DRESSER

WELL

DATE 22.08.84

COMPANY A/S NORSKE SHELL

ADDRESS AKER NORSCO BASE

4056 TANANGER

WELL 31/2-14

LOCATION NORWEGIAN NORTH SEA

PREPARED BY J. Webster
J. Frank
A. Wright

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WELL SUMMARY

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Shell, 31/2-14

C O N T E N T S

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WELL SUMMARY BY INTERVAL

17-1/2" hole: 810m to 1514m

One bit was utilized on this section. The cement, float and shoe were drilled and the rathole washed out with seawater. Two viscous slugs were pumped prior to displacement with KCl - Polymer mud at 1.26 RD. The mud was diluted with drill water to be able to run low pH without excessive total hardness. A leak-off test at 826m gave a maximum equivalent mud weight of 1.37 S.G. Drilling resumed to 1169m were a wiper trip was made. The hole was tight on pulling out and the mud weight was therefore raised to 1.30 S.G. There was no fill on bottom. Another wiper trip was performed at 1189m due to a survey missrun. Again overpull was experienced. With a wiper trip at 1351m, it was necessary to pick up kelly at 1164m and circulate to work the pipe out. On bottom there was 9m fill. The hole was then drilled to casing depth at 1514m. The low leak-off tolerance limited the use of higher mud weights to stabilize the hole walls.

On a wiper trip to the 20" shoe it was necessary to pump out at 1403m and 1345m, and there was 7m fill on bottom. After circulating, a check trip was made, and the hole was found to be in a good condition..

Schlumberger ran ISF-Sonic-GR to 1407m and LDT-CNL-CAL-GR to 1514m.

A wiper trip was made prior to running casing, and 50 Bbls Hi-vis mud circulated and considerable cuttings noted at the shakers. On pulling out no overpull was observed.

The 13-3/8" casing was successfully run and cemented at 1498m.

Cont'd....

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Cont.

The mud maintained excellent properties, liberating the cuttings on surface throughout the section.

Also notable was that the materials consumption was significantly less than the projected figures, resulting in the cost being somewhat less.

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WELL SUMMARY BY INTERVAL

12-1/4" hole: 1514m to 1725m

The float and cement in the 13-3/8" casing was drilled with seawater, to one meter above the shoe, a high-vis pill pumped and the hole displaced to a non-formation damaging chalk mud. The shoe was drilled and the rathole cleaned out to 1514m. New hole was drilled to 1520m, a 50 Bbl hi-vis pill was circulated around and the hole circulated clean. A leak-off test was performed to a stabilized equivalent mud weight of 1.56 S.G. 12-1/4" hole was drilled to 1535m with drilling breaks at 1528m and 1533m. Samples were circulated out and it was decided to commence coring. A total of seven cores were cut to a depth of 1599m. Tight hole near the bottom was experienced several times when running back in the hole with the core barrel (the last five to ten meters were washed to bottom after round tripping).

Drilling continued to TD, 1725m, in one bit run. A survey was run showing one degree. The hole was circulated clean and the bit was pulled. Schlumberger was rigged up and the hole was logged as per programme. A 9-5/8" liner was run and successfully cemented with the shoe at 1724m, and liner top at 606m.

The chalk mud ($CaCl_2$, $CaCO_3$, Shellflo, HEC) remained very stable throughout the interval with very little fluctuation in the mud properties.

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WELL SUMMARY BY INTERVAL

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WELL SUMMARY BY INTERVAL

36" Hole: Seabed 365m to 474m

This section was drilled with seawater, washing down from 365m to 474m, where 100 Bbls of 100+ viscosity spud mud was used to flush the hole clean. After a short trip to the T.G.B. the hole had 1/2m fill. The hole was displaced with 600 Bbls of Hi-Vis mud, and 30" csg was run to 464m and cemented.

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WELL SUMMARY BY INTERVAL

26" Hole: 474m - 810m

A 26" bit was run and the cement drilled from 473m - 479m. A 50 Bbl Hi-Vis pill was displaced with seawater to flush hole clean and a further 50 Bbl Hi-Vis pill spotted on bottom. The riser was then run and a 14-3/4" pilot hole drilled from 479m - 815m making Hi-Vis sweeps with each joint drilled. At TD the hole was circulated and the bit pulled. Some drag was experienced at 787m and 644m (40 K O.P.) where it was necessary to work the string. On return to bottom there was no fill, and bottoms up was circulated prior to spotting 250 Bbls. 1.35 S.G. Hi-Vis spud mud in the open hole.

The hole was then logged and a 14-3/4" bit run to the 30" shoe where the casing was circulated to seawater before running in to TD (no fill encountered). The Hi-Vis mud was then circulated out through the riser dump valve and the hole displaced to seawater. A 300 Bbls Hi-Vis pill was then spotted and the riser pulled.

A 26" hole opener was then used to open up the pilot hole from 479m - 810m using seawater and making Hi-Vis sweeps at each connection, with returns to seabed. A wiper trip indicated tight hole at 648m and, on running in, at 769m. The hole was flushed w/120 Bbl Hi-Vis mud at T.D. and was followed by spotting 800 Bbls of 1.35 S.G. spud mud in the open hole. The 20" casing was then run and cemented with no problems.

This section was drilled with no significant problems and the material consumption was within the estimated total for the interval. Cost, we are pleased to note, was thus marginally less than anticipated.

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DAILY OPERATIONS LOG

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DAILY OPERATIONS LOG

23rd April 1984 Report no 1

Ran TGB, RIH with 26" bit plus 36" HO,spudded well 31/2-14 at 2300 hrs on 23.04.84.

24th April 1984 Report no 2

Drilled 36" hole to 474 m. Spotted 600 bbls mud in hole. Ran and cemented 30" casing. Mixed up 150 bbls 3 pct BWOC $CaCl_2$. Dumped and remixed due to contamination.

25th April 1984 Report no 3

WOC, made up new BHA, drill cement and 26" hole to 479 m. Circ, spot Hi-Vis pill, POH. Run 21" riser, made up 14 3/4" bit. RIH.

26th April 1984 Report no 4

Drilled 14-3/4" pilot hole to 815m tight spot at 787m, POOH to 30" shoe. Recovered survey - mis run. M/U manifold and cementing kelly, M/U guide shoe and baffle collar on 20" joint. RIH to 815m, no fill. Hole O.K. Circulated bottoms up. Spotted 250 Bbls of Hi-Vis 1.35 SP.GR., mud in open hole section. Dropped survey. POOH. (Mud) built 792 Bbls of new prehydrated Bentonite - seawater mud. Weighted up 250 Bbls of mud to 1.35 SP.GR. to spot in the open hole section prior to logging.

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27th April 1984 Report no 5

Run logs. RIH. Circ. with seawater. Spot Hi-Visc pill. POH. Pull 30" latch.

28th April 1984 Report no 6

Made up 26" hole opener. Opened hole to 26". Flushed hole with mud. Displaced 800 bbls 1.35 SG mud in hole.

29th April 1984 Report no 7

Run 20" casing and cmt. same.

30th April 1984 Report no 8

Run and land riser and BOP. Test same. M/U BHA, RIH to 364.5 m. No go. POH and inspect. RIH with 17 ½" bit.

1st May 1984 Report no 9

Attempt to penetrate well head housing. RIH and mill on well head. RIH with 17 ½" bit.

2nd May 1984 Report no 10

Drill cmt. at shoe. Displaced hole with KCL mud. Performed leak off test. 1.37 s.g. max equivalent mud weight. Drill ahead.

3rd May 1984 Report no 11

Drill 17 ½" at 20 m/hr 1083-1169. W/trip tight (120-150O/P) Drill 1169-1189 m. W/trip. Tight (40O/P) No fill. Drill to 1351 m. Maintain mud props and volume with Premix additions 50-60 bbls/hr. Cuttings dry.

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4th May 1984 — Report no 12

POOH tight 1164 to shoe. Max O.P. 110 K. RIH. 9 m fill. Drill 17 ½" 1485 - 1514 m. POOH (O/P145 K max). RIH 2 m fill. Check trip hole good.

5th May 1984 — Report no 13

POOH. Schlumberger logs. RIH W/ 17 ½" bit. No fill. Circ. hole clean W/Hi-Vis pill. POOH, no drag. Start run 13 3/8" csg. Clean pits to take on $CaCl_2$ brine and mix.

6th May 1984 — Report no 14

Ran and landed 13 3/8" csg and cemented the same. Dumped all kill mud, cleaned pits and flushed mixing lines. Could not unload brine due to bad weather.

7th May 1984 — Report no 15

Service rig. WOW. Build 700 bbl 1.2 SG mud to displace the casing. Start build 1320 bbl $CaCl_2$/brine mud.

8th May 1984 — Report no 16

Continue building non-damaging $CaCO_3/CaCl_2$ chalk mud in pits.

9th May 1984 — Report no 17

Presently adding HEC + N5 for rheology + fluid loss.

10th May 1984 — Report no 18

Work on BOP. Raising M.W. in pits to 1.16 SG.

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11th May 1984 — Report no 19

Run, pull and work on BOP.

12th May 1984 — Report no 20

Work on BOP.

13th May 1984 — Report no 21

Test kill and choke lines. Waiting on repairs.

14th May 1984 — Report no 22

Waiting on repairs.

15th May 1984 — Report no 23

Waiting on repairs.

16th May 1984 — Report no 24

Waiting on repairs.

17th May 1984 — Report no 25

Repair rig. RIH. Tag top of cement at 1480 m. Work junk sub, drill cmt plus float to 1495 m with seawater. Pumped 40 bbl spacer. Displaced hole to mud. Drilled out shoe at 1498 m. Cleaned out rat hole to 1514 m. Drilled to 1520 m. Pumped 50 bbls Hi-Vis mud. Circulated hole clean. Pulled back to 1480 m. Made up circ head plus lines. Tested same, closed BOP, performed leak-off test. 1.56 S.G. max equivalent mud weight.

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RIH one stand. Drill from 1520 to 1530m. Drilling break at 1528 m. Circ. bottoms up for sample. Contd. drilling to 1535 m. Drilling break at 1533 m. Circ. bottoms up for sample. Slug pipe. POOH P/U core bbl. Made up core head.
Dumped 550 bbls of old mud from the hole. Built a total of 695 bbls of new mud. Mud weight dropped during displacement from 1.16 to 1.14 SG. Increased weight with $CaCo_3$.

18th May 1984 Report no 26

Made up core assy. RIH to 1520 m. Washed to btm, 1535 m, dropped ball, spaced out. Established slow circ. rate. Cut core no 1 from 1535 to 1545,5m. Slugged pipe. POOH. Recovered core no 1. serviced core bbl. Changed bit. RIH to 1529 m. Washed to btm, 1544 m, cutting core no 2. Mixed 350 bbls of mud using calcium carbonate concentrate slurry. Final mud weight of the finished 350 bbls was 1.18 SG. Added 40 bbls of drill water to bring the WT back to 1.16 SG. All additional prop. remained about the same. No further treatment was made to this mud.

19th May 1984 Report no 27

Cut core no 2 from 1545,5 to 1560 m. Slug pipe. POOH. Recovered core sample. Serviced core bbl. Changed core-head. RIH. Took WT at 1545 m. Washed to btm, 1560 m. Cut core no 3 from 1560 to 1564 m. Circ up gas. Attempt to continue coring - no success. Slug pipe. POH. Recovered core sample no 3. RIH. Service rig. RIH to 1550 m. Washed to btm. 1564 m. Circ bottoms up - no gas, cut core no 4 from 1564 to 1571 m.

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Tested the active system with HEC and Shellflo to maintain a good viscosity and yield point and to help drop the fluid loss as low as possible, using $CaCo_3$ to slug the pipe for trips.

20th May 1984 Report no 28

Held flowcheck - static. Slugged pipe. POOH. Recovered core sample no 4. Redressed core bbl. Checked corehead. RIH. Took WT at 1535 m. Washed to btm, 1571 m. Cut core no 5 from 1571 - 1580 m. Slugged pipe. POOH. Recovered core sample no 5. Re-dressed core bbl. Checked corehead. RIH to 1570 m. Washed to btm., 1580 m. Cut core no 6, 1580 - 1589,5 m. Held flow check. Slugged pipe. POOH. Recovered core sample no 6. Redressed core bbl. Checked corehead. RIH to 1580 m. Washed to btm, 1589,5 m. Circ. btms up. Dumped and cleaned Gumbo and shaker traps.

21st May 1984 Report no 29

Circulated btms up. Held flow check - static. Cut core no 7, 1589,5 m to 1599 Slug pipe. POOH. Recovered core sample no 7. Serviced core bbl. Laid down same. Changed BHA. RIH to 1565 m. Washed to btm., 1599 m. Work junk sub. Circ btms up. No gas. Dropped survey. Pulled to csg shoe, retrieved survey. RIH to bottom. Drill to 1725 m, TD.

22nd May 1984 Report no 30

Drilled to 1725 m. Circulated for 30 mins. Dropped survey. Pulled to 13 3/8" csg shoe. Retrieved survey 1 degree. RIH to 1714 m. Washed to 1725 m. Circulated hole clean. Slugged pipe. POOH. Rigged up Schlumberger. RIH to condition hole. Dumped and cleaned Gumbo trap.

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23rd May 1984 Report no 31

RIH to 1695 m. Tight spot. Washed to bottom, 1725 m. Circulated hole clean. Slugged pipe. POOH. Rigged up Schlumberger. Continued logging program.

24th May 1984 Report no 32

Completed logging program. Rigged down Schlumberger. Made up cementing head on cementing kelly. Made up liner hanger. RIH with 12 1/4" bit to 1705 m. Washed to 1725 m. Circulated bottoms up. Held flow check-static. Slugged pipe. POOH, rigged up to run 9 5/8" liner. Running liner.

25th May 1984 Report no 33

RIH + set 9 5/8" liner with shoe at 1724m and liner top at 606m, test, cement and displace. L/D running tool. RIH 8-1/2" bit. Drill seals to 610m. Cont. w/scrapers. Built slug. Circ hole. Backloaded 120 sxs $CaCl_2$. Prepare to built up mud in no 4 from brine.

26th May 1984 Report no 34

Circ. hole clean. POOH. RIH W/RTTS set and press test 9 5/8 liner to 3000 PSI. Pull RTTS and lay down 5" D.P. Ret W/ bushing. Test BOP's, build pit no 4 to 1.16 S.G. W/HEC, Shellflo and $CaCo_3$. Mixing now w/no3. Start clean surface system. Took on 1500 bbls filtered brine to deck tanks.

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27th May 1984 — Report no 35

BOP test - pull test plug. RIH. Set W/bushing. RIH. W/3 ½" DP. Wash9 5/8" liner w/seawater. Circ 2 Hi-Vis pills (50 bbls each). Displace old mud to seawater. Circ. 45 bbl acid- adjust kill mud properties.

28th May 1984 — Report no 36

Circulate with brine.		Turbidity out
0900	Clean brine at surface	.22
1130	Prior to pulling back to 600 m	50
1600	B.U. from 600	100+
1800	Going in 8 NTU. RIH.	61
2030	Pump Hi-Vis slug	20
2230	B.U. from scraping 13 3/8" csg	100+
0000	Going in 6 NTU	50

Reduced to low circulating rate while taking on brine.
Dumped 250 bbls brine.
Rust coming over shakers at B.U. from scrape.

0330	Start displacing hole to new brine	66
0630	New brine to surface	45

28th May 1984 — Report no 37

Pump visc.slug. Slug out. POOH to 620 m. Start disp. to S/W. S/W to surface. Pump 50 bbls acid + vis slug. RIH. Start disp. to brine. Brine at surface.

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30th May 1984 — Report no 38

Circ. brine. POOH. M/up and run and set packer at 1594 m. M/Up hanger and EZ tree.

31st May 1984 — Report no 39

Run EZ tree, RIH W/perf.assy, test.

1st June 1984 — Report no 40

Circ. brine, test lubricator, prepare to test well.

2nd June 1984 — Report no 41

Flow well. Kill well. POOH with packer and perf. assy. RIH with gravelpack assy.

3rd June 1984 — Report no 42

Run gravel Pack assy. Pump acid, pump gravel. Circulate and filterbrine.

4th June 1984 — Report no 43

Carry out well production program.

5th - 16th June 1984 — Report no 44 - 55

Carry out well production program.

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17th June 1984 Report no 56

Completed test program. Bullheaded tubing contents down to test interval with a viscous pill followed by brine. Observed tubing. Reverse circulate. Pull out of packer. Circulated the long way. Added $CaCl_2$ to the brine to weight up a light spot while circulating. Laid down flowhead. POOH with test spring.

18th June 1984 Report no 57

R.U. Schlumerger, run CNL-GR, set cement plug no 1.
Scraped 9 5/8" csg. T.O.C at 1374 m.
R.U. Schlumberger, run junk-basket gauge ring to 1350 m.
Set bridge plug at 1325 m and at 655m.

19th June 1984 Report no 58

Plug and abandon.

20th June 1984 Report no 59

Plug and abandon.

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MATERIAL CONSUMPTION BY INTERVAL

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MATERIAL CONSUMPTION BY INTERVAL

36" Hole from 365m to 474m

PRODUCT	UNIT SIZE	UNIT COST	USAGE	TOTAL COST
Bentonite	m/t	$ 405.56	33	$ 13 383.48
Caustic	25 kg	$ 22.05	12	$ 264.60
Lime	40 kg	$ 10.30	28	$ 288.40
$CaCl_2$	50 kg	$ 38.07	95	$ 3 616.65
			TOTAL COST	$ 17 553.13

Cost per m drilled	$ 159.57
Bbl mud built	2384 Bbl
Bbl mud utilized	1024 Bbl
Cost per bbl mud	$ 7.36

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MATERIALS CONSUMPTION BY INTERVAL

26" hole from 474m to 810m

PRODUCT	UNIT SIZE	UNIT COST	USAGE	TOTAL COST
Barite	m.t.	$ 148.90	64	$ 9 529.60
Bentonite	m.t.	$ 405.56	29	$ 11 761.24
Caustic	25 kg	$ 22.05	6	$ 132.30
Lime	40 kg	$ 10.30	8	$ 82.40
Soda Ash	50 kg	$ 22.81	2	$ 45.62
CMC HV	25 kg	$ 49.50	12	$ 594.00
			TOTAL COST	$ 22 145.16

Cost per meter drilled	$ 64.94
Bbl mud built	2542 Bbl
Bbl mud utilized	3902 Bbl
Cost per Bbl mud	$ 8.71

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MATERIAL CONSUMPTION BY INTERVAL

12-1/4" Hole drilled from 1514m to 1724m

PRODUCT	UNITS	COST/SIZE	TOTAL COST
Cal.Chl. Brine	976	$ 22.40/bbl	$ 21 862.40
HEC	110	$ 246.38/25 kg	$ 27 101.80
Calc.Carb. N40	784	$ 5.18/50 kg	$ 4 061.12
Calc.Carb. N15	896	$ 5.18/50 kg	$ 4 641.28
Calc.Carb. N5	127	$ 5.18/50 kg	$ 657.86
Caustic Soda	15	$ 22.05/25 kg	$ 330.75
Shellflo	18	$ 282.75/200 ltr	$ 5 089.50
Magconol	3	$ 1049.00/208 ltr	$ 3 147.00
Calc.Carb. Concentrated slurry	15.51	$ 690.70/15.51 Bbls	$ 690.70
			$ 67 582.41

Cost per meter drilled	$ 321.82
Bbls of mud built	3623 Bbls
Bbls of mud utilized	2953 Bbls
Cost per Bbl of mud	$ 18.65

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MATERIAL CONSUMPTION BY INTERVAL

17-1/2" Hole from 810m to 1514m

PRODUCT	UNITS	UNIT COST	TOTAL COST
Barite	184	$ 148.90/m.t.	$ 27 397.60
Celpol Reg.	117	$ 198.50/25 kg	$ 23 224.50
Alcomer 110L	51	$ 110.41/25 kg	$ 5 630.91
XCD Polymer	16	$ 397.20/25 kg	$ 6 355.20
KCl Brine	1375	$ 21.60/bbl	$ 29 700.00
KCl	267	$ 21.60/50 kg	$ 5 767.20
Caustic Soda	16	$ 22.05/25 kg	$ 352.80
Soda Ash	24	$ 22.81/50 kg	$ 547.44
Bentonite	8	$ 405.56/m.t..	$ 3 244.48
CMC HV	14	$ 49.50/25 kg	$ 693.00
		Total for interval	$ 102 913.13

Cost per meter drilled	$ 146.18
Bbl mud utilized	3302 Bbl
Cost per bbl	$ 31.17

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MATERIAL CONSUMPTION BY INTERVAL

TESTING AND COMPLETION

PRODUCT	UNITS	COST/SIZE	TOTAL COST
Calcium Chloride	215	$ 38.07/50 kg	$ 8 185.05
		TOTAL INTERVAL COST	$ 8 185.05

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TOTAL MATERIAL CONSUMPTION

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TOTAL MATERIAL CONSUMPTION

Interval: 365m- 1725m

1360m drilled

PRODUCT	UNITS	COST/SIZE	TOTAL COST
Magcobar	248	$ 148.90/m.t.	$ 36 927.20
Magcogel (Wyoming)	70	$ 405.56/m.t.	$ 28 389.20
Caustic Soda	49	$ 22.05/25 kg	$ 1 080.45
Soda Ash	26	$ 22.81/50 kg	$ 593.06
Lime	36	$ 10.30/40 kg	$ 370.80
CMC HV	26	$ 49.50/25 kg	$ 1 287.00
KCl Brine	1375	$ 21.60/bbl	$ 29 700.00
$CaCl_2$ Brine	976	$ 22.40/bbl	$ 21 862.40
KCl	267	$ 21.60/50 kg	$ 5 767.20
$CaCl_2$	310	$ 38.07/50 kg	$ 11 801.70
Celpol Reg.	117	$ 198.50/25 kg	$ 23 224.50
HEC	110	$ 246.38/25 kg	$ 27 101.80
XC Polymer	16	$ 397.20/50 lbs	$ 6 355.20
Alcomer 110L	51	$ 110.41/25 kg	$ 5 630.91
Calc.Carb. N40	784	$ 5.18/50 kg	$ 4 055.94
Calc.Carb. N15	896	$ 5.18/50 kg	$ 4 641.28
Calc.Carb. N5	127	$ 5.18/50 kg	$ 657.84
Shellflo	18	$ 282.75/200 ltr	$ 5 089.50
Magconol	3	$ 1049.00/208 ltr	$ 3 147.00
$CaCo_3$ Conc.	15.51	$ 690.70/15.51 bbls	$ 690.70
		TOTAL COST	$ 218 373.70

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DAILY MATERIALS CONSUMPTION

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DAILY MATERIALS CONSUMPTION

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DATE 1984	DEPTH	CAUSTIC	LIME	BARITE	CELPOL REG.	BENTONITE	ALCOMER 110L	$CaCl_2$	SODA ASH	CMC HV	KCL BRINE	XCD POLYMER	KCL		DAILY MUD COST	REMARKS
24.04		7	17			19									8035.09	Move to new location.Build spud mud.
25.04		5	11			14		95							9518.05	Drill to 474m.Run 30" and cmt.
26.04			4			4									1663.44	WOC.Run riser.M/U 14-3/4" BHA.
27.04		4	4	17		9									6310.74	Drill to 815m.Pump 250 Bbls of 1.35 s.g.
																mud in open hole.
28.04		1		22		11			1						7781.82	Log.Circ out mud.Pull riser.
29.04		1		25		5			1	12					6389.16	Open hole to 26".Displace hole w/800 Bbls
																of 1.35 s.g.
30.04															0.0	Run 20" casng and cmt.
01.05		2		40	45		20								17140.80	Run riser & BOP.Built KCL-Celpol mud.
02.05				42		3				14	675				22742.88	Build KCL mud,mill on wellhead.
03.05		3		35	30		10		5		700	8	60		32044.40	Build KCL mud.Drill 17-1/2"hole to 1083m.
04.05		3		27	28		13		10			3	40		13363.48	Drill to 135m.
05.05		3		13	10		7					3	100		8111.32	Drill to 1514m.
06.05					4		1		9			2	67		3551.30	Log.Run 13-3/8" casing.
07.05				8											1191.20	Run & cmt 13-3/8" casing. Wait on weather

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DAILY MATERIALS CONSUMPTION

WELL Shell, 31/2-14 PAGE 2

DATE	DEPTH	CAUSTIC	BENTONITE	BARITE	HEC	SHELLFLO	N40	N15	N5	$CaCl_2$	CaCl2 Brine				DAILY MUD COST	REMARKS
08.05		5	5	19	21	1									10426.33	WOW.Built 700Bbls of 1.25 s.g.&displ. csg
09.05					10	1	245	245	25		516				25058.25	Built chalk mud.Work on BOP's & riser.
10.05															0.0	Work on BOP & riser.
11.05					8				18						2064.24	Work on BOP & riser.
12.05															0.0	" " " "
13.05							71	71							735.56	" " " "
14.05															0.0	" " " "
15.05															0.0	" " " "
16.05															0.0	" " " "
17.05															0.0	Run and test BOP and riser.

DRESSER

DAILY MATERIALS CONSUMPTION

WELL Shell. 31/2-14 PAGE 3

DATE	DEPTH	HEC	SHELLFLO	N40	N15	N5	$CaCl_2$	$CaCl_2$ Brine	CAUSTIC	MAGCONOL	$CaCO_3$ Concentrate				DAILY MUD COST	REMARKS
18.05		12	1	287	287	30		310	2	1					14405.13	Displ. hole w/chalk mud.Build mud.Drill.
19.05		18	3	60	30	20		150	2		15.51				9947.69	Drill to 1535m.Start coring.
20.05		8	1	22	40	7									2611.21	Coring to 1571m.
21.05		7	2	15	30	8			4						2652.90	Coring.
22.05		12	3	7	25	5			2						4040.57	Complete coring.Drilled to TD,1725m.
23.05				5	4					1					1095.62	Run logs.
24.05					14										72.50	Run logs.
25.05					36										186.48	Condition hole.Run 9-5/8" liner.
26.05		1			35										427.68	Run 9-5/8" liner & cmt.
27.05		6	1	66	78	14									2579.47	Test BOP's.Built kill mud.
28.05		4													985.52	Displace hole to seawater.
29.05										1					1049.00	Circ casing clean.
30.05		3													739.14	Displace hole w/brine & filter.
31.05															0.0	Run packer, hanger, & EZ tree.
01.06															0.0	Run perf. assy.
02.06			5	6	1										62.71	Prepare to flow well.Test lines&lubricatc
03.06	to 17.06 no chemicals used.														0.0	Carry out production test.
18.06							145								5520.15	Completed testing.Kill well.
19.06							70								2664.90	Run CNL-GT log.Start P&A operation.
20.06															0.0	Plug and abandon
21.06															0.0	" "

DRESSER

DRESSER NORWAY A.S.

MAGCOBAR

Shell, 31/2-14

DAILY MUD PROPERTIES

DRESSER

DAILY MUD PROPERTIES

Well: Shell, 31/2-14

DATE	DEPTH	WT.	VIS SEC.	CORR. 115°F PV	CORR. 115°F 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 @ 115° 600 R.P.M.	300 R.P.M.	KCl ppbl	100 R.P.M.	6 R.P.M.	3 R.P.M.	Bbl CEC		TOTAL MUD COST
24.04		1.06	200	12	37	7	19	9.0	N/C	N/A	23,000	.3			80		3.5	96.5									8033.09
25.04	474	1.05	48	7	19	4	9	9.0	N/C	N/A	25,800	.3			120		3	97									17551.13
26.04	479	1.05	48	7	17	5	9	9.0	N/C	N/A	25,800	.3			120		3	97									19214.57
27.04	815	1.12	46	4	17	4	17	8.0	N/C	N/A	16,500	.05			40		8	97									25525.31
28.04	815	1.14	120	13	44	5	22	9.5	N/C	N/A	20,000	.05			100		9	91									33307.13
29.04	815	1.35	75	18	38	4	28	8.8	N/C	N/A	12,000	.05			200		13	87									39696.29
30.04	815	1.08				K	C	L		BRINE											45						39696.29
01.05	815	1.2	50	10	25	2	5	9.4	N/C	N/A	48,000	.05			360		8	92			44						56837.09
02.05	815	1.26	48	10	25	2	5	9.4	N/C	N/A	48K	.05			200		8	92			44						79579.97
03.05	1083	1.27	54	16	20	2	3	9.4	7.8		53K	.15			400		9	91			37						111624.37
04.05	1351	1.30	46	15	18	2	4	9.0	7.2		48K	.10	.15		800		14	86			34						124987.85
05.05	1514	1.31	53	15	15	2	5	9.1	7.8		54,000	.10	.2		600		15	85			32				22.5		133099.17
06.05	1514	1.31	52	15	15	2	6	9.0	7.2		61K	.05	.2		580		15	85			42				22.5		136450.47
07.05	1514	ALL	MUD	DUMPED																							136641.67
08.05	1514	BUILT	NEW	CHALK	MUD																						148070.03
09.05	1514	"	"	"		"																					173128.28
10.05	1514	1.15	50	9	8	2	2	9.2	N/C	N/A	58K	.15					6	94									173128.28
11.05	1514	1.15	58	12	16	2	2	9.2	120	N/A	58K	.15					6	94									175192.52
12.05	1514	1.16	53	18	23	2	3	9.1	84		58,000	.15			100		8.5	91.5	59	41							175192.52
13.05	1514	1.16	53	18	24	2	3	9.1	84		58,000	.15			100		8.5	91.5	60	42							175928.08
14.05	1514	1.16	53	18	24	2	3	9.0	81		58,000	.15			100		8.5	91.5	60	42							175928.08
15.05	1514	1.16	53	18	24	2	2	9.0	80		58,000	.15			100		8.5	91.5	60	42							175928.08
16.05	1514	1.16	53	18	24	2	2	9.0	80		58,000	.15			100		8.5	91.5	60	42							175928.08
17.05	1514	1.16	53	18	24	2	2	9.0	80		58,000	.15			100		8.5	91.5	60	42							175928.08
18.05	1535	1.16	56	20	25	3	4	9.0	47		51,000	.2			120		9	91	65	45					TR		190333.21
19.05	1557	1.17	54	19	26	3	5	8.8	30		50,400	.1			120		10	90	64	45					2-2.5		200280.90
20.05	1571	1.17	50	18	25	3	3	8.7	19		50,000	.1			160		10	90	61	43					2-2.5		202892.11
21.05	1599	1.17	54	19	26	3	3	8.9	17		50,000	.2			100		10	90	64	45					2-2.5		205545.01

DATE SPUD: 23/4/84

DATE T.D.:

COST:

DRESSER

DAILY MUD PROPERTIES

Well: Shell, 31/2-14

DATE	DEPTH	WT.	VIS SEC.	CORR. 115°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 @ 115° 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
22.05	1711	1.17	53	18	27	3	5	8.8	17	N/A	48,700	0.2			120	0	11	89	63	45					3.0		209585.58
23.05	1725	1.17	54	20	27	3	5	8.7	9	N/A	48,500	0.15			140	0	11	89	67	47					3.0		210681.20
24.05	1725	1.17	55	20	27	3	5	8.6	9	N/A	48,000	0.15			140	0	11	89	67	47					3.0		210753.72
25.05	1725	1.17	56	20	26	3	5	8.6	8	N/A	47,600	0.1			160	0	11	89	66	46					3.0		210940.20
26.05	1725	1.17	57	21	26	3	5	8.4	10	N/A	48,000	.1			150	0	11	89	65	46					3.0		211367.88
27.05	1725	1.16	52	11	11	2	2	8.2	48	N/A	53K	.1			26K	0	8	92	33	22							213941.35
28.05	1725	1.16	52	11	12	2	2	8.2	48	N/A	53K	.1			26K	0	8	92	34	23							214926.87
29.05	1725	1.16	52	11	12	2	2	8.2	48	N/A	53K	.1			26K	0	8	92	36	23							215975.87
30.05	1725	1.16	52	11	12	2	2	8.2	48	N/A	53K	.1			26K	0	8	92	36	23							216715.01
31.05	1725	1.16	52	11	12	2	2	8.2	48	N/A	53K	.1			26K	0	8	92	36	23							216715.01
01.06	1725	1.16	52	11	12	2	2	8.2	48	N/A	53K	.1			26K	0	8	92	36	23							216715.01
02.06	1725	1.16	52	11	11	2	2	8.2	48	N/A	53K	.1			26K	0	8	92	36	23							208707.41
03.06	1725	1.16	52	11	11	2	2	8.2	48	N/A	53K	.1			26K	0	8	92	36	23							208707.41
04.06	1725	1.16	52	11	11	2	2	8.2	48	N/A	53K	.1			26K	0	8	92	36	23							208707.41
05.06	1725	1.16	52	11	11	2	2	8.2	48	N/A	53K	.1			26K	0	8	92	36	23							208707.41
06.06	1725	1.16	52	11	11	2	2	8.2	48	N/A	53K	.1			26K	0	8	92	36	23							208707.41
07.06	1725	1.16	52	11	11	2	2	8.2	48	N/A	53K	.1			26K	0	8	92	36	23							208707.41
08.06	1725	1.16	50	14	23	2	3	8.2	44		59,000	0.05				0	8	92	51	37							208707.41
09.06	1725	1.16	50	14	23	2	3	8.2	44		59,000	.005				0	8	92	51	37							208707.41
10.06	1725	1.16	50	14	22	2	3	8.2	44		59,000	.05				0	8	92	50	36							208707.41
11.06	1725	1.16	50	14	22	2	3	8.2	44		59,000	.05				0	8	92	50	36							208707.41
12.06	1725	1.16	50	14	22	2	2	8.2	45		59,000	.05				0	8	92	50	36							208707.41
13.06	1725	1.16	50	14	22	2	2	8.2	45		59,000	0.05				0	8	92	50	36							208707.41
14.06	1725	1.16	50	14	22	2	2	8.2	45		59,000	.05				0	8	92	50	36							208707.41
15.06	1725	1.16	50	14	23	2	2	8.1	44		59,000	.05				0	8	92	51	37							208707.41
16.06	1725	1.16	50	14	23	2	2	8.1	43		59,000	.05				0	8	92	51	37							208707.41
17.06	1725	1.16	49	13	22	2	2	8.1	44		59,000	.05				0	8	92	48	35							208707.41
																											214227.56

DATE SPUD: 23/4/84

DATE T.D.: 23/5/84

COST:

DRESSER

DRESSER NORWAY A.S.

MAGCOBAR

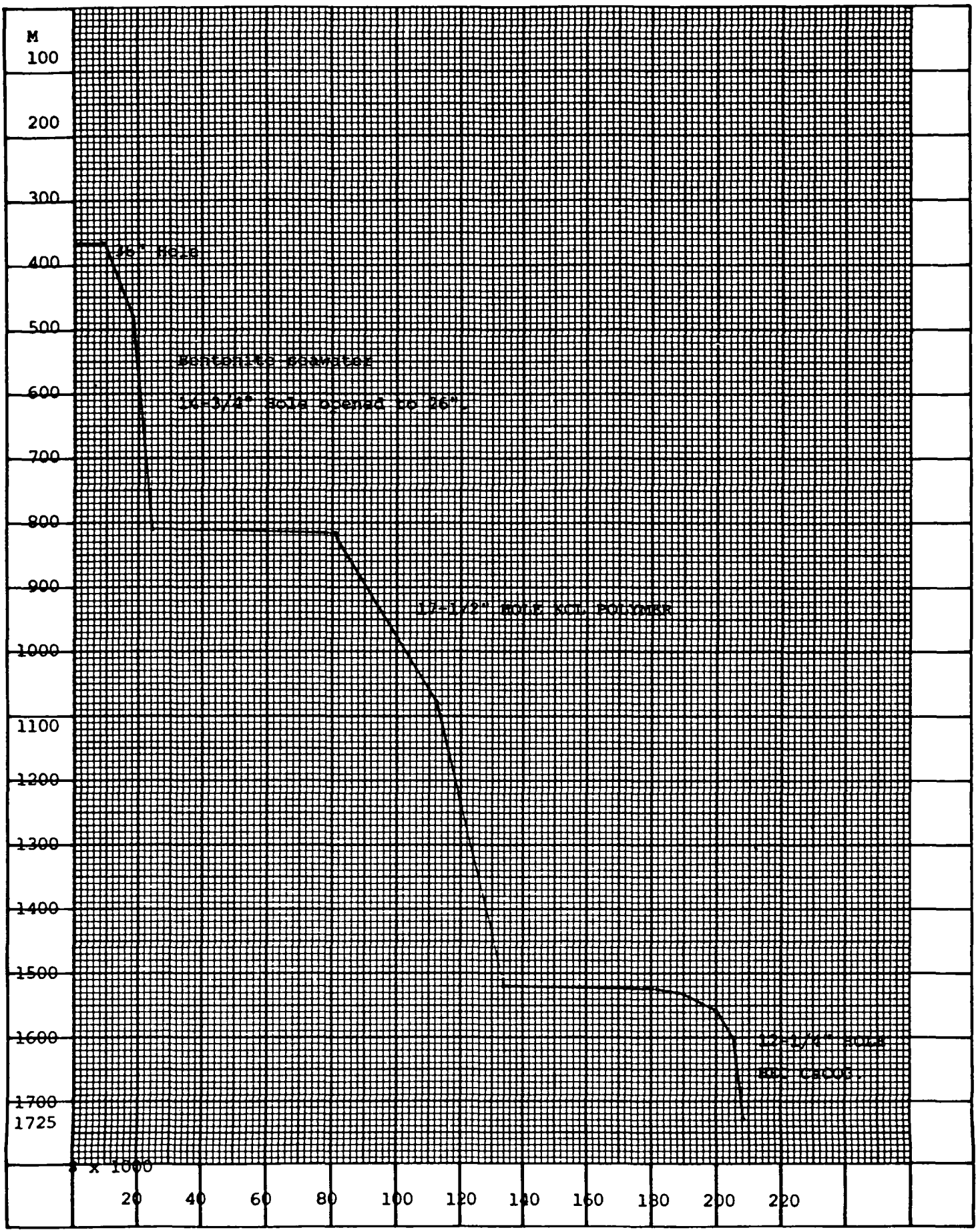
Shell, 31/2-14

G R A P H S

DRESSER

PLOT

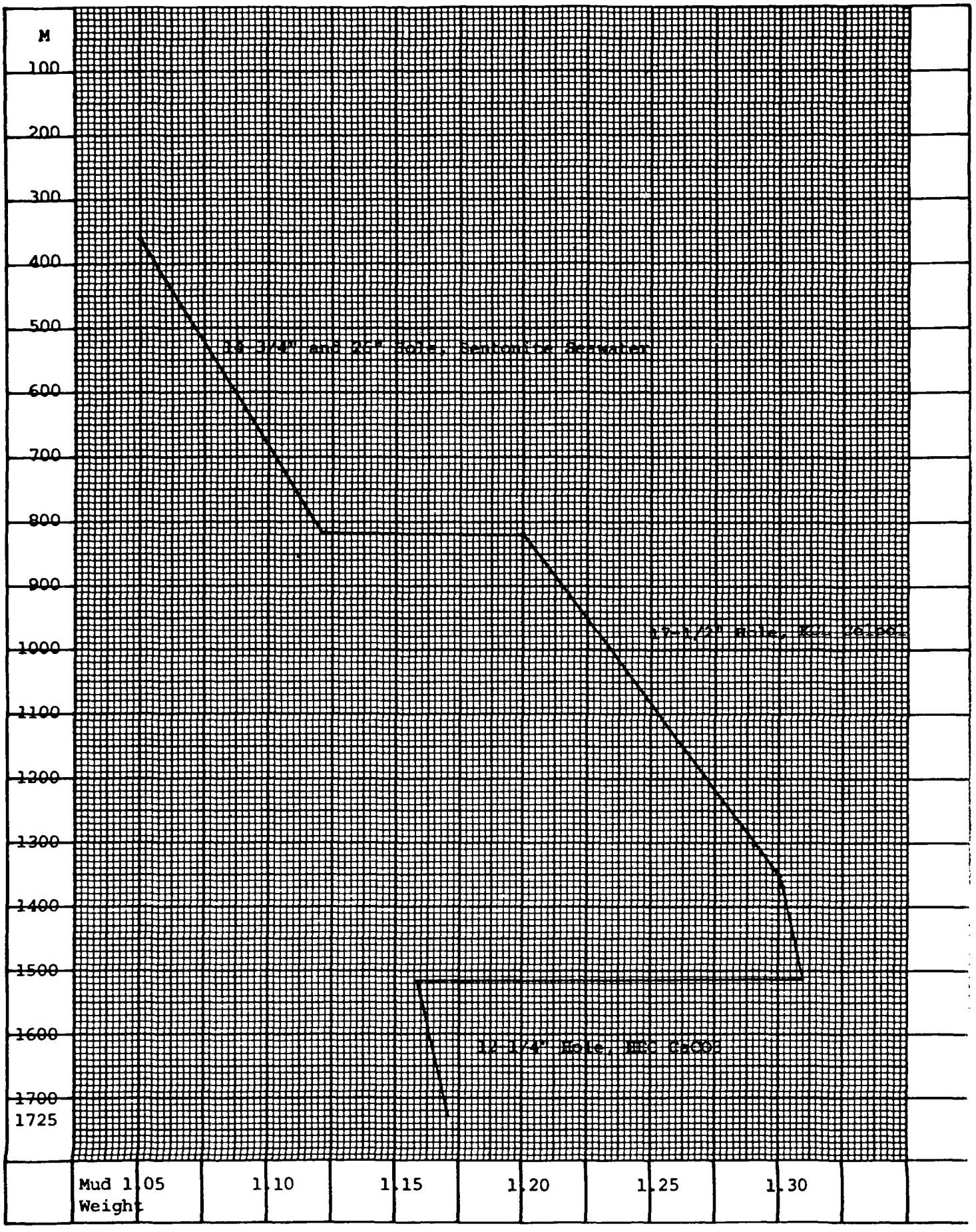
WELL: 31/2-14 - Troll field PLOT NAME: DEPTH VS COST



DRESSER

PLOT

WELL: 31/2-14 PLOT NAME: DEPTH VS MUD WEIGHT



DRESSER

PLOT

WELL: 31/2-14 PLOT NAME: DAYS VS DEPTH