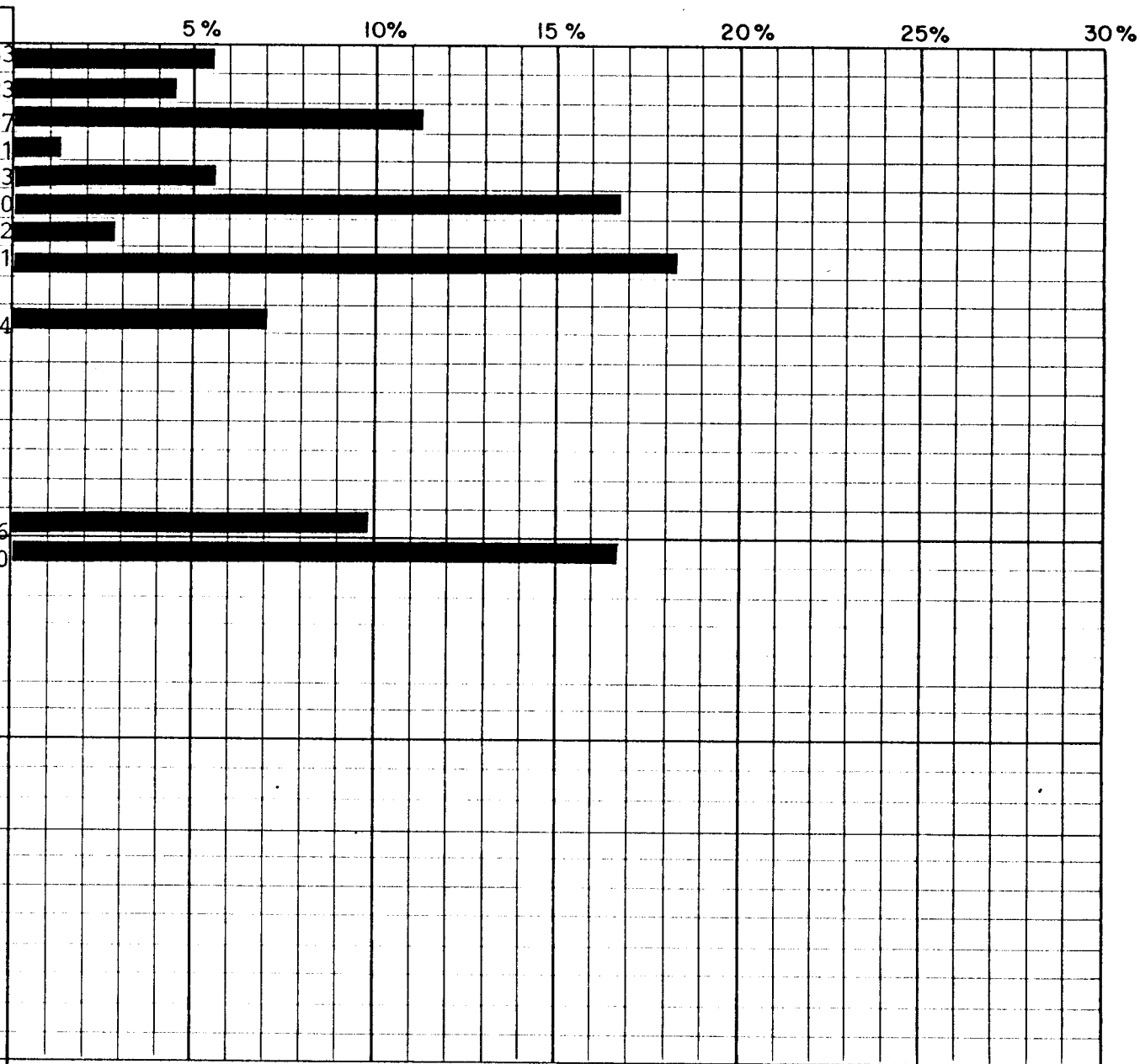
Den norske stats oljeselskap a.s

Well 34/10-27, Phase I

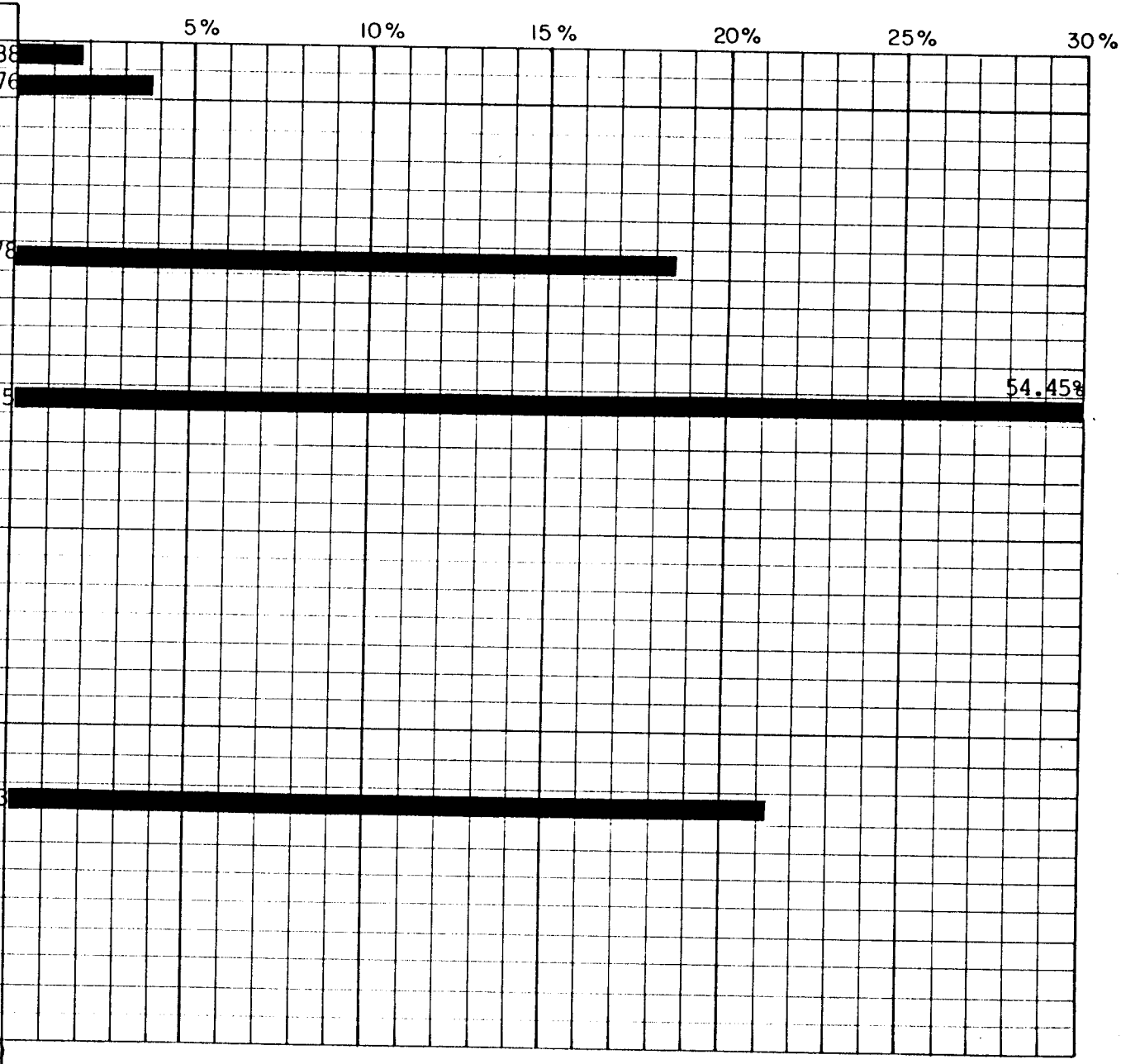
		HRS	%
Plugging	Preparations	2.0	5.63
	Con. and circ.	1.5	4.23
	Cement / Squeeze	4.0	11.27
	Pressure testing	0.5	1.41
	Wire line ops.	2.0	5.63
	Tripping	6.0	16.90
	Other drilling	1.0	2.82
	Sub sea eq. and BOP	6.5	18.31
	Cutting casing		
	Diving	2.5	7.04
	Other	3.5	9.86
Downtime	Waiting on weather	6.0	16.90
	Waiting on cement		
	Cutting casing		
	Other		
	TOTAL	35.5	100



TOTAL RIG TIME DISTRIBUTION FOR WELL 34/10-27 Phase II

statoil
Den norske stats oljeselskap a.s

		HRS	%
	Moving	2.0	1.88
	Mooring	4.0	3.76
Drilling operation	Efficient drilling		
	Other drilling		
	Hole opening		
	Regular tripping		
	Casing and cementing		
	Sub sea eq. and BOP	20.0	18.78
	Abnormal press. detection		
	Cond. and circ.		
	Reaming		
	Directional survey		
	Plugging	58.0	54.45
	Formation leak-off test		
	Maintenance		
	Other		
Formation Evaluation	Coring		
	El. logging		
	Circ. for samples		
	RFT		
	Production testing		
	Other		
Downtime	Rig repairs		
	Rig moving		
	Waiting on weather	22.5	21.13
	Sub sea eq. and BOP		
	Fishing		
	Lost circulation		
	Well control		
	Hole problems		
	Formation evaluation		
	Diving		
	Other		
TOTAL		106.5	100.0



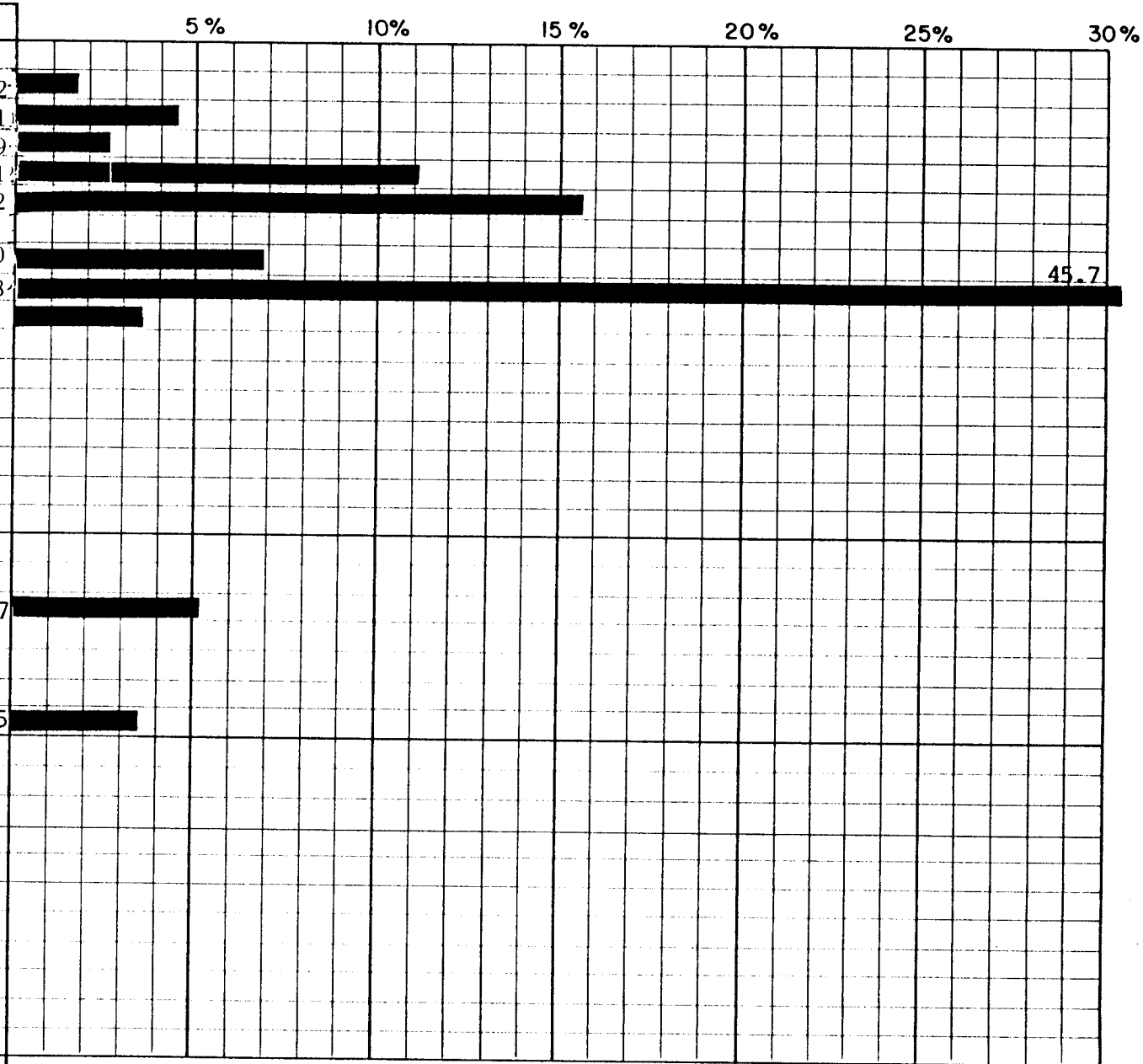
BOR 3.2.2.60

RIG TIME DISTRIBUTION FOR PLUGGING, INCL. IN TOTAL RIG TIME DISTRIBUTION.

statoil
Den norske stats oljeselskap a.s

Well 34/10-27, Phase II

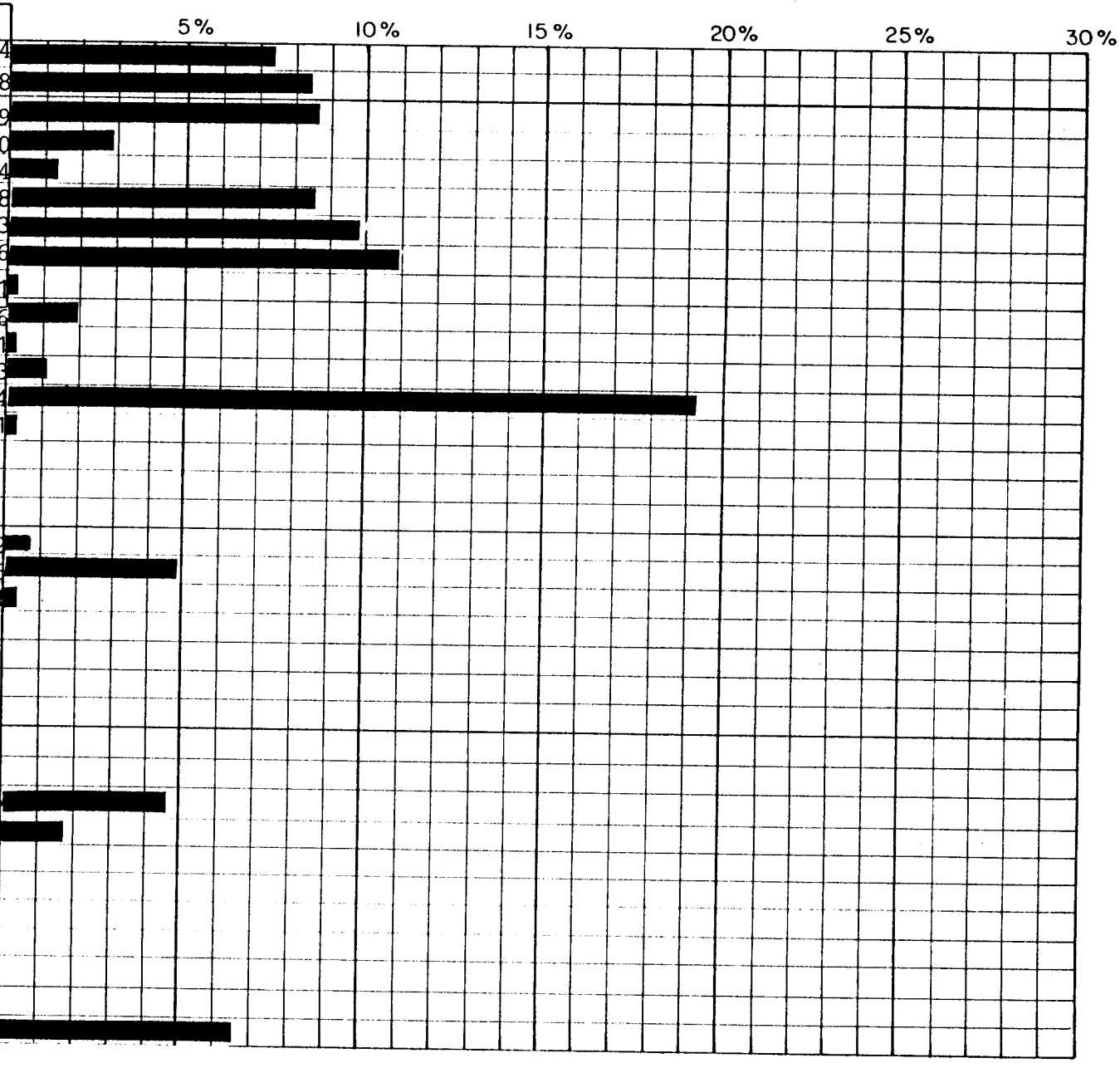
		HRS	%
Plugging	Preparations		
	Con. and circ.	1.0	1.72
	Cement / Squeeze	2.5	4.31
	Pressure testing	1.5	2.59
	Wire line ops.	6.5	11.21
	Tripping	9.0	15.52
	Other drilling		
	Sub sea eq. and BOP	4.0	6.90
	Cutting casing	26.5	45.68
	Diving	2.0	3.4
	Other		
Downtime	Waiting on weather		
	Waiting on cement		
	Cutting casing	3.0	5.17
	Other	2.0	3.45
	TOTAL	58.0	100



TOTAL RIG TIME DISTRIBUTION FOR WELL 34/10-27 Phase I + II

statoil
Den norske stats oljeselskap a.s

		HRS	%
	Moving	35.0	7.24
	Mooring	41.0	8.48
Drilling operation	Efficient drilling	42.0	8.69
	Other drilling	14.0	2.90
	Hole opening	5.5	1.14
	Regular tripping	41.0	8.48
	Casing and cementing	48.0	9.93
	Sub sea eq. and BOP	53.0	10.96
	Abnormal press. detection	1.0	0.21
	Cond. and circ.	9.5	1.96
	Reaming	1.0	0.21
	Directional survey	5.0	1.03
	Plugging	93.5	19.34
	Formation leak-off test	1.5	0.31
	Maintenance		
	Other		
Formation Evaluation	Coring	3.5	0.72
	El. logging	24.0	4.96
	Circ. for samples	2.0	0.41
	RFT		
	Production testing		
	Other		
Downtime	Rig repairs		
	Rig moving		
	Waiting on weather	22.5	4.65
	Sub sea eq. and BOP	8.5	1.76
	Fishing		
	Lost circulation		
	Well control		
	Hole problems		
	Formation evaluation		
	Diving		
	Other	32.0	6.62
TOTAL		483.5	100.0

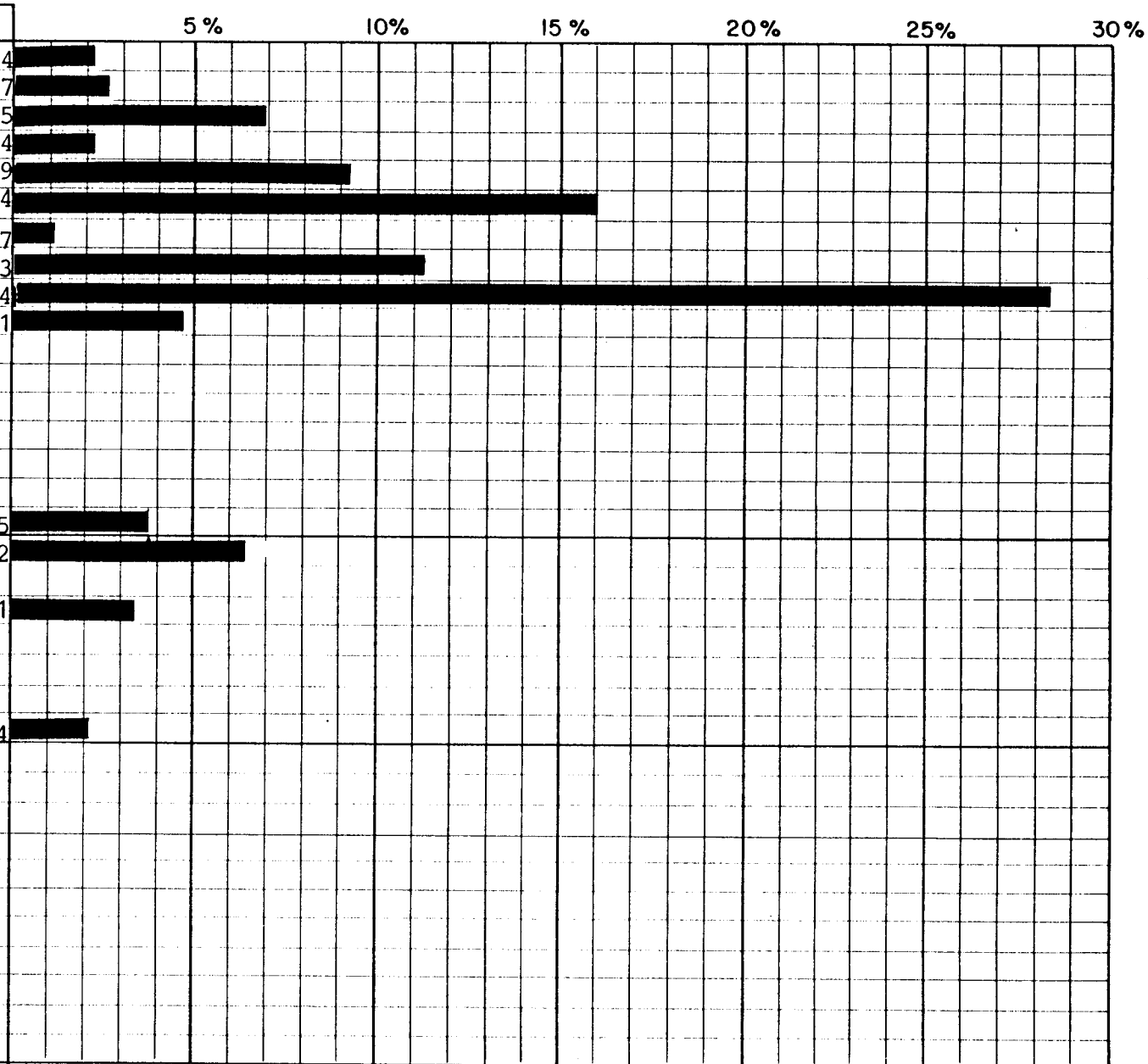


RIG TIME DISTRIBUTION FOR PLUGGING, INCL. IN TOTAL RIG TIME DISTRIBUTION.

statoil
Den norske stats oljeselskap a.s

Well 34/10-27, Phase I + II

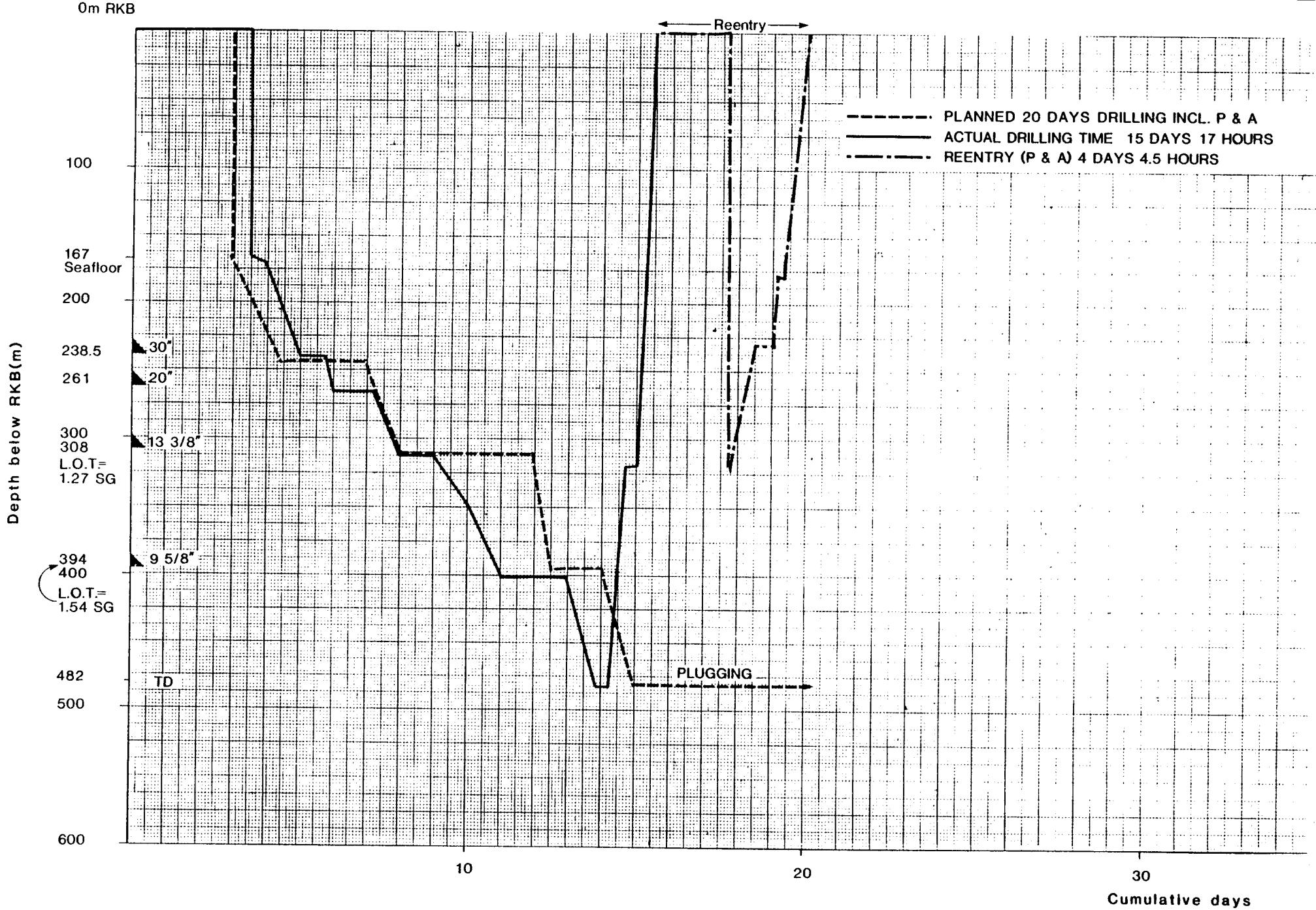
		HRS	%
Plugging	Preparations	2.0	2.14
	Con. and circ.	2.5	2.67
	Cement / Squeeze	6.5	6.95
	Pressure testing	2.0	2.14
	Wire line ops.	8.5	9.09
	Tripping	15.0	16.04
	Other drilling	1.0	1.07
	Sub sea eq. and BOP	10.5	11.23
	Cutting casing	26.5	28.34
	Diving	4.5	4.81
	Other	3.5	3.75
Downtime	Waiting on weather	6.0	6.42
	Waiting on cement		
	Cutting casing	3.0	3.21
	Other	2.0	2.14
	TOTAL	93.5	100



DRILLING TIME V.S. DEPTH

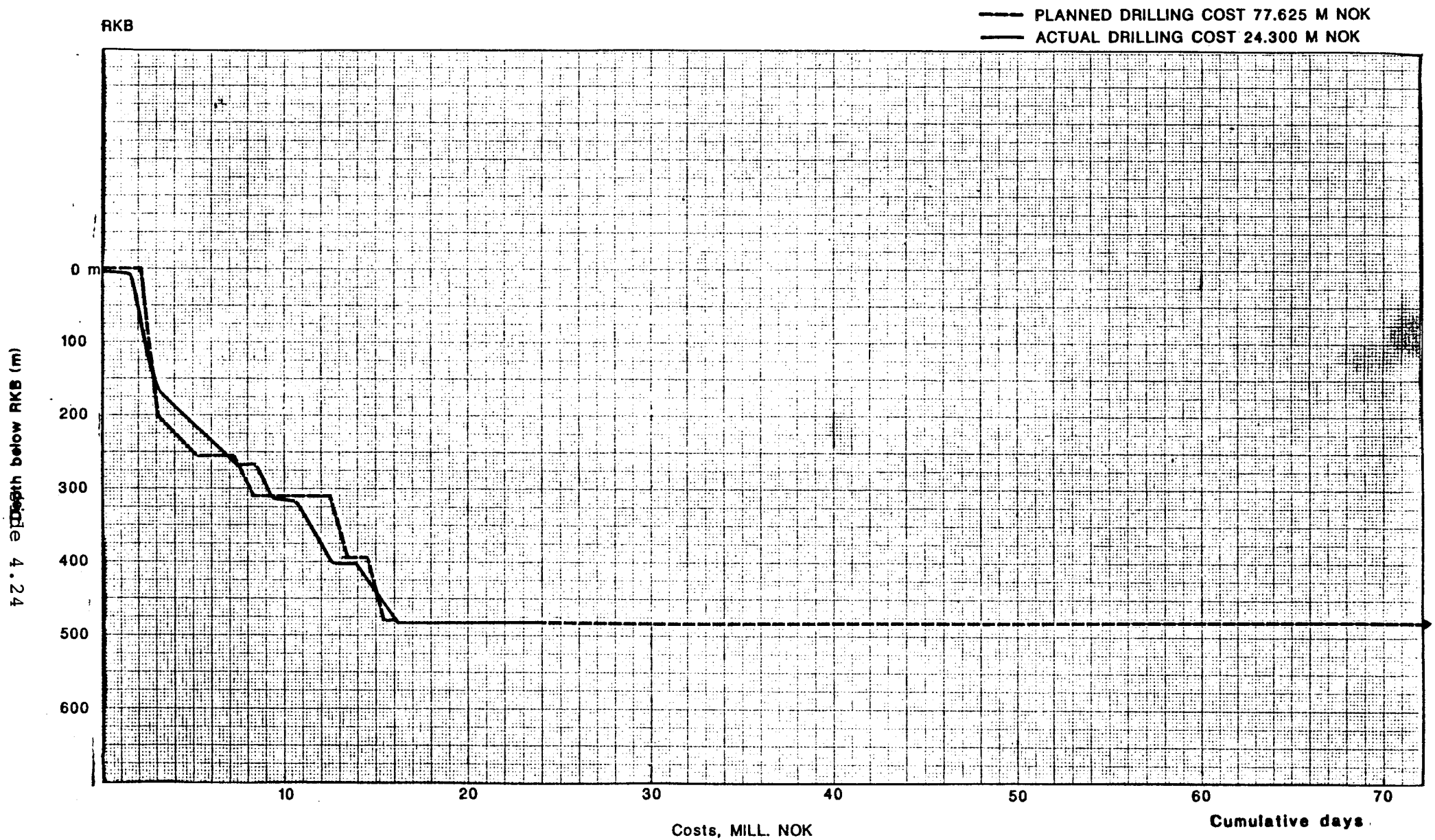
WELL : 34/10-27 RIG: WEST VENTURE

ORIGINAL ARB AV	TEGNET AV	statoil
	DATO	



DRILLING COST V.S. DEPTH

WELL 34/10-27 RIG: WEST VENTURE



4.7 Bit record and lithology column

statoil

BORKRONEDATA

Brønn nr.: 34/10-27

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	36"H.O.	HTC	R1	16412-01	4x20 3x20	240.5	73.5	13.1	13.1	5.6	3-5	70	83.5		4150	1	2	I	TD 36" HOLE
2	1 RR	26" H.O.	HTC	R 1	16412-01	3 x 20	266	25.5	1.5	14.6	17.0	1-5	70	83.5		4100	2	3	I	TD 26"HOLE
3	2	17 1/2"	HTC	X3A	174114	2x18 1x20	312	46,0	2.5	17.1	18.4	23-11.3	60/150	200		4120	1	1	I	TD 17 1/2"HOLE
4	3	12 1/4"	SEC	S33SF	906035	3x16	DRILLED OUT FC - SHOE - CMT. CLEANED RAT HOLE.													
5	4	8 1/2"	SEC	S33SF	843108	2x11 2x13	347	35.0	3.6	20.7	9.7	1-4	70-110	33-35		800-1000	2	2	I	
6	5	8 1/2"	SEC	S33SF	843133	3x16 2x11 1x13	402	55.0	3.9	24.6	14.1	2-4	120-130	45		940	1	1	I	Drilled 8 1/2" pilot hole to to 402 m
7	5 RR	12 1/4" 8 1/2"	SEC	S33SF	843133	3x16 2x11 1x13	399 402	87 m	5.5	30.1	15.8	1-2	130	52		1320				Opened hole to 12 1/4"
8	5 RR	8 1/2"	SEC	"	"	2x13 1x14	482	80	4.5	34.6	17.8	5	120	52		1400	2	2	I	TD 8 1/2" HOLE
9	5 RR	8 1/2"	SEC	"	"	NONE		DRESSING OFF CEMENT PLUG												

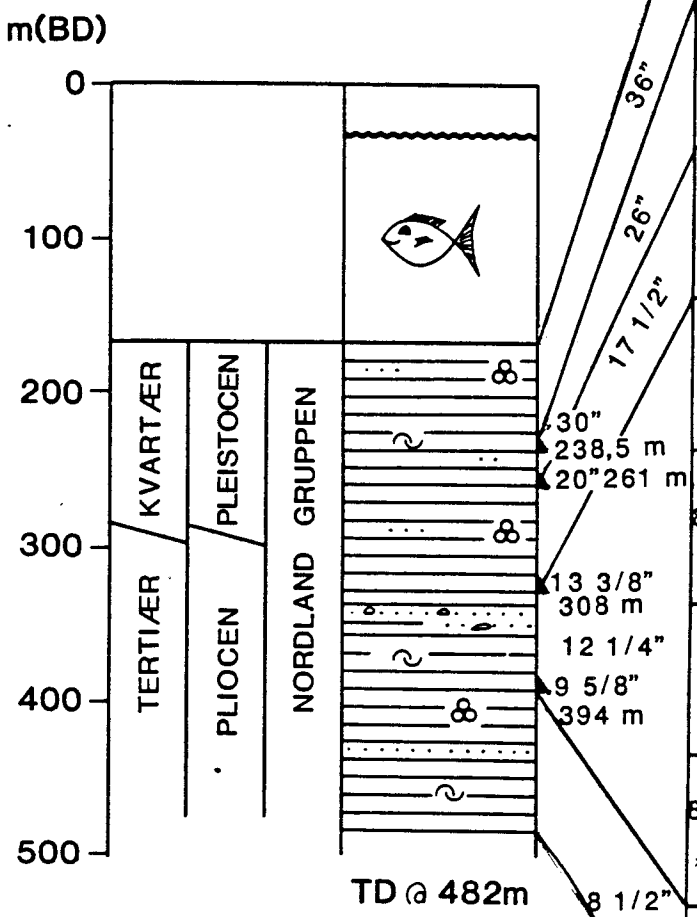
statoil

BORKRONEDATA

Reentry
Brønn nr.: 34/10 - 27

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	RR	12 1/4"		X1G		-	CLEANED 13 3/8" CSG W/BIT AND SCRAPER													
2	2	26" UR 17 1/2"	HTC	X3A	790 WL	1x20 2x18	CLEANED 20" CSG FROM 167 TO 177 M													
3	2RR	26" UR 17 1/2"	HTC	X3A	790 WL	1x20 2x18	CLEANED 20" CSG FROM 177 TO 196 M													

BIT RECORD AND LITHOLOGY COLUMN WELL: 34/10-27



Bit type	Depth out	Progress	ROP (m/hr)
26"R1 × 36"H.O.	240,5	73,5	5,6
26"R1	266,0	25,5	17,0
17 1/2"X3A	312,0	46,0	18,4
Drilled 8 1/2" pilot hole to 402 m			
8 1/2"S33SF	402,0	90,0	11,9
Opened up pilot hole to 12 1/4"			
8 1/2"S33SF ×12 1/4"H.O	402,0 399,0	– 87,0	– 15,8
8 1/2"S33SF	482,0	80,0	17,8

4.8 Pressure profiles

BRØNN: 34/10-27

RIGG: West Venture

RB: 32m

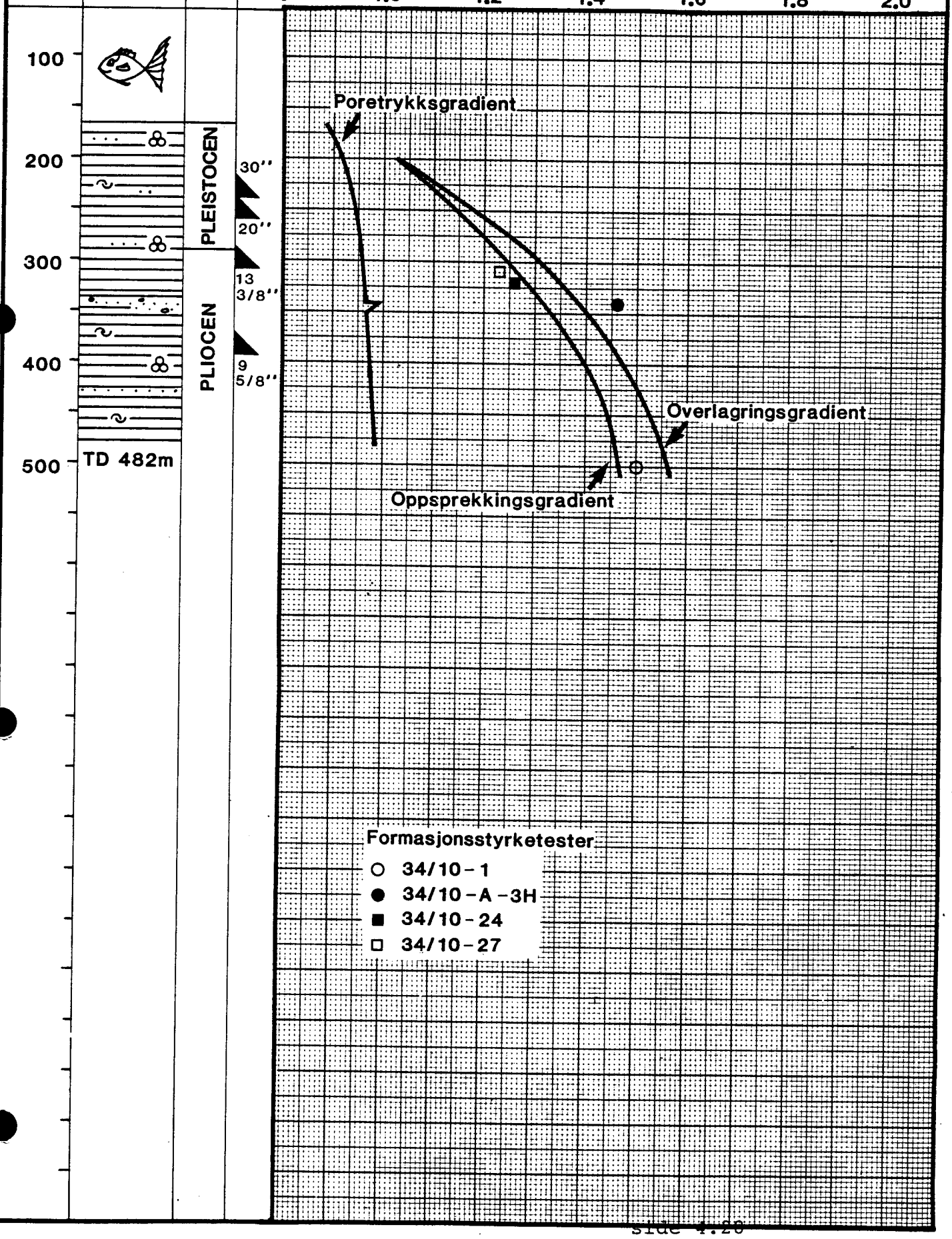
TRYKKGRADIENTER

Statoil
Bergen

Vanndyp 135m

Tegnet av: KJK/MSH

Dato: 080786



4.9 Surveys

EASTMAN WHIPSTOCK UK LTD.

TANANGER

WELL DEFLECTION SURVEY

for

STATOIL

34/10-27

Well : 34/10-27

Survey Reference : S06456.OST

Measured Depth	Drift Angle	Drift Direction	Course Length	Vertical Depth	Vertical Section	RECTANGULAR COORDINATES		Dogleg Severity
167.00	0.00	0.00	0.00	167.00	0.00	0.00 N	0.00 E	0.00
232.50	0.00	0.00	65.50	232.50	0.00	0.00 N	0.00 E	0.00
261.00	0.50	45.00	28.50	261.00	0.09	0.09 N	0.09 E	0.53
275.00	0.40	80.00	14.00	275.00	0.14	0.14 N	0.18 E	0.61
284.00	0.50	115.00	9.00	284.00	0.13	0.13 N	0.25 E	0.96
294.00	0.60	103.00	10.00	294.00	0.10	0.10 N	0.34 E	0.46
300.00	0.00	103.00	6.00	300.00	0.09	0.09 N	0.37 E	3.00
308.00	0.20	315.00	8.00	308.00	0.10	0.10 N	0.36 E	0.75
328.00	1.20	175.00	20.00	328.00	-0.08	0.08 S	0.35 E	2.04
343.00	1.10	169.00	15.00	342.99	-0.38	0.38 S	0.39 E	0.31
364.00	0.30	143.00	21.00	363.99	-0.62	0.62 S	0.46 E	1.20
398.00	0.90	157.00	34.00	397.99	-0.94	0.94 S	0.62 E	0.54
478.00	0.50	290.00	80.00	477.99	-1.40	1.40 S	0.54 E	0.49

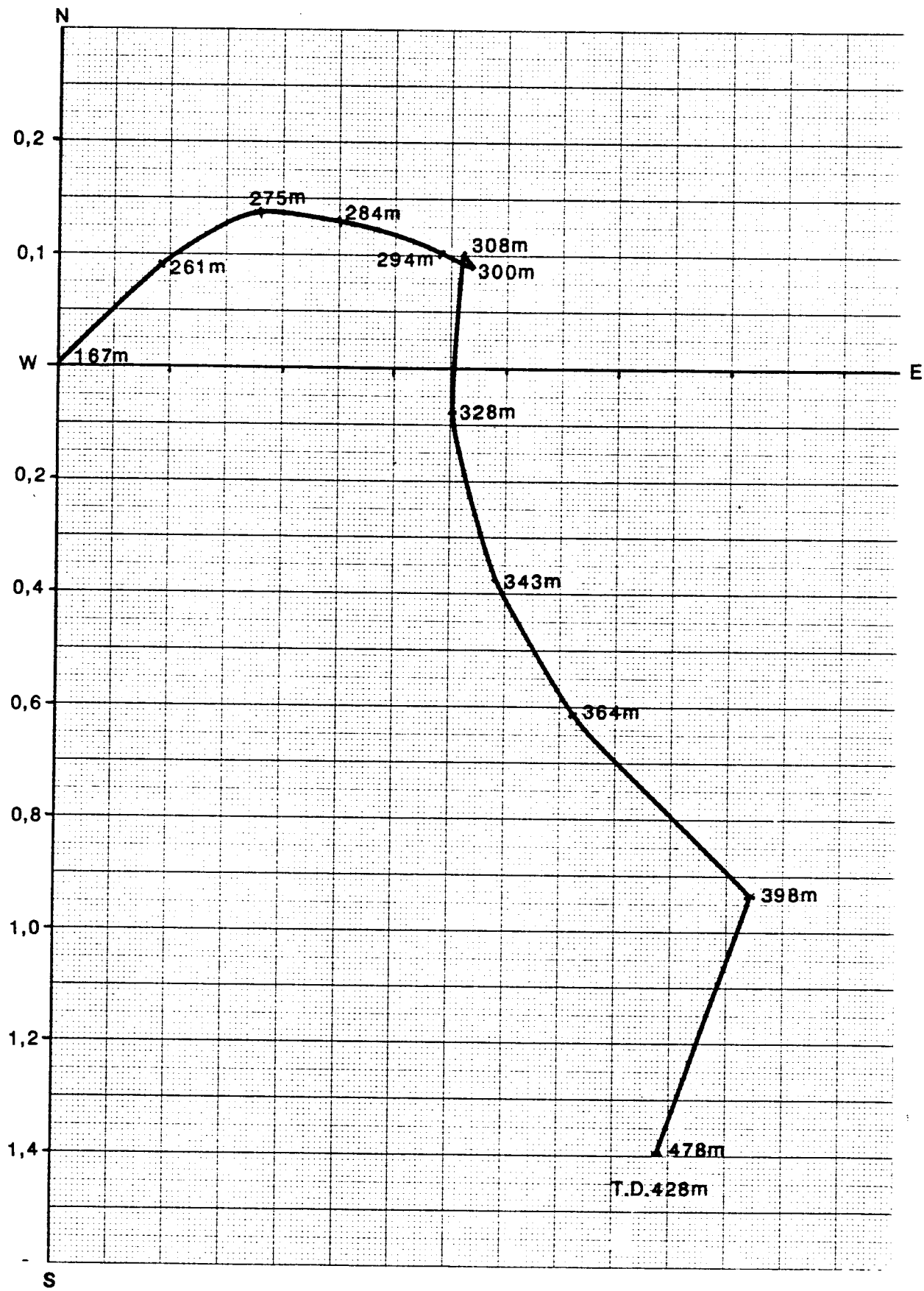
CALCULATION METHOD : Minimum curvature
SLOT COORDINATES : 0.00 N 0.00 E
BOTTOM HOLE LOCATION : Referenced to SLOT
DISTANCE : 1.50
DIRECTION : 158.93

Report Units : Meters

SURVEY RUN INFORMATION

3-DEC-85 START EXPLORATION WELL # 27.
MWD/MSS SURVEYS 232.5 - 478 MT. MD.
WELL ASSUMED TO BE VERTICAL TO 167 MT.MD. (SEABED)
SURVEYS @ 232.5, 261, 300 AND 478 MT. MD. ARE
MAGNETIC SINGLE SHOTS.

WELL 34/10-27
HORIZONTAL SECTION



4.10 Drilling Fluid Summary

DRILLING MUD RECAP

DRILLING MUD RECAP

DATE: 21-Jan-86

OPERATOR: Statoil WELL NO.: 34/10-27 RIG NAME: West Venture

SPUD DATE: 2-Des-85 No.drlg days to TD: : 10 TOTAL DEPTH: 482 m

CONTRACTOR: Smedvig WAREHOUSE: CCB TOTAL COST: $ 71.937,81

Date	Depth	Time	W.T.	FV API @	PV cp @	YP API @	GELS 0/10	pH	FILTRATE API	FILTRATE HT-HP	F	Cake	ALKALINITY Pm	ALKALINITY Pf/Mf	Cl- mg/l	Ca- mg/l	Sand %	Solids %	Water %	MBT
01-Dec	0	2400	1.06	100+																
02-Dec	168	2400	1.06	100+																
03-Dec	241	2400	1.06	100+																
04-Dec	266	2400	1.06	100+																
05-Dec	266	2400	1.10	58	5	40	20/27	10.0	15.0											
06-Dec	312	2400	1.10	60	8	48	27/33	12.3												
07-Dec	284	2400	1.10	59	8	47	25/30	12.5												
08-Dec	346	2400	1.13	70	14	35	12/15	9.9	7.2			1	0.40	0.2/0.4	50000	260	tr	6.00	94.00	
09-Dec	402	2400	1.12	73	17	36	18/23	9.9	7.4			1	0.40	0.2/0.4	47000	280	tr	6.00	94.00	
10-Dec	402	2400	1.12	58	18	37	14/25	9.7	7.0			1	0.40	0.3/0.4	47000	280	tr	6.00	94.00	
11-Dec	405	2400	1.12	62	14	32	14/20	11.0	9.6			1	0.80	0.2/0.5	50000	600	tr	6.00	94.00	5.0
12-Dec	482	2400	1.12	68	17	34	15/23	12.0	9.9			1	3.50	0.17/0.64	43000	380	tr	7.00	93.00	5.0
13-Dec	0	2400	1.12	64	16	32	15/21	12.3	9.8			1	2.80	0.15/1.1	44000	360	tr	7.00	93.00	5.0

side 4.32

DAILY DRILLING MUD ADDITIONS

DATE: 21-Jan-86

OPERATOR: Statoil | WELL NO : 34/10-27 | RIG NAME: West Venture

SPUD DATE: 2-Des-85 | No.drlg days to TD: 10 | TOTAL DEPTH: 482 m

CONTRACTOR: Smedvig | WAREHOUSE: CCB | TOTAL COST: 71.937,81

Product :	Bento-nite	Caus. soda	Soda ash	Barite	KCl	W.O.21	XCD polymer	Dris. S/L.	Propac	Pro- defoam	Promate N40	N 15	Fine	Coarse	Bicarb		
Price	403.60	22.47	22.79	151.20	22.68	273.36	393.80	208.00	750.00	72.19	19.64	19.64	19.64	19.64	26.57		
Unit	mt	25 kg	50 kg	mt	50 kg	25 kg	25 kg	50 lb	200 l	25 l	50 kg	50 kg	50 kg	50 kg	50 kg	C O S T	
Date	Depth															Daily	Cumulative
01-Dec	0	14	8	7												5,989.69	5,989.69
02-Dec	168															0.00	5,989.69
03-Dec	241	9	8	3												3,880.53	9,870.22
04-Dec	266															0.00	9,870.22
05-Dec	266	5	5	2	19											5,048.73	14,918.95
06-Dec	312		2		4	344	6	13				43	25			15	16,945.29	31,864.24
07-Dec	284		3		3	172	5	29			4	91	45				19,880.01	51,744.25
08-Dec	346					64		18	4		6		170	10	60	6	14,244.94	65,989.19
09-Dec	402					11		2									1,037.08	67,026.27
10-Dec	402						3	3									2,001.48	69,027.75
11-Dec	405					20	4									6	1,706.46	70,734.21
12-Dec	482					20				1							1,203.60	71,937.81
13-Dec	0																0.00	71,937.81

WELL 34/10-27

RIG	West Venture
DRILLING CONTRACTOR	Smedvig
WATER DEPTH FROM RKB	167 m
36" HOLE TO	241 m
30" CASING TO	241 m
26 " HOLE TO	266 m
20" CASING TO	261 m
17 1/2" HOLE TO	312 m
13 3/8" CASING TO	2308 m
12 1/2" HOLE TO	402 m
9 5/8" CASING TO	393 m

CASING SIZE	:	30"
HOLE SIZE	:	36"
CASING SET AT	:	241 m
DRILLED FROM	:	167 m

Had to spud in two times because of boulders and hard seabed. 36" hole were drilled with seawater and viscous slugs. On TD 50 m^3 of high viscosity mud were spotted in the open hole. Wiper trip and survey were performed. Back on bottom another 50 m^3 mud were pumped down. When pulling out, tight hole were experienced 10 m below seabed, probably because of boulders falling in. Run in to TD again and circulated hole clean with seawater, 40 m^3 mud were spotted prior to run casing. 30" casing were run and cemented with no problems.

CASING SIZE	:	20"
HOLE SIZE	:	26"
CASING SET AT	:	266 m
DRILLED FROM	:	241 m

26" hole were drilled to TD a 266 m with seawater and viscous slugs. No problems encountered while drilling this section. 20" casing were run and cemented.

CASING SIZE	:	13 3/8"
HOLE SIZE	:	17 1/2"
CASING SET AT	:	312 M
DRILLED FROM	:	261 M

Diluted gel mud from previous section to 50-60 FV. Weighted it to 1.10 s.g. as per specifications. Drilled cement and shoe with this gel mud. Mud got badly cement contaminated and heavy dilution with seawater was vecessary to avoid the mud from setting up. Because of the heavy dilution barite additions were made to maintain specified mud weight. When reaching TD, the heavy dilutions and bicarbonate additions finally gave results. Viscosity went back down to around 50 F.V. Casing were run and cemented with no problems.

Drilling cement with this kind of mud will always create big problems. It will be better to drill the cement with seawater and displace to mud in the shoe. If this is not possible, we need a stack of thinner on the rig. In this case we had none.

CASING SIZE	:	9 5/8"
HOLE SIZE	:	12 1/4"
CASING SET AT	:	402 M
DRILLED FROM	:	312 M

$KCL-CaCo_3$ polymer mud. MW 1.12-FV 57 to 73.
First a 8 1/2" pilot was drilled from 308 m to 402 m.

We started with a YP of 27 raised it to 40 and ended at a YP of 35. A YP of 35 seemed to be enough to clean the hole at a spm of 40 (7824 l/min). KCL ppb was kept at 40.

After logging the hole was opened to 12 1/4". YP was kept between 32 and 37. Which seemed to be sufficient at a spm of 132 (3581 l/min). Hole was drilled with an average ROP of 20 m/hr. MW was kept down by running mud cleaner periodically. KCL content was kept at 37 ppb. Clay cuttings went over shakers with no problems, the clay was soft but not sticky enough to blind the shaker screens, it seemed to be quite good dehydration effect from the KCL.

Problems occured when trying to retrive the wear bushing, but they got it on second attempt. The bushing was balled up some with clay. While running 9 5/8" casing the string took weight when we passed the 13 3/8" shoe. Max over pull was 20000 lb. I assume that this was due to balled up clay in the rat hole.

After the string was landed we had problems getting circalation. The string was pulled to surface and the return ports was found balled up with clay.

Recommendation.

Use of WO 21 + WO 22 as primary viscosifiers on next occasion. Use of XCD polymer as a secondary viscosifier to adjust YP. This will save money and we certanly will get a better mud to drill with. Higher content of N 15 and Prowate F.

DAILY ACTIVITY REPORT

DAILY ACTIVITY REPORT

COMPANY STATOIL WELL NO. 34/10-27 PAGE 1 OF 3

DATE 1/12-86 DEPTH _____ TIME 2400 ENGINEER Sørbø/Nøklebye

Mixed 230 m^3 spud mud

DATE 2/12 DEPTH 168 TIME 2400 ENGINEER Sørbø/Nøklebye

Spudded in at 1800 hrs. RKB seabed 167 m. Seabed too hard. Rig moved 3 m to re-spud.

DATE 3/12 DEPTH 241 TIME 2400 ENGINEER Sørbø/Nøklebye

Drilled 36" hole to TD 241 m with 26" bit + 36" hole opener. Drilling with seawater + viscous slugs on connections. Pumped 50 m^3 mud to TD. Wiper trip + survey. Returned in hole. Pumped 50 m^3 more mud. Pulled out. Tight spot, pumped 40 m^3 more, pulled out of hole. Run and cement 30" casing.

DATE 4/12 DEPTH 266 TIME 2400 ENGINEER Sørbø/Nøklebye

Drilled cement from 234 to 238 m. Drilled 26" hole to 266 m. Pumped high viscous pill on each connection.

DAILY ACTIVITY REPORT

COMPANY STATOIL WELL NO. 34/10-27 PAGE 2 OF 3

DATE 5/12-85 DEPTH 266 TIME 2400 ENGINEER Sørbø/Nøklebye

Returned in hole with no fill Circulated. Ran casing and cemented 20" casing. Ran riser + BOP. Test BOP. Mixed 60 m^3 gel mud. Weighted up mud to 1.10 + reduced FV to 58.

DATE 6/12 DEPTH 312 TIME 2400 ENGINEER Sørbø/Nøklebye

Drilled cement + 46 m new 17 1/2" hole. Prepared to run 13 3/8" casing.
Started mixing 180 m^3 KCL mud.

DATE 7/12 DEPTH 284 TIME 2400 ENGINEER Sørbø/Nøklebye

Run and cement 13 3/8" casing. Backed out running tool, circulated riser clean with mud. No cement in return. Made up 12 1/4" bottom hole assembly. Drilled cement from 283 m to 285 m. KCL mud: Mud weight 1,12, FV 65.

DATE 8/12 DEPTH 346 TIME 2400 ENGINEER Sørbø/Nøklebye

Drilled cement from 285 m. Performed F.I. test. Pumped 4 m^3 water spacer. Displaced hole to KCL mud. Cleaned all surface tanks with seawater. Drilled 8 1/2" pilot hole to 346 m and pulled out of hole.

DAILY ACTIVITY REPORT

COMPANY STATOIL WELL NO. 34/10-27 PAGE 3 OF 3

DATE 9/12-85 DEPTH 402 TIME 2400 ENGINEER Sørbø/Nøklebye

Returned in hole with no fill. Drilled 8 1/2" pilot hole from 346 to 402 m. Pulled out of hole. Logged.

DATE 10/12 DEPTH 402 TIME 2400 ENGINEER Sørbø/Nøklebye

Reamed out hole to 12 1/4". Pulled out of hole. Prepared to run 9 5/8" casing.

DATE 11/12 DEPTH 405 TIME 2400 ENGINEER Sørbø/Nøklebye

Cemented 9 5/8" casing with no mud loss. Temperature logging showed good cement job. Drilled cement from 362 m to shoe. Drilled 3 m new formation. Prepared for leak off test.

DATE _____ DEPTH _____ TIME _____ ENGINEER _____

COMPLETION INTERVAL

COMPANY STATOIL Well No. 34/10-27 Page 1 of 4

Casing Size		Meters		(Bit Size)		Meters	
30	" from	167	to 241	36	" hole from	167	to 241

Material Consumption for Interval:

Product	Units	Size	Cost/Unit	Total Cost
Bentonite	23	MT	403.60	9.282.80
Caustic	16	25 kg	22.47	359.52
Soda Ash	10	50 kg	22.79	227.90

Material Cost for Interval $ 9.870.22 Average Cost per meter $ 133.38

Number of Days 2 Average Cost per Day $ 4.935.11

Comments

COMPLETION INTERVAL

COMPANY STATOIL Well No. 34/10-27 Page 2 of 4

Casing Size 20 " from Meters 167 to 261 (Bit Size) 26 " hole from Meters 241 to 266

Material Consumption for Interval:

Product	Units	Size	Cost/Unit	Total Cost
Bentonite	5	MT	403.60	2.018.00
Caustic	5	25 kg	22.47	112.35
Soda Ash	2	50 kg	22.74	45.48

Material Cost for Interval $ 2.175.83 Average Cost per meter $ 87.03

Number of Days 2 Average Cost per Day $ 1.087.92

Comments

COMPLETION INTERVAL

COMPANY STATOIL Well No. 34/10-27 Page 3 of 4

Casing Size 13 3/8 " from 167 to 308 Meters (Bit Size) 17 1/2 " hole from 261 to 312 Meters

Material Consumption for Interval:

Product	Units	Size	Cost/Unit	Total Cost
Sodium Bicarbonate	15	50 kg	26.57	398.55
Barite	23	MT	151.20	3477.60

Material Cost for Interval $ 3876.15 Average Cost per meter $ 76.00

Number of Days 2 Average Cost per Day $ 3876.15

Comments

COMPLETION INTERVAL

COMPANY STATOIL Well No. 34/10-27 Page 4 of 4

Casing Size	Meters	(Bit Size)	Meters
9 5/8 " from	167 to 393	12 1/4 " hole from	312 to 402

Material Consumption for Interval:

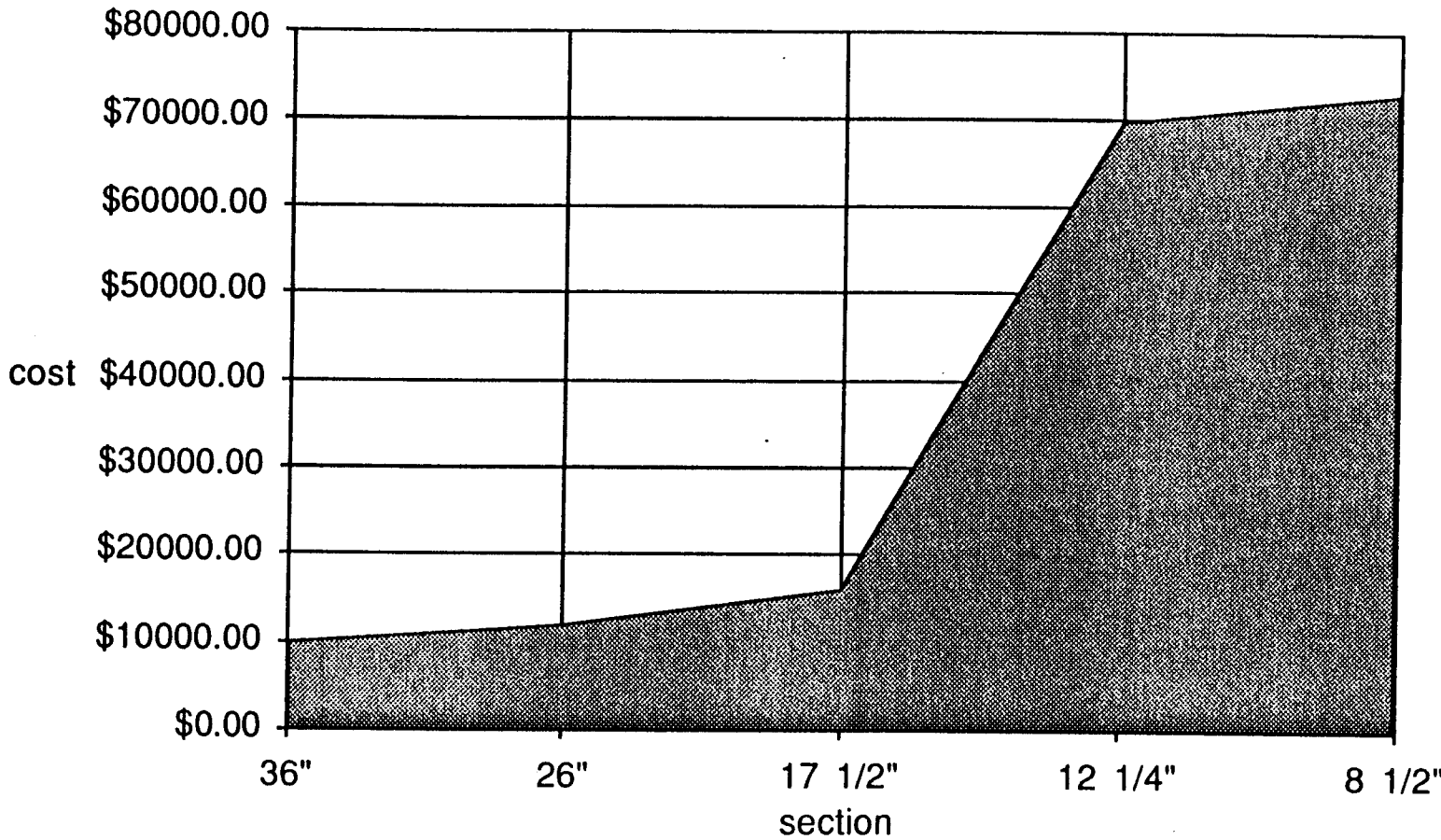
Product	Units	Size	Cost/Unit	Total Cost
Caustic	5	50 kg	22.47	112.35
Barite	3	MT	151.20	453.60
KCL	591	50 kg	22.68	13.403.88
WO 21	14	25 kg	273.36	3.827.94
Bicarbonate	6	50 kg	26.57	159.42
XCD-polymer	65	50 lb	393.80	25.597.00
Prowate N 40	134	50 kg	19.64	2.631.76
Prowate N 15	240	50 kg	19.64	4.713.60
Prodefoam	10	25 l	72.19	721.90
Drispac S/LO	4	50 lb	208.00	832.00
Prowate F	10	50 kg	19.64	196.40
Prowate C	60	50 kg	19.64	1.178.40

Material Cost for Interval $ 53.827.35 Average Cost per meter $ 598.08

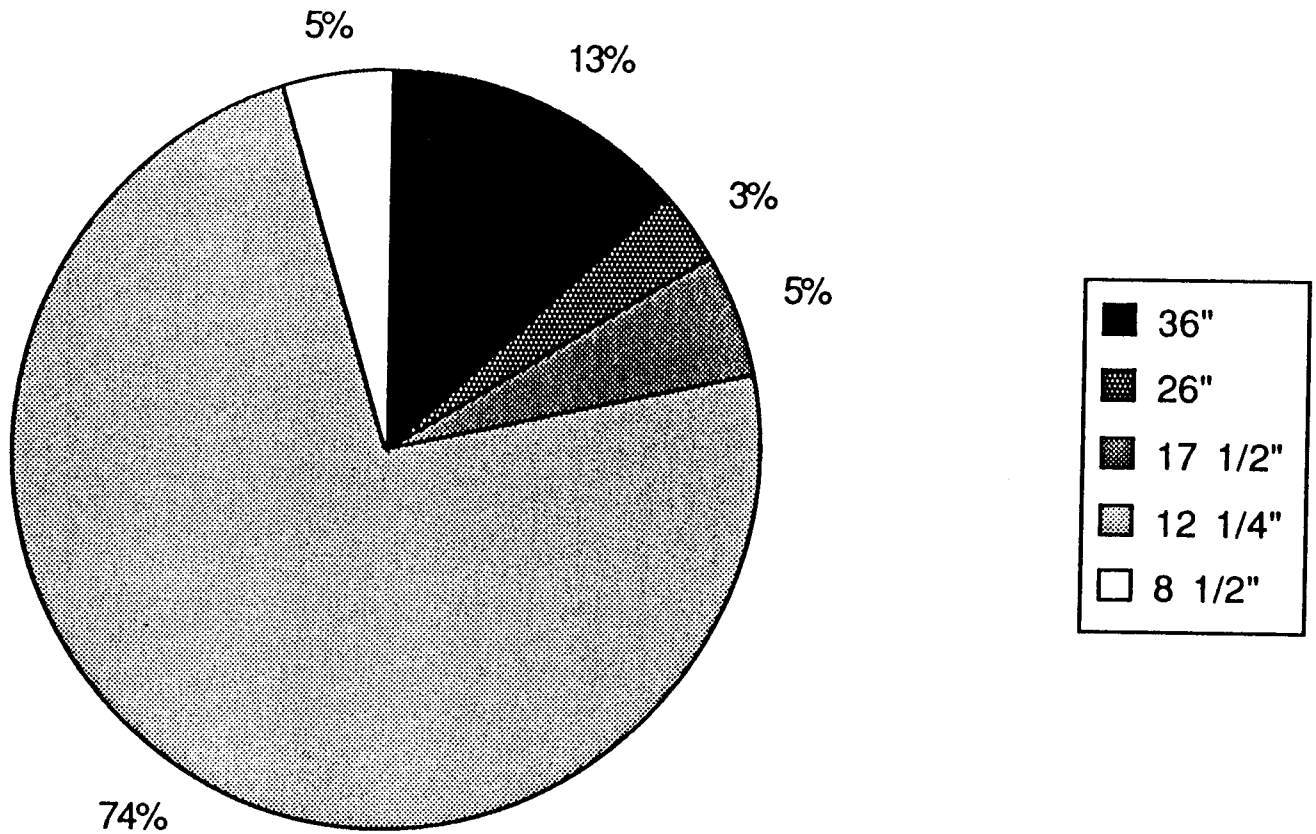
Number of Days 4 Average Cost per Day $ 13.456.83

Comments

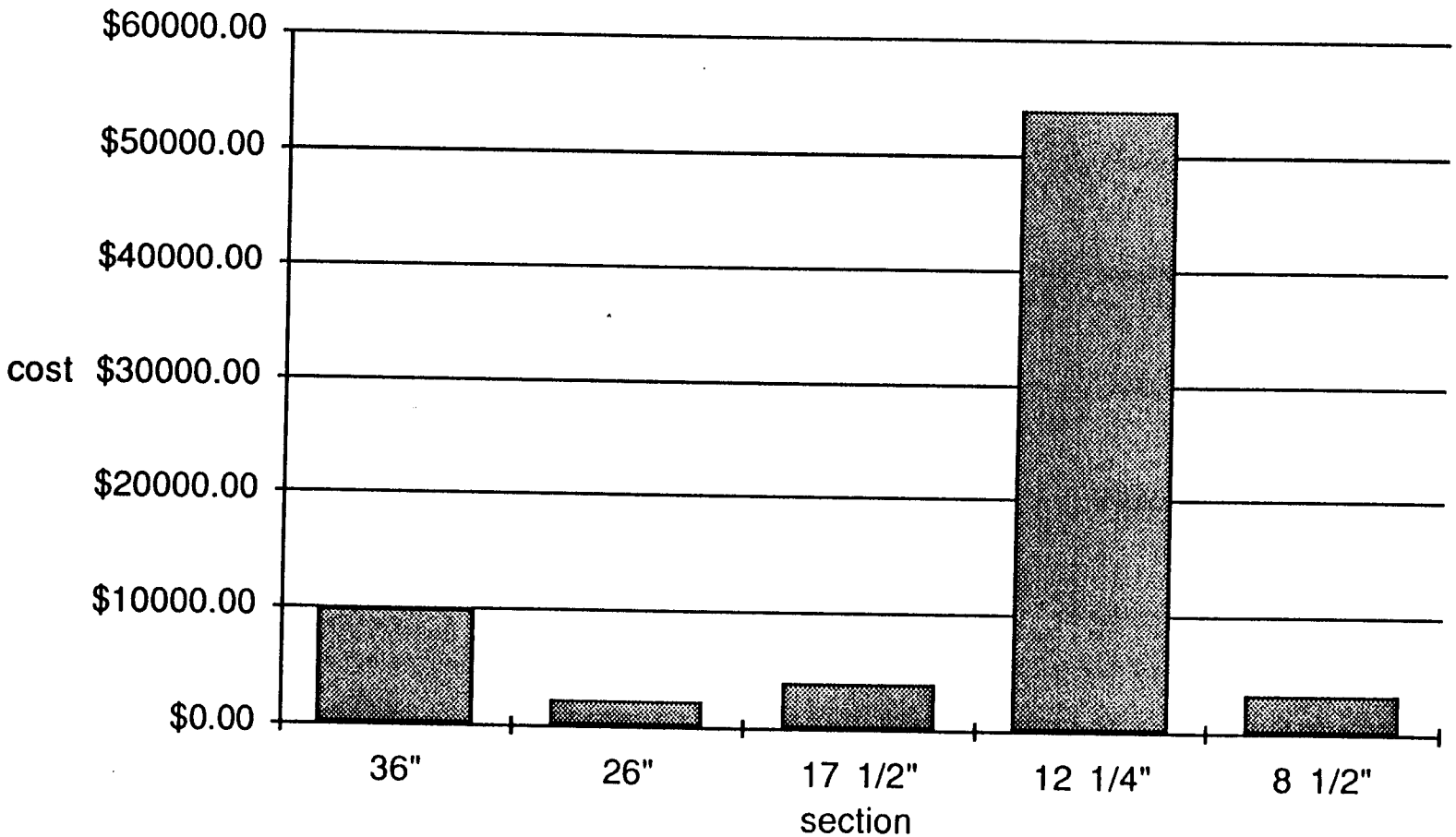
Cumulative cost 34/10-27



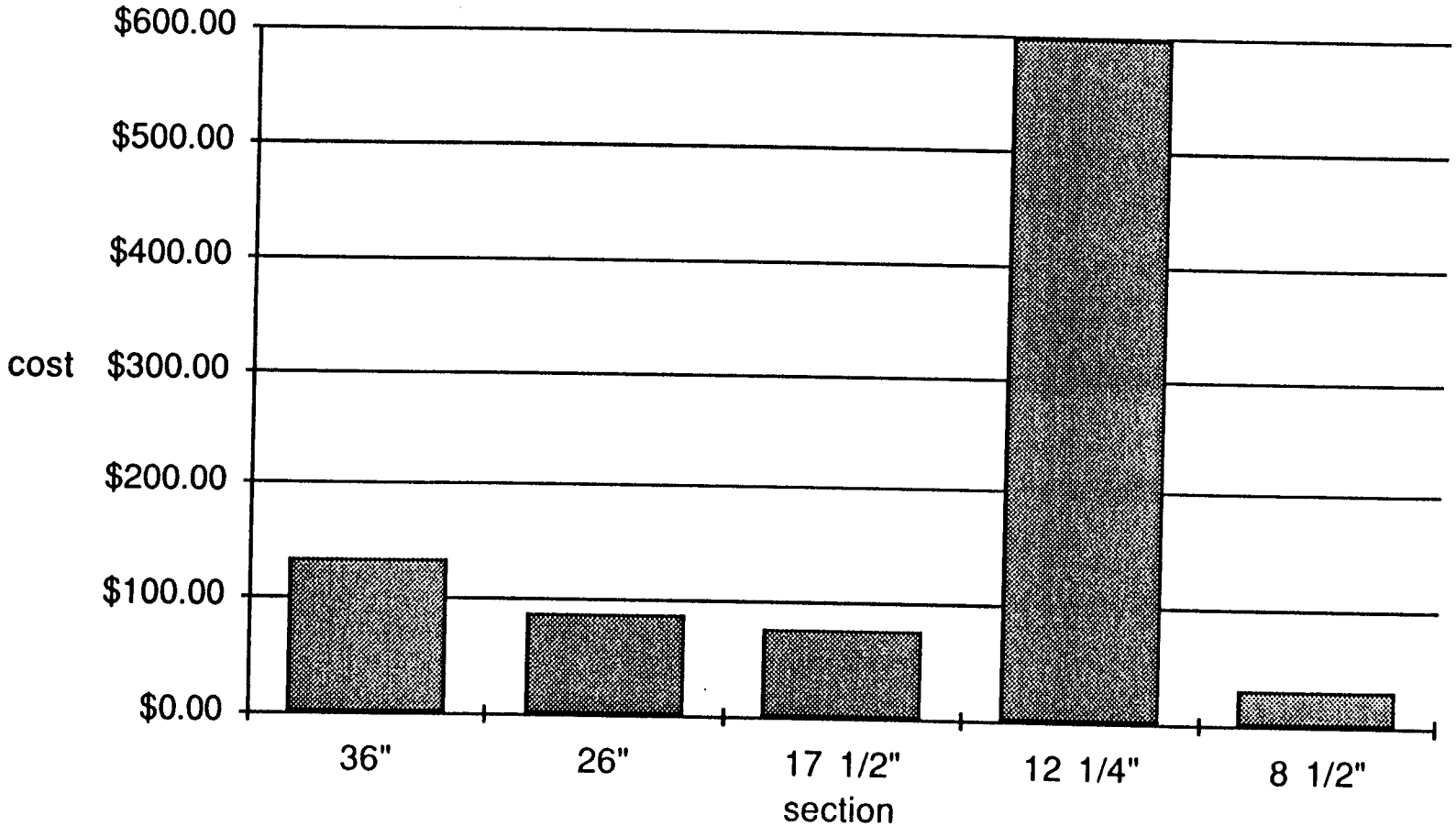
Total cost 34/10-27



Interval cost 34/10-27



Cost pr meter 34/10-27



4.11 Equipment failure

4.11 Equipment failure

1. Not able to get 30" shoe below 238,5 m, had 3 m stick up.

2. Vetco's wear bushing R/R - tool.
   Unable to retrieve wear bushing after 17 1/2" and 12 1/4" hole were drilled. The wellhead was washed with jet sub, and the wear bushing was retrieved on second attempt.

3. Exlog MWD - tool
   While drilling 8 1/2" pilot hole the MWD - tool was changed due to bad readings on higher flowrate (above 1000 l/min.). Had to pick MWD - tool up again due to failure on back up tool.

4. Vetco's 9 5/8" seal assembly.
   Had no returns while circulating 9 5/8" casing. Pulled hanger back to surface. All circulation parts were plugged. Backed out running tool, removed seal assembly and cleaned circulation ports. Seal assembly was damaged.

Equipment failure, reentry

1. A-1 13 3/8" casing spear.
   Did not recover 13 3/8" casing in first attempt. In second attempt recovered 1 joint, casing unscrewed in connection. M/U 12 1/4" stabilizator below casing spear and RIH. Recovered 2 joints of casing.

2. HTC 17 1/2" bit/26" UR.
   While cleaning 20" casing, was not able to go through wellhead with underreamer after connection. POOH and checked underreamer. RIH with bit and underreamer and cleaned casing.

V MARINE REPORT

5.1 Weather data and anchor tension.

Location weather data summary

5.1 Weather data and anchor tension.

Maximum anchor stretch value was reported on anchor no. 10. The 14th of December we had 140 ton overpull on anchor no. 10. At the same time the wind was reported to be 33 m/s coming from WNW and the wave height 12 m from the same direction.

The strongest wind occured the 12th to the 14th of December 1985 with wind speed up to 33 m/s from WNW and 12 m waves from WNW. At that time the rig heave was only 1.5 m.

LOCATION WEATHER DATA SUMMARY

statoil
Den norske stats oljeselskap a.s

WELL: 34/10-27 Phase 1 + 2 RIG: West Venture

TIME PERIOD: FROM 29/11 TO 14/12 -1985 and 27/1 to 31/1-1986

READINGS PR. MONTH: A total of 21 readings.

WIND

m/sec. / dir.	0 – 5	5 – 10	10 – 15	15 – 20	20 – 25	25 – 30	> 30	total
N			1	1				2
NNE			1		1			2
NE					1			1
ENE			1			1		2
E			1					1
ESE								
SE					1			1
SSE								
S					2	2		4
SSW			1	1	1	1		4
SW				1				1
WSW					1			1
W				1				1
WNW							1	1
NW								
NNW								
total			5	4	7	4	1	21 / 21

WAVE

height (m) / dir.	0 – 1	1 – 2	2 – 3	3 – 5	5 – 7	7 – 10	> 10	total
N	1	1	2	1	1			6
NNE					1			1
NE					1			1
ENE					1			1
E								
ESE								
SE				1	1			2
SSE								
S						4		4
SSW				1	1	1		3
SW								
WSW	1				1			2
W								
WNW							1	1
NW								
NNW								
total	2	1	2	3	7	5	1	21 / 21

PRO

statoil
Den norske stats oljeselskap a.s

Reentry
WELL: 34/10-27 Phase II RIG: West Venture

TIME PERIOD: FROM 27/1 TO 31/1 -1986

READINGS PR. MONTH: 5 readings in January 1986

WIND

m/sec. / dir.	0 – 5	5 – 10	10 – 15	15 – 20	20 – 25	25 – 30	> 30	total
N								
NNE								
NE								
ENE						1		1
E								
ESE								
SE								
SSE								
S					2	2		5
SSW								
SW								
WSW								
W								
WNW								
NW								
NNW								
total					2	3		5 / 5

WAVE

height (m) / dir.	0 – 1	1 – 2	2 – 3	3 – 5	5 – 7	7 – 10	> 10	total
N								
NNE								
NE								
ENE					1			1
E								
ESE								
SE								
SSE								
S						4		4
SSW								
SW								
WSW								
W								
WNW								
NW								
NNW								
total					1	4		5 / 5

PRO

LOCATION WEATHER DATA SUMMARY

statoil
Den norske stats oljeselskap a.s

WELL: 34/10-27 Phase I RIG: West Venture

TIME PERIOD: FROM 29/11 TO 14/12 -19 85

READINGS PR. MONTH: A total of 16 readings

WIND

m/sec. / dir.	0 – 5	5 – 10	10 – 15	15 – 20	20 – 25	25 – 30	> 30	total
N			1	1				2
NNE			1		1			2
NE					1			1
ENE			1					1
E			1					1
ESE								
SE					1			1
SSE								
S								
SSW			1	1	1	1		4
SW				1				1
WSW					1			1
W				1				1
WNW							1	1
NW								
NNW								
total			5	4	5	1	1	16 / 16

WAVE

height (m) / dir.	0 – 1	1 – 2	2 – 3	3 – 5	5 – 7	7 – 10	> 10	total
N	1	1	2	1	1			6
NNE					1			1
NE					1			1
ENE								
E								
ESE								
SE				1	1			2
SSE								
S								
SSW				1	1	1		3
SW								
WSW	1				1			2
W								
WNW							1	1
NW								
NNW								
total	2	1	2	3	6	1	1	16 / 16

PRO

LOCATION WEATHER DATA SUMMARY

statoil
Den norske stats oljeselskap a.s

WELL: 34/10-27 RIG: West Venture

TIME PERIOD: FROM 29/11 TO 30/11 -1985

READINGS PR. MONTH: 2 readings in November 1985

WIND

m/sec. / dir.	0 – 5	5 – 10	10 – 15	15 – 20	20 – 25	25 – 30	> 30	total
N								
NNE								
NE								
ENE			1					1
E								
ESE								
SE								
SSE								
S								
SSW								
SW				1				1
WSW								
W								
WNW								
NW								
NNW								
total			1	1				2 / 2

WAVE

height (m) / dir.	0 – 1	1 – 2	2 – 3	3 – 5	5 – 7	7 – 10	> 10	total
N		1						1
NNE								
NE								
ENE								
E								
ESE								
SE								
SSE								
S								
SSW								
SW								
WSW	1							1
W								
WNW								
NW								
NNW								
total	1	1						2 / 2

LOCATION WEATHER DATA SUMMARY

statoil
Den norske stats oljeselskap a.s

WELL: 34/10-27 RIG: West Venture

TIME PERIOD: FROM 1/12 TO 14/12 -19 85

READINGS PR. MONTH: 14 readings in December 1985

WIND

m/sec. / dir.	0 – 5	5 – 10	10 – 15	15 – 20	20 – 25	25 – 30	> 30	total
N			1	1				2
NNE			1		1			2
NE					1			1
ENE								
E			1					1
ESE								
SE					1			1
SSE								
S								
SSW			1	1	1	1		4
SW								
WSW					1			1
W				1				1
WNW							1	1
NW								
NNW								
total			4	3	5	1	1	14 / 14

WAVE

height (m) / dir.	0 – 1	1 – 2	2 – 3	3 – 5	5 – 7	7 – 10	> 10	total
N	1		2	1	1			5
NNE					1			1
NE					1			1
ENE								
E								
ESE								
SE				1	1			2
SSE								
S								
SSW				1	1	1		3
SW								
WSW					1			1
W								
WNW							1	1
NW								
NNW								
total	1		2	3	6	1	1	14 / 14

5.2 Navigation report

RIG MOVE OF "WEST VENTURE" TO WELL 34/10-27

1. Final position (Datum ED50)

Geographical coordinates:

Lat. 61° 10' 31.12" N Lon. 02° 11' 23.96" E

UTM coodinates (UTM-zone 31, cm 3°E):

Northing 6 782 746 Easting 456 430

Accuracy: +/- 5 meter

Rig heading: 92°

Deviation from intended position: 12 m - 311°

2. Observed Decca Main Chain Readings

Chain: Vestlandet 0E
Red : 1I 12.83
Green: 2D 47.48

3. Navigation/Position Method

a) Navigation

Micro-fix positioning system interfaced to a HP 9845 computer.

Contractor: A/S Geoteam, Oslo
Personnel : E. Neteland (Geoteam) and J. Rundehovde (Racal)

b) Positioning

MX 1502 satellite positioning system. Translocation against fixed point at Eigeberg near Stavanger
Contractor: A/S Geoteam, Oslo
Personnel : T. Michaelsen

4. Duration of Rig Move

Personnel and equipment onboard:		27 November 1985 at 14.00 hrs.
Rig leaving CCB	:	28 November 1985 at 19.00 hrs.
10 km left to location	:	29 November 1985 at 23.10 hrs.
At location	:	30 November 1985 at 02.30 hrs.
Stabilizing the rig's movements		
at location	:	30 November 1985 at 02.30 hrs.
	until:	30 November 1985 at 03.45 hrs.
First anchor (-2) at bottom	:	30 November 1985 at 04.20 hrs.
(This anchor lengthened and reset later)		
Last anchor (-2) at bottom	:	30 November 1985 at 15.45 hrs
Approx 2 m west of location	:	30 November 1985 at 17.00 hrs
Tension test from	:	01 December 1985 at 00.30 hrs.
	Until:	01 December 1985 at 08.30 hrs.
(rig moved 10-12 north during tension test)		
Standby due to bad weather	:	01 December 1985 at 12.00 hrs.
	until:	02 December 1985 at 06.30 hrs
Approx 2 m south of location	:	02 December 1985 at 08.30 hrs.

5. Techniques/Problems

The operation was performed according to Statoil's procedures without any navigational problems.

The final position of the rig were fixed by satellite using the ranslocation method. A geodetic point onshore at Eigeberg near Stavanger was used for the fixed point satellite receiver.

VI DIVERSE VEDLEGG

VEDLEGG 2.3: SLUTTLOGG

Statoil
Gullfaks – divisjonen

/ NORSK HYDRO / SAGA PETROLEUM

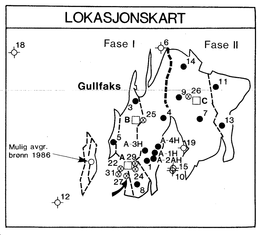
34/10-27 GULLFAKS FASE I

SLUTT - LOGG

Målestokk 1 : 500

Lisens : PL 050
Koordinater : 61° 10' 31,12" N 02° 11' 23,96" Ø
Brønntype : Grunn gass
R.B.: 32m
Vann dybde : 135m
Total dybde : 482m BD
Avvik pa TD/retning : Vertikal brønn
Dypeste formasjon : Nordland gruppen
Borestart : 02.12.85
Ferdig dato : 31.01.86
Brønn status : Plugget og forlatt
Rigg : West Venture
Geologer : S. Bjerkenes, T. Svånå

LOKASJONSKART



Utarbeidet av : K. J. Kornstad Dato : 02.07.86

FORINGSRØR: FORM.STYRK.-TEST.

30"	ved	238,5m BD		
20"	ved	261,0m BD		
16"	ved	—		
13 3/8"	ved	308,0m BD	1,27 g/cc	(F.I.T)
9 5/8"	ved	394,0m BD	1,54 g/cc	
7"	ved			

HASTIGHETSUNDERSØKELSE:

LOGGER KONTRAKTOR : SCHLUMBERGER

ISF-BHC-MSFL-GR	LDL-CNL-GR	DLL-GR	RFT-GR	CST-GR	CBL-VDL-GR
1A : 308 - 400 2B : 394 - 479	1A : 308 - 401 2B : 394 - 480	1A : 308 - 397	1A : 343 - 346	1A : 315 - 390 (30 skudd)	2A : 196 - 382

KOMMENTARER:

LITOLOGISKE SYMBOLER

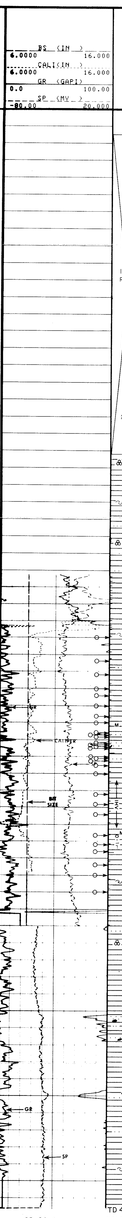
KONGLOMERAT, SKIFER, MERGEL, KULL LIGNITT, FORAMINIFERER, GLIMMER
SAND SANDSTEIN, KALKSTEIN, TUFF, TRE – FRAGMENTER, GRAVESPOR, KAOLIN
SILT SILTSTEIN, KRITT, SALT, FOSSILER GENERELT, PYRITT, KISEL
LEIRE LEIRSTEIN, DOLOMITT, ANHYDRITT, SKALL FRAGMENTER, GLAUKONITT, SIDERITT

OLJEDEKKET, FLUORESCENS, STRØMNINGS FLUORESCENS, INDIKASJONER PÅ GASS

SIDEVEGGSKJERNER
GJENVINNING
GJENVINNING M/HYDROKARBONER
INGEN GJENVINNING

PRODUKSJONSTEST (DST)
KJERNER
KJERNE NR.
TRYKKTEST (RFT/FMT/SFT)
MISLYKKET
FORINGSRØR SKO/FORINGSRØR FORLENGELSE

PERIODE	EPOKE	GRUPPE	FORMASJON
KVARTÆR	PLEISTOCEN	NORDLAND GRUPPEN	
TERTIÆR	PLIOCEN		



LITOLOGISK BESKRIVELSE

Nordland Gruppen 167 m (+135 m).

Leire:
Mørk-middels grå, bløt, klebrig, løselig, kalkholdig, delvis sandig, av og til glimmerholdig

Sand:
Klar - gjennomskinnelig kvarts, grov - fin, dårlig sortert, subangulær - angulær, av og til rundet, av og til med fragmenter av metamorf bergart.
Spor av:
Foraminifer skjellfragmenter

Sand:
Delvis leirig - siltig og middels grå, svart fin og spr, ellers som beskrevet over.

Leire:
Svakt siltig - sandig, bløt, løselig, svakt klebrig, kalkholdig.

Sand:
Som over.

RFT-RESULTATER

DYP (m BD)	TRYKK (psia)
346.8	482.8
346.2	488.0
346.5	484.5

VEDLEGG 2.4: MWD-LOGG

EXLOG MWD

MEASUREMENT WHILE DRILLING

COMPANY STATOIL

WELL 34/10-27

FIELD GULLFAKS

REGION OFFSHORE NORWAY

COORDINATES N 61 DEG 10' 30.88"
E 02 DEG 11' 24.56"

API WELL INDEX NO. ----

CONTRACTOR SMEDVIG DRILLING

RIG/TYPE WEST VENTURE, SEMISUBMERSIBLE

HOLE SIZE		CASING RECORD	
36"	TO 240M	30"	AT 237.5M
26"	TO 266M	20"	AT 281M
8-1/2"	TO 402M	13-3/8"	AT 308M
12-1/4"	TO 402M		AT
	TO		AT
	TO		AT

PERMANENT DATUM MSL ELEVATION 0M

LOG MEASURED FROM RKB : 32M ABOVE PERMANENT DATUM

ELEVATION KB 32M DF 30M GL ---

RUN DATA :

RUN NUMBER	1	2	3
START DATE	120685	120885	120985
END DATE	120685	120885	120985
TOP LOG INT.	266M	313M	347M
BTM LOG INT.	313M	347M	402M
BIT NUMBER	2	4	5
BIT SIZE	17-1/2	8-1/2	8-1/2
CLR SIZE	0	6-1/4	6-1/4
CLR SER. NO.	11870	51783	51783

MUD DATA :

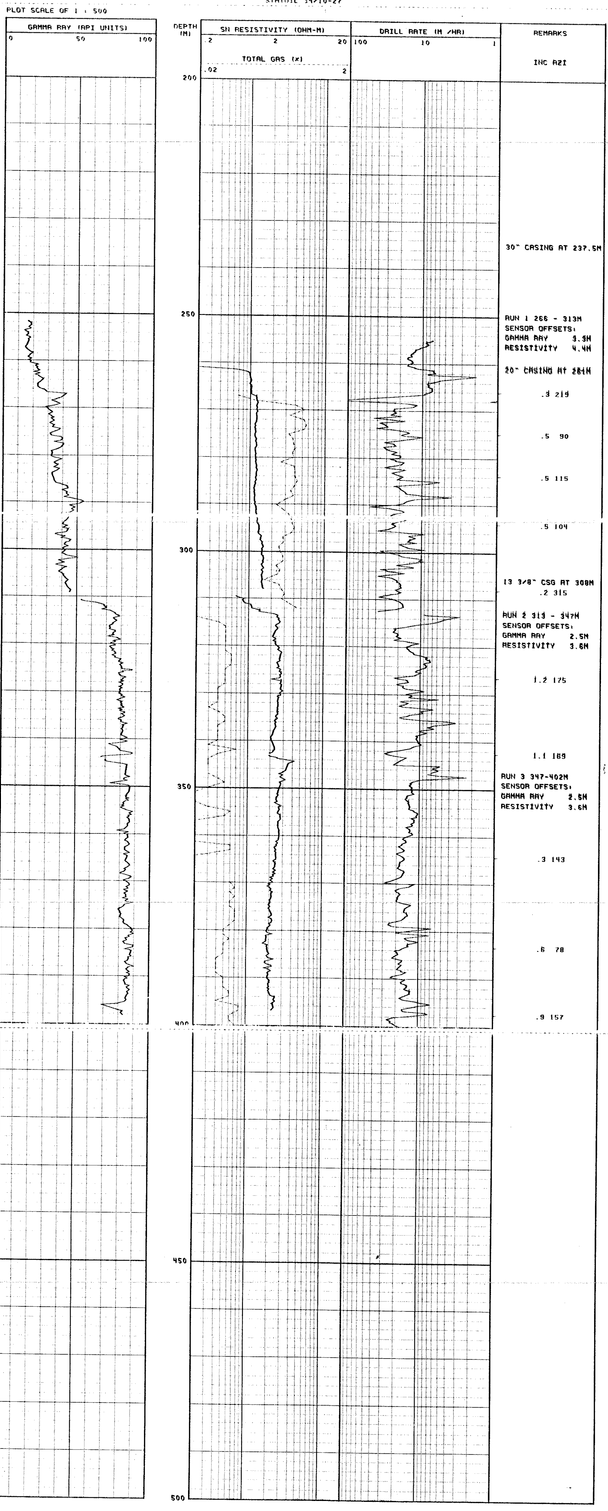
FLUID TYPE	SW/GEL	KCL/POLYM	KCL/POLYM
DENSITY	9.2	9.3	9.3
VISCOSITY	60	70	73
PH	12.2	9.9	9.9
FLUID LOSS	N/A	7.2	7.4
RM AT TEMP.	0.48 25	0.08 25	0.08 25
RMF AT TEMP.	---		
RM AT BHT	0.30		

REMARKS :

656.1681 300 0000487

STATOIL 34/10-27

PLOT SCALE OF 1 : 500



VEDLEGG 2.5: FORMATION EVALUATION LOG

12105

EXLOG

COMPANY STATOIL

WELL 34/10-27

FIELD GULLFAKS

REGION NORWEGIAN NORTH SEA

COORDINATES 61° 10' 30.88" NORTH
02° 11' 24.56" EAST

API WELL INDEX NO.

SPUD DATE 2 DECEMBER 1985

ELEVATION RKB - MSL 32 m
RKB - SEABED 167 m

TOTAL DEPTH 482 m

CONTRACTOR SMEDVIG

RIG / TYPE WEST VENTURE / SEMI-SUB

LOG INTERVAL

DEPTH FROM 167 m TO 482 m

DATE FROM 2/12/85 TO 12/12/85

SCALE 1:500 UNIT 272

LOG PREPARED BY CHEW, HALLIGAN, HERRIES

HOLE SIZE

36"	TO	241 m	12.25"	TO	402 m
26"	TO	267 m	8.5"	TO	482 m
17.5"	TO	312 m		TO	

CASING RECORD

30"	AT	237.5 m	9 5/8"	AT	393.7
20"	AT	261 m		AT	
13 3/8"	AT	308m		AT	

MUD TYPES

SEAWATER / SPUD MUD	TO	267m
SEAWATER-BENTONITE	TO	313 m
KCL-POLYMER	TO	482m

LITHOLOGY SYMBOLS

LIMESTONE, DOLOMITE, ANHYDRITE AND GYPSUM, HALITE, COAL AND LIGNITE, CLAY, SHALE, SILT AND SILTSTONE, SILTY SANDSTONE, SAND AND SANDSTONE, CONGLOMERATE, CHERT, IGNEOUS UNDIFFERENTIATED

CASING SEAT; CORED INTERVAL; NO RECOVERY; SIDEWALL CORE; WIRELINE LOG RUN; TEST INTERVAL; WIRELINE TEST

EXLOG SUITE

FORMATION EVALUATION LOG	■	WIRELINE DATA PRESSURE LOG
PRESSURE EVALUATION LOG	■	TEMPERATURE DATA LOG
DRILLING DATA PRESSURE LOG	■	GEMDAS COMPUTER LOGS

ABBREVIATIONS

NB	NEW BIT	SVG	SURVEY GAS
RRB	RERUN BIT	C	CARBIDE TEST
CB	CORE BIT	W	MUD DENSITY SG
WOB	WEIGHT ON BIT	V	FUNNEL VISCOSITY
RPM	REVS PER MINUTE	F	FILTRATE – API
FLC	FLOW CHECK	FC	FILTER CAKE
CR	CIRCULATE RETURNS	PV	PLASTIC VISCOSITY
PR	POOR RETURNS	YP	YIELD POINT
NR	NO RETURNS	SOL	SOLIDS – %
LAT	LOGGED AFTER TRIP	SD	SAND – %
BG	BACKGROUND GAS	S	SALINITY — PPM Cl
TG	TRIP GAS	RM	MUD RESISTIVITY
STG	SHORT TRIP GAS	RMF	FILTRATE RESISTIVITY
CG	CONNECTION GAS		
SWG	SWAB GAS		

GAS – 100 Total gas units is equivalent to 2% methane-in-air

OIL – Based on live oil in unwashed cuttings and percentage staining of washed cuttings

FORMATION EVALUATION LOG

RATE OF PENETRATION — METRE/HR — VISUAL POROSITY

DEPTH

CUTTINGS LITHOLOGY

HYDROCARBON ANALYSIS — CONTINUOUS TOTAL GAS — CUTTINGS GAS — CHROMATOGRAPH — METHANE — BUTANES — PENTANE — GAS IN PERCENT — GAS IN PPM

LITHOLOGY DESCRIPTION AND REMARKS

SCALE
5 10 15 20

NB#1 HTC RI 26" 2/12
w/36" HOLE OPENER
3/12

NR

NR

NR

SET 30" CASING SHOE AT 237.5m

RRB#1 HTC RLBC 17½"
17/12

K2

5 10 15 20

NR

SET 20" CASING SHOE AT 261m

K2

NB#2 HTC XSA 17½"
3/6/12

NB#3 SEC S333SF 12¼"
TO DRILL CEMENT

C2 C1

SET 13⅜" CASING SHOE AT 308 m

NB#4 SEC S333SF 8½"
7-9/12

WTG 0.08%

C1

NB#5 SEC S333SF 8½"
9/12

TG 0.07%

NOTE SCALE CHANGE
10 20 30 40

SET 9⅝" CASING SHOE AT 393.7 m

RRB#3 SEC S333SF 8½"
10-12/12

WTG 0.14%
TG 0.17%

C1

K2

FLC (STATIC)

5 10 20 30 40

FLC (STATIC)

C1

DRILLERS DEPTH 482m
SCHLUMBERGERS DEPTH 481.5m

WELL 34/10-27
SPUDDED 2/12/85

ALL DEPTHS FROM RKB
IN METRES
RKB - MSL 32 m
MSL - SEABED 135 m

SURFACE HOLE FROM 167m-
267m DRILLED USING
SEAWATER WITH RETURNS
TO SEABED

DEVIATION AT 240m
0°

W	V	PV	YP	F
11	58	5	40	15
pH	Cl	SD	SOL	FC
10	15k	0	0	2

DEVIATION AT 267m
0.3° S40°W

CLY; M GY, SFT-V SFT, OCC FRM, PLAS, SOL, AMOR, MOD CALC, TR CARB MAT, TR SHELL FRAGS, TR LITHIC FRAGS

SD; CLR-TRNSLU, OCC WH, VF-F, RNDD-SUBRNDD, WELL SRTD

CLY; LT GY, V SFT, PLAS, SOL, AMOR, SL-MOD CALC, TR CARB MAT, TR SHELL FRAGS, TR LITHIC FRAGS

DEVIATION AT 294m
0.6° S77°E

W	V	PV	YP	F
11	60	8	48	-
pH	Cl	SD	SOL	FC
12.3	-	0	0	-

SD; WH-TRNSP, OCC TRNSLU-CLR, VF, LOC F-VF, SUBANG-SUBRNDD, MOD WELL SRTD

CLY; LT GY, V SFT, V SOL, AMOR, OCC BLKY, TR LITHIC FRAGS, TR SHELL FRAGS, TR CARB MAT

DEVIATION AT 343m
1.1° S11°E

CORE #1, CUT USING ADT TOOL. 346.8m-347m approx RECOVERY UNKNOWN

CLY, M GY, V SFT, V SOL, STKY, TR LITHIC FRAGS

DEVIATION AT 364m
0.3° S37°E

W	V	PV	YP	F
112	73	17	36	74
pH	Cl	SD	SOL	FC
10	-	0	0	1

DEVIATION AT 384m
0.6° N 78°E

OPEN OUT 8½" HOLE FROM 313m TO 402m USING A 8½" BIT W/A 12¼" HOLE OPENER

RAN E-LOGS TO 402m
ISF/BHC-MSFL-GR-CAL
LDL/CNL-CAL-GR
DLL-GR, RFT, CST

CLY, M GY, V SFT, V SOL, TR BLK SPKS, SL TR LITHIC FRAGS, S- TR SHELL FRAGS

CLY, M GY, AMOR, OCC BLKY, SLTY, TR BLK SPKS, GD TR LITHIC FRAGS, SL TR SHELL FRAGS

DEVIATION AT 478m
0.5° N 70°W

RAN E-LOGS TO 482m
ISF-BHC-GR
LDL-CNL-GR
CBL-VDL-GR