Elf Aquitaine Norge A/S
Drilling department

Stavanger, 17th Sept. 1981

DRILLING REPORT
3/7-3

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APPENDIX: Water erruption behind 13 3/8" casing

1. DISPATCHING LIST

E.A.N.	Reservoir dept.	1 ex
	Exploration dept.	5 ex
	Production dept.	1 ex
	Drilling dept.	5 ex
SNEA(P) PARIS	Dept. Exploitation	2 ex
DIG Europe	Dept. Production	1 ex
	Dir. Exploitation	1 ex
	Dir.Prod., dept.Forage	2 ex
SNEA(P) PAU	DRA - Service puits/forage	1 ex
	DRA - Service puits completion	1 ex
SNEA(P) BOUSSENS	DRA - Service puits/boue	1 ex
N.P.D.	Drilling Section	2 ex

2 - PREFACE

Licence 023 was awarded to the PETRONORD GROUP in 1969.
The licence covers block 3/7. It is now held by the following companies:

ELF AQUITAINE NORGE A/S	43.60%
NORSK HYDRO PRODUKSJON A/S	34.60%
TOTAL MARINE NORSK A/S	21.80%

EAN is operating THE PETRONORD GROUP.

3. SUMMARY OF THE 3/7-3 WELL

MOVING IN

The well 3/7-3 started June 20, 1981 at 16.00 hrs. with all anchors racked up and the semi-submersible "Dyvi Alpha" ready for tow on well location 3/7-2.

The S.S. DYVI ALPHA arrived on location June 20, 1981 at 18.00 hrs. and dropped the first anchor at 1825 hrs.

Well coordinates: 04° 10' 54.33" E
56° 24' 54 77" N

Water depth on location 67 m distance RKB/mud line : 92 m

DRILLING

The well was spudded the 21.06.81 at 15.00 hrs. and the drilling was finished the 26.08.81 at 19.30 hrs, which gives 66.2 days of drilling.
The following operations were performed:

- Drilled 36" hole and set 30 inch casing at 153 m
- Drilled 17 1/2 hole log and underreamed 26" to 666 m
- Set 20" casing at 653 m
- Drilled 17 1/2 hole to 1968 m. At 1968 m increased mud weight from 1.31 to 1.55 to keep the well stable. Drilled 17 1/2 hole to 1970 m
- Ran logs and sat 13 3/8 inch casing at 1961 m.

After cemented 13 3/8 inch casing, well started to flow. 17.5 m^3 cement plug. The well was stabilised by help of heavy mud and cement plugs pumped down the annulus or squeezed through perforation in the casing. (For further details, see appendix: Water eruption behind 13 3/8" casing).

- Drilled 12 1/4" hole to 2830 m
- Cut core #1 from 2830 m to 2848 m
- Drilled 12 1/4" hole from 2848 to 3253 m
- Ran logs and sat 9 5/8" casing at 3241 m
- Drilled 8 1/2 " hole 3291 to 3337,5 m
- Cut core #2 and #3 from 3337.5 to 3348 m
- 8 1/2" hole was drilled from 3348 m to total depth 3540 m and logged.

Abandonment

The abandonment phase was 5.48 days long and the last anchors were on bolster September 1st at 07.00 hrs. S.S. DYVI ALPHA went to SAGA.

Total well duration : 72.6 days.

4

POSITION MAP

BLOCK : 3/7

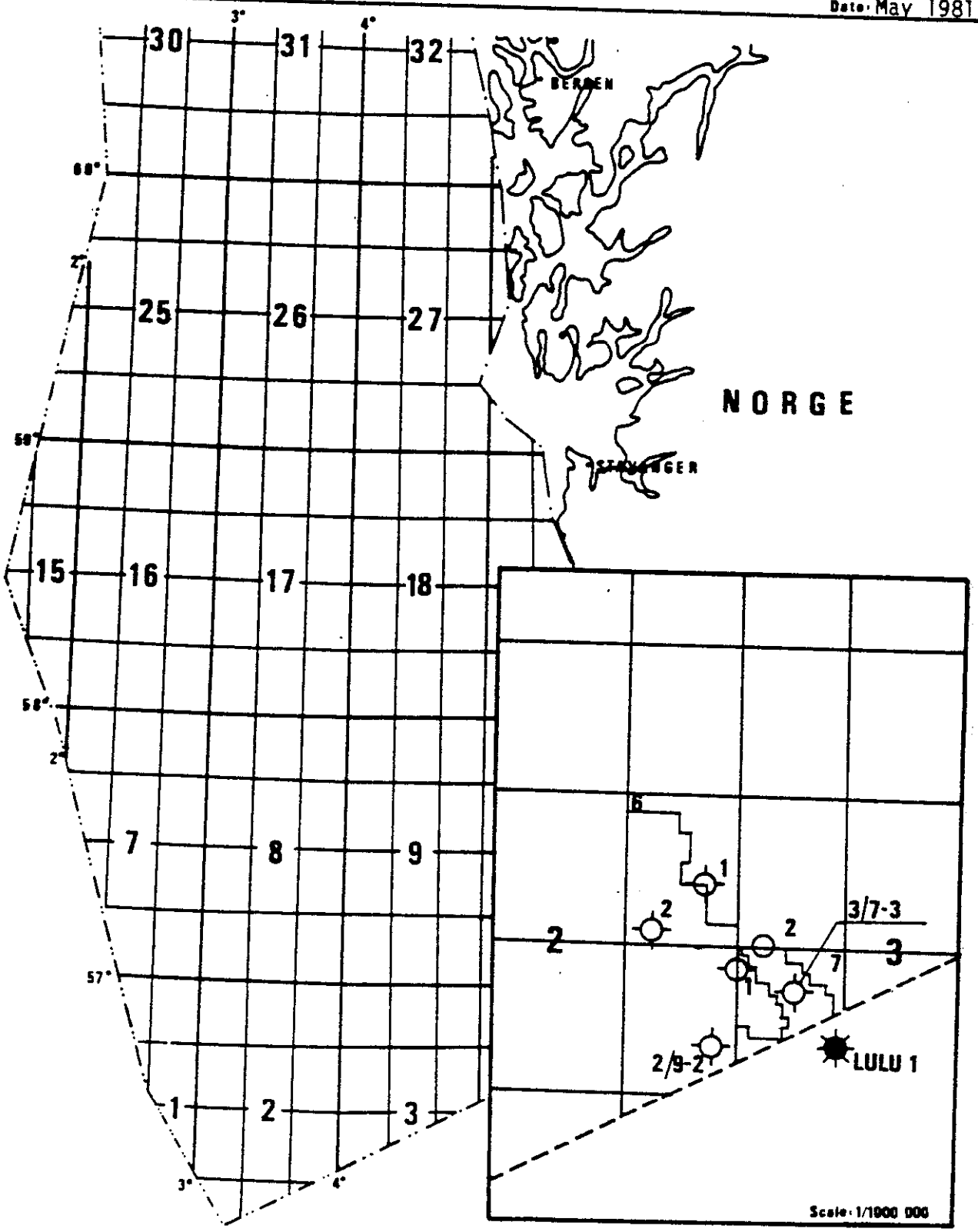
WELL : 3/7-3

OWNER : PETRONORD

x: 04°10'59.68"
y: 56°24'54.33"

Scale: 1/2500 000

Date: May 1981



EXPLORATION DIVISION

Fig.1

5. LOCATION SURVEY

A marine engineering geophysical survey was carried out in block 3/7-3. An area consisting of a 3 km by 5 km rectangle was surveyed around the proposed well location at:

56° 24' 32.72" NORTH
04° 12' 11.64" EAST

The orientation of the survey area was with its long axis running NW/SE. Survey work was carried out between the 9th and 14th February 1981, by Gardline Survey.

Principal Findings

Bathymetry

The water depth at location is 66.4 metres whilst the minimum and maximum depths found within the survey area are 63.6 metres and 67.4 metres respectively. Generally the seabed over the ares is remarkable flat and featureless.

Geophysics and Seabed

The seabed within the survey area is covered with a thin veneer of mobile silty sand. This rests upon a series of laminated silty clays, which are occasionally exposed through the overlying veneer. Below these silty clays is a marked unconformity consisting of a complex pattern of sub-parallel channels. These channels have cut into underlying glaciomarine sediments, which are poorly bedded and probably consist mainly of sands and clays. These in turn lie unconformably on a coarsely bedded sequence, itself cut by occasional channel features. This sequence continues to a depth of at least 60 metres where it is obscured by the first multiple return. At the proposed location the thickness of the units described are as follows:

sand veneer	2 metres
silty clays	28 metres
glacio-marine sediments	26 metres

No seabed obstruction or adverse geological conditions were identified which should seriously hamper drilling or anchoring activities.

6. WELL POSITIONING

Drilling rig "DYVI ALPHA" was navigated from well location 3/7-2 to well location 3/7-3 Norwegian Sector using Decca Pulse/8 navigation system.

The final positioning was performed by Racal-Decca Survey Norge A/S in the period 21/6-81 to 23/6-81 utilizing a JMR-4 Sealand Satellite Surveyor.

Final position well 3/7-3 European Datum 1950:

Lat.: 50° 24' 54.77" N
Long.: 04° 10' 54.33" E

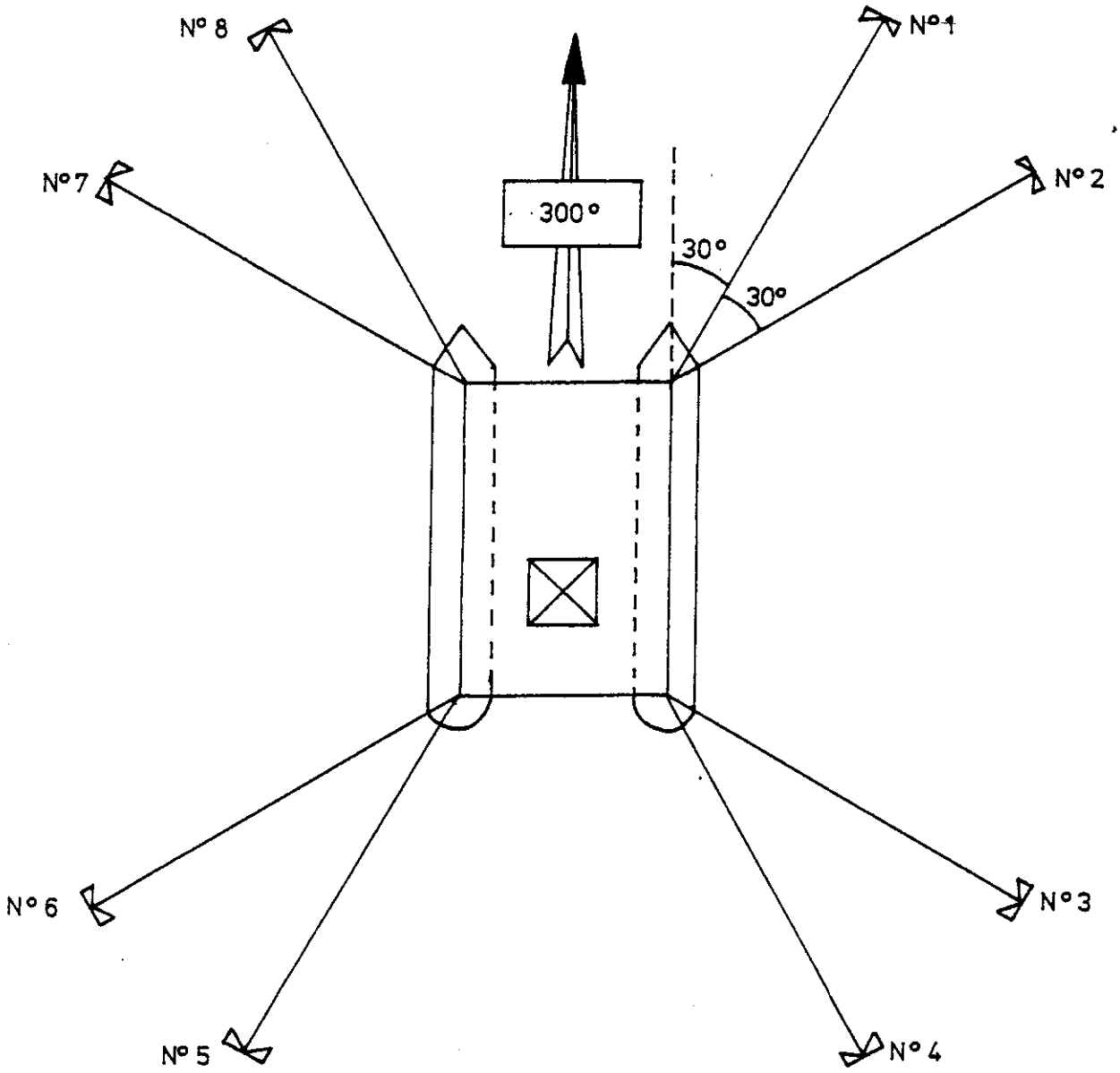
Number of 3 D passes : 33
Time of last 3 D pass : 1024 hours 23 June 1981
Rig heading: : 302°
Deviation from intended location: 21.8 metres in 208°

This deviation is the difference between intended position and final Sat. Nav. position.

7 MOORING LINE PATTERN

DYVI ALPHA

WELL: 3/7-3



8. GEOLOGICAL SUMMARY

1. Objectives

The main objective of the 3/7-3 well was to test possible hydrocarbon accumulation in the Danian/Upper Cretaceous chalk. This interval, which is hydrocarbon bearing on the Danish well Lulu 1, exhibits a seismic anomaly similar to the one noticed on Lulu 1.

The secondary objective was the Middle Jurassic Sandstones found water bearing on Lulu 1 but with good reservoir characteristics.

2. Main results

2.1. Danian/Upper Cretaceous Chalk

The chalk has been found water bearing and thick. The seismic anomaly noticed at the top of the chalk is not related to hydrocarbon. The chalk is 468 m thick from 2818 to 3280 m.

2.2. Jurassic Sandstones

The Jurassic Sandstones are underlaying directly the lower Cretaceous Marl/Carbonates interval. At 3325 m coarse, clean, sandstones were encountered. They are 55 m thick, with below 52 m of more argillaceous sandstones with their base at 3432 m. These sandstones are both water bearing. They are most probably Upper Jurassic and not Middle Jurassic as expected.

The Upper Jurassic rests on the Upper Permian (Zechstein) Anhydrite/Salt formation in which the well was bottomed at 3540 m RKB.
The 3/7-3 well has been plugged and abandoned.

2.3. Coring

Three cores have been cut:
One in the Danian chalk from 2830 to 2848 m (60% recovery) and two in the Upper Jurassic Sandstones from 3337,5 to 3339 m (67% recovery) and from 3339 to 3348 m (100% recovery). In addition a run of 30 side wall cores was shot between 3504 and 3285,5 m. 28 cores have been recovered.

2.4. Shows

Only C1 has been noticed below 700 m and down 1850 m with a maximum of 6% at 1530 m. At 1860 m C1 reached 8% with occurence of C2 and C3.
At 1969 m up to 70% of C1 was noticed. Then the gas back ground decreased and below 2820 it never exceeded 0,2% of C1 with occasionally traces of C2 and C3.
Below 3432 m, in the Upper Jurassic Shales, minor shows, up to C4 have been encountered. No fluorescence has been noticed even on cores and/or side wall cores.

2.5. Tests

No DST's were performed.

6 pressure tests with RFT were performed between 3323,5 and 3372 m.

The formation pressure gradient from the RFT is 1.43 in the Jurassic.

2.6. Petroleum results

Only one reservoir has been encountered. Despite some good porosities (up to 25% from electric log interpretation) the Danian chalk is water bearing.

The Jurassic sandstones have good porosities (from 18 to 28% from core analysis) and good permeabilities (generally above 1 darcy with maximum 10 darcys). The upper part only (3325 to 3380 m) is taken into account:

Gross pay	:	45 m
Net pay	:	41 m
Average porosity	:	24%
Average permeability	:	3,5 darcys
Water saturation	:	90/95%
Formation pressure gradient	:	1.43

Water bearing.

9 PROVISIONAL
FROM DAILY REPORTS.

Coord x: 04° 10' 54.33" Z ground: -67m
y: 56° 24' 54.77" Z RKB: +25m
Line: ANO 7380 SP: 269 92m
Depths datum: RKB
Rig: Dyvi Alpha
Stopped in: Zechstein

Spudded: 20.06.81
Started drilling: 20.06.81
At T.D: 24.08.81
Completed: 01.09.81
T.D Driller: 3540 m T.D. Logger: 3542 m

Well 3/7-3
Country NORWAY off-shore

OPERATOR EAN
LICENCE 023 OWNED BY PETRONORD

TARGETS

1) Danian/Upper Cretaceous Limestones.
2) Middle Jurassic Sandstones.

RESULTS

1) The Danian/Upper Cretaceous Limestones have been found rigth and water bearing.
2) Good upper Jurassic (?) sandstones have been encountered but they are water bearing

CASINGS

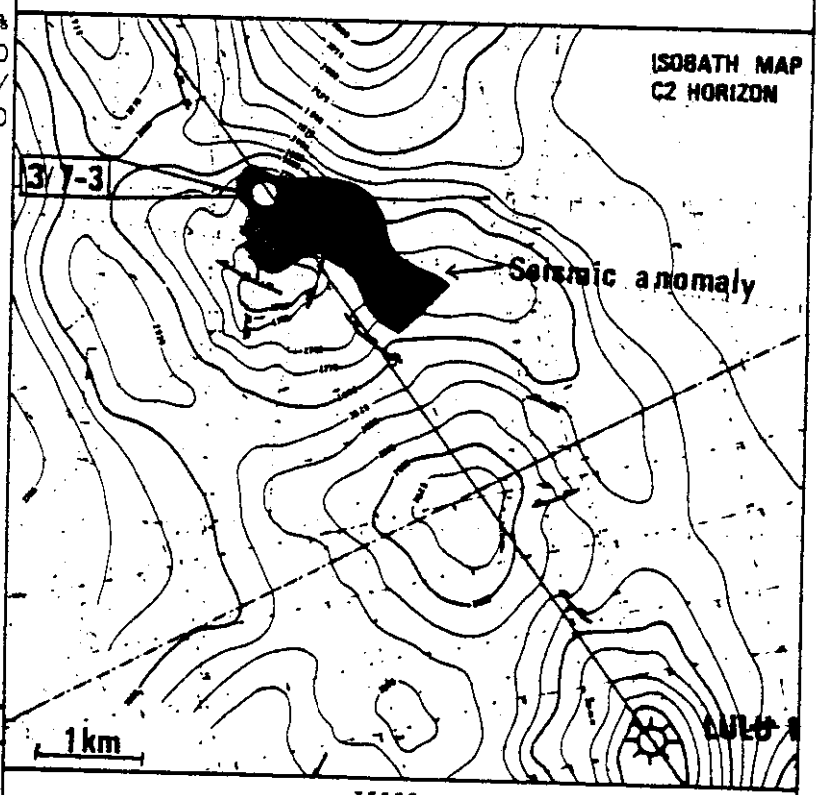
30"	at	153m
20"	at	653m
$13^3/8$"	at	1961m
$9^5/8$"	at	3241m

CORES

K1	2830-2848	60%
K2	33375-3339	67%
K3	3339 -3348	100
SWC	32855-3504	28/30

SHOWS

C1, traces of C2, C3 noticed in the Tertiary above 2700m.
Below no shows.



LOGS

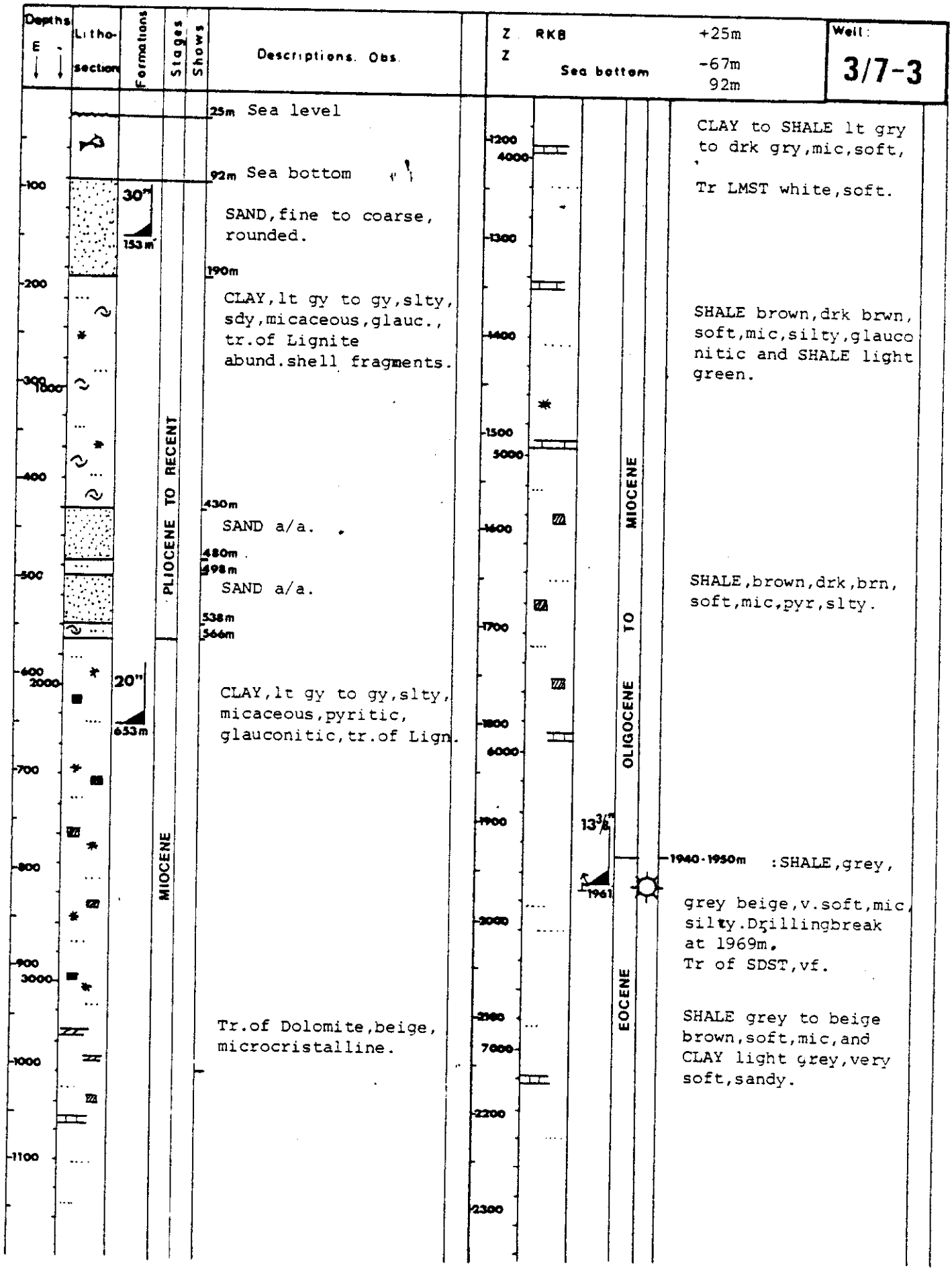
ISF/BHC/GR LDL/GR CAL	666 - 153	1	HDT	3253-1961	1
	666 - 153 GR up to mud line	1	HDT	3505-3240	2
ISF/GR BHC	1969 -653	2	Velocity	3520-2500 (50 shots)	
ISF/GR BHC	2906-1961	3			
ISF/BHC/GR	3251-1961	3	Temp	1880-100m	1
ISF/NGS/BHC LDL CNL GR	3542-3244	5	Temp	1500-100m	2
	3253-1961	1	CBL	1935-500m	1

TESTS

RFT	6 pressure tests 3323.5, 3329, 3341, 3351, 3366, 3372m 6803 psi at 3372m Pressure gradient=1,42	

Checked F.Verrolles
Date 01.09.81.

PROVISIONAL
FROM DAILY REPORTS



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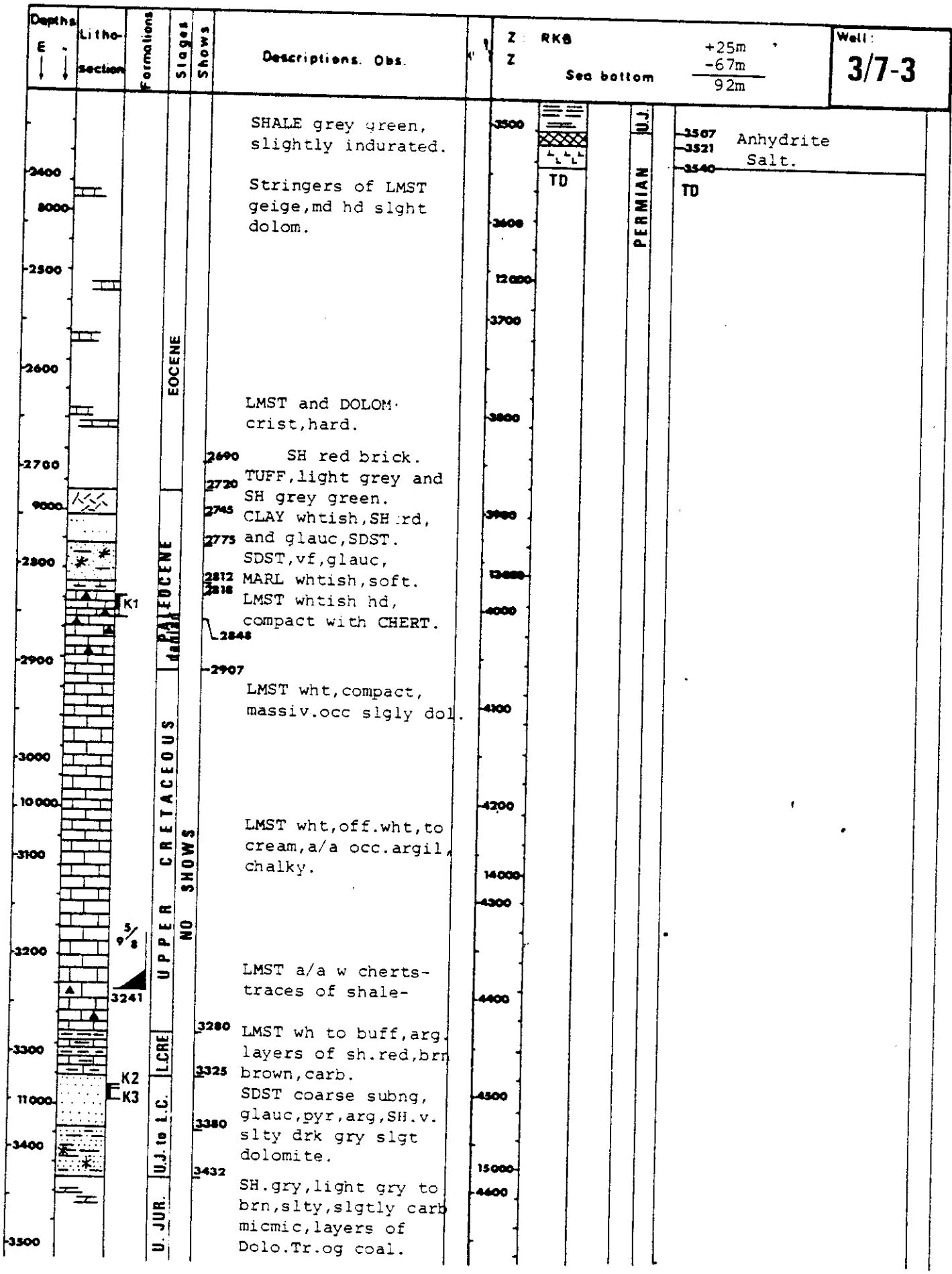


10 - 3/7-3 DAILY REPORT

20.06.81 No.1 - The S.S. DYVI ALPHA was towed from well location 3/7-2. Run anchors on 3/7-3. Start ballasting.

21.06.81 No.2 - Ballasting rig down.
- Tension test anchors 350.000 lbs. OK.
- W.O.W. - to spud - wind 40 kn
- RIH w/26 inch bit. Tag bottom at 92 m RKB - (water depth on location 67 m)
- Drilling 36 inch hole to 153.5 m spot 5 bbl visc. mud each connection. Spot 50 bbl mud at TD - pull to sea bed - RIH to bottom - spot 50 bbl mud hi-vis. - fill hole w/new mud. POOH.

22.06.81 No.3 - POOH
- Rig up base plate. Run 30 inch casing land on bottom 153 m. w/base blate 2 m above sea bed
- Rig up and test cement line. Cement 30" casing w/49 tons G cement. 39 m^3 slurry 1.88 sp.gr. Displace same.
- WOC
- Back out R/R/Tool. Wash well head. Pull out
- Install new ball joint on pin connector dress pin connector on riser.

23.06.81 No.4 - Run riser - install diverter.
- Make up new BHA. RIH w/17 1/2 bit tag CMT 150 m.
- Drill out cement and shoe.
- Drilling and surveying hole to 449 m.
- P.O. to shoe. Lay down 4 sts dp. Retrieve survey drilling to 533 m.

24.06.81 No.5 - Drilling 17 1/2 from 533 to 557 m.
- Drop and retieve survey
- Drilling to 666 m
- Circulate
- Wiper trip to shoe
- Circulate
- Drop survey. POOH. Flow check at shoe rig up Schlumberger. Run logs. Lay down lay down 5" DP. Make up new BHA w/26" underreamer.

25.06.81 No.6 - Lay down excess DP
- Surface test under reamer
- RIH
- Under ream 155 to 666 m
- Circulation.

26.06.81 No.7 - Circulate. Increase mud weight to 1.24.
- POOH to mud line
- Displace riser w/seawater. Observe well.
- Continue observing well. Leak at pin connector. Unlatch hydraulic latch.
- Pull riser.
- Lay down riser and connector.
- Make up 18 3/4. Wellhead w/run toll. STD in derrick
- Make up 26" bit. RIH. Wash 588-600 m 640-666 m
- Displace 1.24 mud w/1.33 mud.

27.06.81 No.8 - POOH w/26" bit
- Run 20 inch casing. 133 cbs/ft. K55, but w/shoe at 653 m. Pick up test 30.000 lbs OK.
- Circulate 50 m^3 mud.
- Cement w/96 T "G" cement 1.50 sp.gr. 140 m^3 lead slurry. Followed by 457 "G" cement 1.96. Bump plug test casing 1200 psi 15 minutes OK.
- POOH w/running tool
- Rig up to run BOP. Handling BOP on cellar deck.

28.06.81 No.9 - Handling LMR/BOP in cellar deck. Pressure test k/ch loops to 10.000 - function test, OK w/yellow pod.
- Repair leak blue pod. Runction test same. OK
- Run BOP. Test k/ch to 1500 psi OK
- Dress slip joint.
- Land. Connect BOP. pick up test 10.000 lbs. OK
- Run test plug. Pressure test connector, k/ch lines and valves to 1500 psi. OK. POOH w/test plug.
- RIH set wear bushing. Pull out u/tool
- Break laydown 26" bit. Rig up 17 1/2" bit and BHA.

29.06.81 No.10 - Change BHA RIH
- Slip drilling line
- Tag CMT. Drill out float valve - CMT - shoe - wash to bottom and change seawater by mud
- Drill 666 - 671 m
- Circulate P.O. to shoe - perform leak off test 1.65 eq. mud wt.
- Drilling - 671 - 700 m (w/out stab.)
- Circulate drop survey POOH - retrieve survey
- Made up new BHA - change bit. RIH to 651 m
- Ream and wash (w/stab.) to 700 m
- Drilling to 742 m

30.06.81 No.11 - POOH to casing shoe RIH
- Drilling 742 to 810 m
- Circulate drop survey. POOH to shoe. Retrieve survey RIH
- Drilling 810 - 818 m
- Circulate. Condition hole
- Drilling 818 - 919 m
- Circulate survey, retrieve survey at shoe. RIH
- Drilling to 1014 m

01.07.81 No.12 - Drilling 1014 - 1027 m
- Circulate drop survey
- Pull to shoe - retrieve survey - RIH - wash last single
- Drilling to 1136 m
- Circulate drop survey - retrieve at shoe - RIH
- Drilling to 1245 m
- Circulate - drop survey - pull to shoe - max. drag 70 000 lbs at 1100 - 1000 m - retrieve survey.

02.07.81 No.13 - RIH - wash last 20 m
- Drilling 1245 - 1352 m
- Circulate - Drop survey - retrieve at shoe - RIH
- Drilling to 1384 m - slow penetration
- Circulate - drop survey
- POOH - change bit - RIH

03.07.81 No.14 - RIH. Pick up Bowen drilling jar
- Make up hang off tool. Set it in derreck
- RIH. Wash down last 26 m
- Drilling 1384/1499
- Circulating. Drop survey.
- POOH to 1322
- Circulating - repair draw works electrical failure.
- Retreive survey.
- RIH to 1490 m
- Circulation repair draw works electrical failure
- Drilling 1499/1543

04.07.81 No.15 - Drilling 1543 - 1607 m
- Circulate drop survey
- P.O. to shoe. Max over pull 100.000 lbs at 1270 m
- Recover survey. RIH
- Drilling to 1716 m
- Circulate. Drop survey. POOH.

05.07.81 No.16 - Attempt to retreive survey break the line
- POOH. Tight from 1500 to 1465. Max. over pull 45 T
- Retrieve survey (Totco ring broken) change bit RIH. Wash down from 695 to 710
- Drilling 1716-1824
- Circulating
- Drop survey. POOH 4 stands. Retrieve survey. RIH
- Drilling 1824-1871

06.07.81 No.17 - Drilling 1871 - 1932
- Circulate
- Drop survey - pump slug
- POOH to shoe - tight from 1847 to 1712
- Retrieve survey
- Cut ANS slip drilling line
- Wash down last JNT
- Drilling 1932 - 1970 - drilling break - flow check 6 m^3 in 20 min. total (mud treatment)
- Shut well - double check pipe pressure and well head pressure open well circulating - close pipe pressure 15 kg - well head pressure 25 kg
- Circulate through K.L. and increase mud weight to 1,40

07.07.81 No.18 - Circulate out influx through choke - increase mud weight to 1,40.
- Flow check - well flowing
- Displace mud 1,40 in riser - observe pressure - pipe pressure = 0 - Well head pressure = 14 kg
- Circulate through choke increase mud weight to 1,45
- Observe pressure - circulate
- Open well small flow - Circulate 2.500 l/min
- Open well influx 1,8 m^3 - 20 minutes - close well and observe pressure
- Circulate 1.45 s.g. mud through choke

08.07.81 No.19 - Circulated through choke increasing mud weight to 1,45 - total gas down to 5-10 % - condition mud - influx during circulating
- Flowcheck - well flowing - close well - pipe pressure 80 psi - annulus pressure 250 psi
- Increase mud weight to 1,50
- Flowcheck - 15 min - 2,4 m^3 - close ell - pipe pressure 50 psi - annulus pressure 150 psi
- Increase mud weight reserve 1,80

09.07.81 No.20 - Circulated through choke and increasing mud weight to 1,80 in reserve
- Continued circulating to 1,53
- Shur in well no pressure. Well open slight flow
- Displace riser with 1,53 s.g. mud and circulate with 1,55 s.g. mud well open
- Ream 1966/1970
- Circulate condition mud
- Flow check. POOH 10 stds. Drag and swabbing RIH
- Circulated bottom up.
- POOH to casing shoe. No drag.

10.07.81 No.21 - Pulled to shoe - Ran back to bottom
- Circ. max. gas 13 % flow check
- POOH - flow check at casing shoe
- R/U Schlumberger
- Logging ISF-SONIC-GR
- R/D Schlumberger
- RIG w/bit
- Circulate
- Flow check - POOH
- Retreived wear bushing
- POOH to run casing.

11.07.81 No.22 - Stabilized well with mud d = 1.55. Flow check OK
- POOH
- Logging ISF-Sonic-GR
- RIH (no reaming) - POOH. Flow check OK.
- Ran 13 3/8" casing, shoe at 1961 m
- Circulated 1500 l/min 20 min. Well flowing. Circulated through choke 2 hours. Well dead. Flow check OK.
- Mixed cement.
- Displaced cement.
- Bumped plug 15 min OK w/2500 psi
- Unlatched running tool. Cleaned wellhead (flowrate 3500 l/min 1500 psi)
- Pulled landing string.
- Noticed well flowing (Geoservice)
- SHUT IN WELL after gaining 14 m^3 mud and cement slurry in 45 Pstatic = 550 psi

12.07.81 No.23 - Squeezed 11 m^3 d = 1.80 (flow rate 1100 l/min.) through kill line. Pressure 360 psi.

- After squeeze Pstatic = 180 psi
- Squeezed 11 m^3 mud d = 1.80. Flow rate 1100 l/min. through kill line. Injection pressure 400 psi going down to 300 psi.
- After squeeze Debit = 0 Pressure = 0

02.30 - Pstatic = 200 psi stabil until 5.30 hrs.

05.30 - Pstatic going down to 150 psi

08.30 - OPENED WELL: flowrate 3 bbl/m (30 m^3/hour). Closed in well.

09.00 - Squeezed 11 m^3 mud d = 1.80. Flow rate 1100 l/min. Pressure start injection 500 psi. Pressure end inj. 300 psi.

09.15 - Stopped pumping. Pressure = 0 - 50 psi. Flowrate = 0.5 bbl/min.

- Ran open ended drill pipe and close lower pipe rams just above lowest tool joint.

11.00 - OPENED WELL : Flow check OK.

12.00 - Lost 2 m^3 (12 bbls) in 1.30 hrs. Then lost regularly 3.5 m^3/hrs

16.45 - Total losses = 100 bbls
Pumped 10 m^3 Baryte plug through choke line, d = 2.10, Q = 660 l/min. Displaced with mud d = 1.55 to shoe 20" (660 m). Opened well losses. Filled with 11 m^3 mud d = 1.55

18.30 - Well not stable Alternating losses and Flow (Pressure = 0 psi)

22.00 - Closed in well.

23.00 - Injected 17.4 m^3 cement slurry d = 1.60 (12 m^3 SW + 15T G. Cem. 3.5 l/100 kg D 75). Displaced with 23.7 m^3 mud d = 1.55. Flow rate 900 l/min. Pinj: 420 going up to 460 psi

13.07.81 No.24 - Flow check after displacing cement slurry. Well flowing.

- Observed well pressure 0 hrs. 15 - 04 hrs. Pstatic = 150 psi
04 hrs. to 6 hrs. Pstatic going down to 50 psi.

09.00 - OPENED WELL: Flowing - closed it. Gain 12 bbl/hour (cement sample hard)

- Retrieved Pack off assembly and closed well. Pstatic gone up to 375 psi.
- Pumped 5 m^3 mud d = 1.80 for opening well for running DP.
- Pumped 20 m^3 mud d = 1.55 for cleaning annulus
- Pumped 12 m^3 cement slurry d = 1.65 (31/100 kg retarder)
- Displaced cement slurry with 23.6 m^3 mud d = 1.55 psi Flow rate 1450 l/min. Pinj = 500 psi Pstatic = 150 psi after injection

17.30 - Pstatic going up to 200 psi

19.40 - Pstatic = 0 psi

- OPENING WELL - small losses

23.00 - Losses stabilized at 900 l/hour

14.07.81 No.24 - Pumped 20 m^3 loss circ. material (10 m^3 CECPAC fine 100 kg/m^3 + 10 m^3 MICA fine 100 kg/m^3) + 25 m^3 cement slurry d = 1.90

- Displaced with 19.8 m^3 mud d = 1.55 flow rate 1100 l/min. Pressure after injection 150 psi

(Note: When the loss circ. material was pumped down to the 20" shoe the injection pressure was going up 150 psi, which indicates that the losing zone was situated just below the 20" shoe or about at 660 m)

OBSERVED PRESSURE:

02.30 - 03.00 - Pstatic down to 100 psi; at 03.00 pumped 600 l Pstatic up to 160 psi

03.00 - 04.00 - Pstatic stable ; at 04.00 pumped 600 l Pstatic up to 180 psi

04.00 - 05.00 - Pstatic stable ; at 05.00 pumped 600 l Pstatic up to 200 psi

05.00 - 06.00 - Pstatic down to 180 psi; at 06.00 pumped 600 l Pstatic up to 220 psi

06.00 - 08.00 - Pumped 600 l every 1/2 hour

08.00 - Pstatic = 250 psi Total displacement 24.6 m^3 mud which gives bottom of cement plug at 20" shoe.

- Pumped 3300 l Ping 500 psi Pstatic 250 psi

08.15 - Pumped 2200 l Pinj 400 psi Pstatic 260 psi

09.00 - Pumped 2200 l Pinj 400 psi Pstatic 200 psi

08.00 - 09.00 - Pumped 7.7 m^3 which gives top cement about 200 m above 20" shoe.

09.00 - 14.15 - OBSERVED PRESSURE

14.15 - OPENED WELL - well flowing 10 bbl/3 min. (32 m^3/hours)

- Closed well. Pstatic going up to 260 psi

16.45 - Let well flow 10 min. to control density (5 m^3/5 min) density = 1.55. No traces of gas. Pressure going up to 300 psi in 3 min.

18.00 - Pstatic = 400 psi. Pumped 5 m^3 mud d= 1.80 to get the pressure down from 420 to 260 psi but at 24.00 hrs. the P was 275 psi

15.07.81. No.26 - Mixed mud and mud with loss circ. materials. Observed well Pstatic = 300 psi

12.00 - Pstatic = 300 psi

- Let well flow 2 min. Q = 60 m^3/hour. Close well
- Pumped through drill pipe: 1) 32 m^3 LCM (100 - 110 kg/m^3 d = 2.0
  followed by 2) 130 m^3 Mud d = 1.85
  and by 3) 23 m^3 Mud d = 1.55

DETAILS OF PUMPING OPERATIONS:

Fluid pumped	Total volume pumped	Flow rate	injection pressure	Wellhead pressure (read from kill line)
LCM d = 2.00	start	1400 l/min	500 psi	300 psi
	20 m^3	"	300 psi	0
Mud d = 1.85		2500 l/min	1700 psi	0
	52 m^3	2800/2900	2700 psi	100 psi
	67 m^3	2800/2900	2700 psi	150 psi
	85 m^3	2800/2900	2700 psi	150 - 100 psi
	100 m^3	3200 l/min	3300 psi	200 psi
	162 m^3	3200 l/min	3300 psi	200 psi
Mud d = 1.65		2500 l/min through DP	250/300	
23 m^3	193 m^3	and KL		

- Stop pumping P = 0
- Opened well. Flowing 4 bbls/min. Let flow 45 bbls.

13.45 - Closed well. Pstatic = 0

- Under water camera: RAS

13.45 - 22.00 - Observed well. Pstatic between 0 and 40 psi

22.00 - Pumped 5 m^3 mud d = 1.80. The well losing a little, then flowing (3-4) bbls/min) Pumped another 5 m^3 mud d = 1.80. The well losing a litle then stable at 23.00 hrs.

16.07.81 No.27 - RIH DP one stand below CSG Hanger 13 3/8
- POOH and clean top of Hanger
- RIH CSG Hanger RT with DP extension. Reconnected to hanger and pressure tested to 1500 psi OK.
- Temperature Log: first run tool failed, second run not able to run farther down than 1844 m
- Unscrewed POOH casing hanger RT
- RIH 12 1/4 BIT washed down 1791 - 1935 m (Float collar 1936.5 m)

17.07.81 No.28 - Conditioned mud. Increased density from 1.55 to 1.65
- While POOH well started to flow.
- Squeezed 4 times 5 m^3 mud d = 1.80 through 20" x 13 3/8" annulus
- Flow check OK. POOH
- Ran CSG running tool. Reconnected to hanger and pressure test to 1500 psi, OK
- Ran perforation gun (2 1/8" UNIJET. 2 feet - 4 slots/foot). Perforated at 1925 m with 500 psi in CSG. No pressure drop. Increased to 2000 psi, no pressure drop.
- Ran same perforation gun (6 feet - 4 slots/foot) and shot at 1913 m with 500 psi in CSG. Pressure drop.
Increased to 600 psi. Pressure dropped
Increased again to 600 psi. No pressure drop
Increased to 1000 psi. No pressure drop
Started injection with 1100 psi. Established injection rate: 400 l/min with 1500 psi. Total injected: 6 m^3. Pressure stabilized at 1100 psi when injection is stopped.

18.07.81 No.29 - Squeezed 60^T (48 m^3) G cement d = 1.90 into the formation. Displaced by 40 m^3 mud d = 1.80
- Opened well. Lost 9 m^3 then well stabilized. Washed casing hanger area.

03.00 - 08.00 - WOC
- Ran VETCO Tap and flush tool. Cleaned pack off and sealing area.
- Ran and set pack off assy. Torqued to 18000 lbs/ft. Tested 7500 psi OK.
- Ran temperature log 1500 m to 0
  CBL 1935 m to 500 m

19.07.81 No.30 - RIH free pipe
- Circ
- Pumped 5 m^3 spacer; 10 m^3 slurry; 2 m^3 spacer. Displaced same.
- POOH 6 stds, reversed circulation. Squeezed 4 m^3 slurry (1500 psi - 400 l/min)
- 4 hours: WOC with 1500 psi
- Tested BOP and set wear bushing

20.07.81 No.31 - RIH 12 1/4 bit
- Drilling out cement from 1819 to 1946 m
- Pressure test. Casing pressure dropped from 1500 to 800 psi
- Drilling out cement from 1946 to 1970 m
- Drilling from 1970 to 1972 losing (8.5 bbls in 5 min.)
- Drilling from 1972 to 1982 while reducing mud weight from 1.65 to 1.59
- Well stabilized.
- Drilling from 1982 to 2027 m without losses.

21.07.81 No.32 - Circulation and POOH
- RIH open ended DP
- Mixed 10 m^3 slurry d = 1.90 and displaced. POOH 6 stds - reversed circulation. Attempted to sqeeze cement with 1500 psi

03.30 - WOC P 1500 psi
- Well steady POOH
- RIH new BHA
- Washed down from 1874 m to 1901 m Top cement 1901
- Drilling out cement to 1938 m

22.07.81 No.33 - Drilling out cement from 1928 to 2019 m
- Circulation bottoms up
- Drop survey
- LOT pressure 620 psi deq. = 1.80
- POOH
- Make up BHA . RIH
- Ream from shoe to 2019 m
- Drilling cement from 2019 to 2027 m
- Resumed drilling.

23.07.81 No.34 - Drilled from 2042 m to 2132 m
- Circulate
- Dropped suvey
- Pulled to shoe. Overall 50.000 lbs
- Retrieved survey No.21
- Ran to bottom
- Drilled from 2132 m to 2240 m
- Circulate
- Dropped survey
- Pulled to shoe

24.07.81 No.35 - Retrieved survey
- Ran to bottom
- Drilled from 2240 m to 2347 m
- Circulate - dropped survey
- Pulled to shoe - overpull 50.000 lbs
- Retrieved survey
- Cut and slipped drilling line
- Ran to bottom
- Drilled from 2347 m to 2377 m

25.07.81 No.36 - Drilled from 2377 m to 2455 m
- Circulate
- Dropped survey
- POOH - retrieved survey
- Changed bit - RIH
- Drilled from 2455 m to 2460 m

26.07.81 No.37 - Drilling from 2460 to 2550 m
- Circulate bottom´s up
- Drop survey
- POOH to shoe, retrieve survey, miss run
- RIH
- Circulate, drop survey
- POOH 2 stds. retrieve survey, miss run - RIH
- Drilling from 2550 to 2578 m

27.07.81 No.38 - Drilling from 2578 to 2645 m
- Circulate bottom´s up
- Drop survey
- POOH 4 stds retrieve survey
- RIH
- Drilling from 2645 m to 2707 m

28.07.81 No.39 - Drilling from 2707 to 2736 m
- Circulate
- Drop survey
- POOH to change bit
- RIH w/new bit to 2330 m - tight hole
- Ream from 2330 to 2371 m
- Lay down 24 joints DP
- RIH w/12 stds - install rubber prot.
- Ream from 2371 to 2685 m

29.07.81 No.40 - Ream from 2685 to 2736 m and circulate
- Drilling from 2736 to 2780 m, 2776 m drilling break
- Circulate bottom´s up for sample (total gas 4% max)
- Driling from 2780 to 2803 m
- Pull out one stand - Circulate
- Wiper trip to 2500 m - OK
- Drilling from 2803 to 2814 m

30.07.81 No.41 - Drilling from 2814 to 2815 m
- Circulate 15 mm - POOH 2 stds - circulate for sample
- RIH
- Drilling from 2815 to 2822 m
- Circulate 15 mm - POOH 2 stds - circulate for sample - RIH
- Drilling from 2822 m to 2830 m
- Circulate bottom's up drop survey
- POOH - recover survey
- Run gyro-multishot survey in 13 3/8 casing

31.07.81 No.42 - Make up core barrel, RIH
- Slip drilling line
- RIH
- Break circulate drop ball
- Core from 2830 - 2848 m
- POOH
- Extract core No.1

01.08.81 No.43 - Service c/bl and stand back in drk. Run wear bushing r.tool - No go clay in riser.
- Circulate through k and c line - no go - run w/jetting tool - clean BOP and wellhead - run to retrieve W.bushing - miss run - clean retrieve tool - RIH OK
- RIH w/test plug
- BOP test - test no good - pull test plug and change o-rings - run w/jetting tool and clean wellhead. Test lower package 7500 psi - upper 3500 psi OK
- Run w.bushing
- Run w/new bit - open hole 2830 to 2848 m
- Drilling 0.5 m 2848 - 2848.5 m

02.08.81 No.44 - Circulate bottom's up for sample
- Drilling from 2848.5 to 2855 m drilling break at 2851 m - rate 28 - 6-7 mm/m
- Circulate bottom's up for sample
- Drilling from 2855 to 2900 m

03.08.81 No.45 - Drilling from 2900 to 2906 m
- Circulate drop survey
- POOH for bit change
- Slum. Logging: ISF-SONIC-GR 2906-1961 m
- RIH w/new bit
- Cut and slip driling line
- RIH
- Drilling from 2906 to 2921 m

04.08.81 No.46 - Drilling from 2911 to 3006 m

05.08.81 No.47 - Drilling from 3006 to 3022 m
- Circulate - drop survey - POOH 5 stds
- Retrieve survey - RIH
- Drilling from 3022 to 3061 m

06.08.81 No.48 - Drilling from 3061 to 3062 m
- Circulate - drop survey
- Change bit - tight spot 2930 m
- Drilling from 3062 to 3096 m

07.08.81 No.49 - Drilling from 3096 to 3152 m

08.08.81 No.50 - Drilling from 3152 to 3158 m
- POOH to change bit - RIH driling from 3158 to 3171 m

09.08.81 No.51 - Drilling from 3171 to 3223 m

10.08.81 No.52 - Drilling from 3223 to 3253 m
- Circulate
- Wiper trip to shoe
- Circulate bottom's up - drop survey
- POOH for logging

11.08.81 No.53 - POOH - retrieve survey
- Log. slum: ISF-SONIC-GR 3251 - 1961 m
  CNL-LDT-GR 3251 - 1961 m
  HDT 3251 - 1961
- RIH
- Slip and cut drilling line
- RIH
- Circulate bottom's up
- POOH

12.08.81 No.54 - POOH
- Retrieve wear bushing - POOH
- Run 9 5/8 casing shoe at 3241 m
- Rig up cement head
- Circulate condition mud

13.08.81 No.55 - Pump spacer
- Cementation lead slurry 1.63 60 m^3
- Displacement
- WOC
- Rig down cement head - lay down landing string
- Set pack off. Test pack off. Kill line broken at 8000 psi
- Change kill hose.
- Run test plug. Test BOP rams, kill choke, 6000 psi and sperical 3500 psi

14.08.81 No.56 - Test BOP - set wear bushing
- Lay down 12 1/4" BHA
- Make up and RIH 8 1/2 BHA
- Driling cement from 3198 to float collar
- Casing test 3500 psi OK
- Drilling cement from float collar to 3253
- Drilling from 3253 to 3258 m
- Bottom's up L.O.T. 1840 psi EMW 2.04
- Drilling from 3258 to 3267 m

15.08.81 No.57 - Drilling from 3267 to 3270 m
- Bottom's up - drop survey
- Slip drilling line. POOH
- Repair drawwork
- POOH
- Retrieve survey. Negative
- POOH
- MAke up new BHA. RIH
- Wait on spare parts (electrical)

16.08.81 No.58 - Wait on spare parts
- Ream from 3266 to 3270 m
- Drilling from 3270 to 3291 m

17.08.81 No.59 - Drilling from 3291 to 3308 m
- Drilling break
- Bottom's up
- Drilling from 3308 to 3332 m
- Circulate
- Drop survey - POOH

18.08.81 No.60 - POOH retrieve survey
- RIH with new bit - slip drilling line
- Drilling from 3332 to 3337,50 m
- Circulate
- POOH
- RIH with core barrel
- Circulate
- POOH
- RIH with core barrel
- Circulate drop ball
- Core from 3337,5 to 3339 m
- POOH
- Extract core.

19.08.81 No.61 - Change core bit. RIH
- Circulate drop ball
- Coring from 3339 to 3348 m
- POOH
- Extract core
- RIH to shoe
- Repair rig

20.08.81 No.62 - Rig repairs
- Slip drilling line
- RIH
- Ream from 3337 to 3348 m
- Drilling from 3348 to 3395 m
- Circulate
- Drilling from 3395 to 3437 m

21.08.81 No.63 - Drilling from 3437 to 3448 m
- Circulate
- Survey
- POOH - retrieve survey
- Change bit. Slip drilling line RIH
- Drilling from 3448 to 3458 m

22.08.81 No.64 - Drilled from 3458 to 3490 m

23.08.81 No.65 - Drilling from 3490 to 3492 m
- Circulate drop survey
- Drilling from 3492 to 3514 m

24.08.81 No.66 - Drilling from 3514 to 3540 m
- POOH
- Logging Schlumberger
  1 ISF-SONIC-GR 3540 - 3240
  2 CBL-VDL-GR 3240 - 1700
  3 LDT-CNL-GR 3540 - 3240

25.08.81 No.67 - Logging. RFT 3323-3329-3341-3351-3366-3372
- Rig down Schlumberger
- RIH
- Slip drilling line
- Run to bottom
- Circulated bottom up
- Rig up schlumberger
- RIH dipmeter. No go below 2932-POH tool
- Rig down Schlumberger
- RIH-hole free to 3513
- Ream 3513 to 3540 - pull back to 3500
- Circulated

26.08.81 No.68 - POOH
- Rig up Schlumberger
- HDT 3505 to 3240
- Velocity survey
- SWCS - 30 shots (1 lost - 1 empty)
- Rig down Schlumberger
- RIH and lay down BHA
- Lay down BHA

27.08.81 No.69 - RIH 5" with 2 7/8 tubing extension
- Wash down to 3515 m
- Set cement plug No.1 from 3515 to 3365 - 9,5 T G cement 1,90 s.g slurry - set cement plug No.2 3355 to 3165 - 10,4 T G cement 1,90 s.g. slurry
- POOH 5" DP and 2 7/8 tubing - Lay down excess 5" DP
- Rig up Schlumberger
- Run junk catcher - attempt to set bridge plug - unsuccessful

28.08.81 No.70 - Set bridge plug at 3130
- Rig down Schlumberger
- Slip and cut drilling line
- RIH 5" DP with tubing extension. Set cement plug No.3 from 2010 to 1910
- POOH

- Change lock pin on compensator
- POOH - lat down - 5" DP
- Rig up Schlumberger for perforating
- RIH with 5" DP close on rams and pressure up
- Attempt to perforate misrun
- Retrieve gun - repair same
- RIH w/gun - pressure up - perforate POOH
- Retrieve wearbushing
- Made up cutting string
- Cut 9 5/8 at 235,50

29.08.81 No.71
- POOH cutting string
- Make up spear. RIH. Retrieve and lay down 9 5/8 casing
- Rig up Schlumberger and 5" DP with lumricator
- Run perfos pressure up - perforate - pressure zero no flow back
- Rig down Schlumberger
- RIH cutting string - cut 13 3/8 at 213 m
- POOH cutting string.
- Attempt to pull out 13 3/8 unsuccessful
- RIH with 9 5/8 cutting string
- Cut 9 5/8 at 340 m POOH string
- POOH 9 5/8 casing
- Run 5" DP with tubing extension at 420 m
- Pressure test 800 psi : 50 mm OK. Previous test not valid.
- Set cement plug No.4 420-220
- Set cement plug No.5 220.110
- Lay down excess 5" DP
- Pick up 13 3/8 cutting string.

30.08.81 No.72
- RIH w/13 3/8 casing cutter. Could not go below 87 m - POOH
- RIH w/revers cir. junk basket. Wash out well head.
- RIH w/13 3/8 casing cutter and cut at 105 m
- POOH
- RIH w/spear and retieve 13 3/8 casing. Lay out same
- Displace riser w/sea water
- Rig up to pull BOP
- Pull BOP
- Make up cutting as to cut 20" and 30" casing RIH.
- Cut 20" and 30" casing.

31.08.81 No.73 - Cut 20" and 30" casing at 97 m
- Attempt to recover same - no go
- RIH with cutting string - cut casings
- RIH and pull ut 20" x 30" and pgb
- Cement sea bed
- Lay down string
- Jump divers - sea bed clear
- Ballasting up rig - anchor handling

01.09.81 No.74 - Anchor handling
- Off loading equipment
- Pick up last anchor at 07.00 hrs.
- End of EAN contract
- Status : "DYVI ALPHA" handed over to SAGA and on her way to Kristiansund for inspection and up-grading.

F3a Bis 2-78 | 11 WELL DATA | WELL: 3/7-3

1) WELL NAME : 3/7-3

2) IDENT. :

3) GEOGRAPHICAL AREA : NORVEGIAN CONTINENTAL SHELF

4) GEOLOGICAL BASIN :

5) FIELD :

6) BLOCK : 3/7

7) PERMIT/HOLDERS :

LICENCE 023

8) PARTNERS :

Name	%	Name	%
EAN	43.6		
NORSK HYDRO P. A/S	34.6		
TOTAL MARINE NORSK A/S	21.8		

9) OPERATOR : EAN

11) REFERENCE WELLS : Name

3/7-1, 3/7-2, 2/6-1, LULU 1

10) INITIAL STATUS

- Exploration ☒
- Development ☐
- Other ☐

12) LOCATION COORDINATES

site: Land ☐ Offshore ☒ Swamp ☐ Other ☐

geographical coordinates: Latitude : N 56°24'54.77" Longitude : E 04°10'54.33"

reference meridian: Paris ☐ Zone 31 Central meridien ☒ 3° East

UTM coordinates: X(m) : 572 913.07E Y(m) : 6 253 058.51N Z(m) :

SITE	LAND	OFFSHORE		SWAMP		OTHER	
Distance RKB/ REF.		92	67				
Reference	GROUND	MUD LINE	ZERO HYDRO				

13) DRILLING OBJECTIVES

Objective n°	Formation	Formation tops vertical depth	Departure	Direction
DANIAN/CRETACEOUS	CHALK			
JURASSIC	SANDSTONE			

14) WELL COURSE

Vertical ☒ Deviated ☐ (Normal ☐ Scourse ☐)

15) WAS THE OBJECTIVE REACHED ?

	yes	no	Formation tops vertical depth	Departure	Direction
OBJECTIVE 1	☒	☐	2818		
OBJECTIVE 2	☒	☐	3325		
OBJECTIVE 3	☐	☐			
OBJECTIVE 4	☐	☐			

16) RESULTS

- ☐ Oil production
- ☐ Gas production
- ☐ Water production
- ☐ Shows but no reservoir
- ☐ Injection well
- ☒ Dry well
- ☐ Temporarily plugged
- ☒ Plugged and abandonned
- ☐ Completed

17) DATES (·)

BEGINNING		END	
Well :	20/06/81	Drilling :	24/08/81
Drilling :	21/06/81	Well :	1/09/81

18) WELL END (··)

Total depth : 3540m Vertical depth : —

Drilled footage : 3448m Lost footage : —

Total departure : Direction :

TOTAL DURATION — Drilling : 66.2 days — Well : 72.6 days

19) COSTS

	CURRENCY UNIT
Before drilling	
During drilling	
After drilling	
Total well	

F3a' Bis 2-78 | 12 LOGISTICS | WELL: 3/7-3

Area management : ELF AQUITAINE NORGE A/S

Located : NORWAY

Land Base : NORWAY

Located : DUSAVIK

• SERVICE COMPANIES

· Mud	: EAM	· Under water T.V.	: SUB SEA SYSTEMS
· Mud logging	: GEOSERVICES	· Testing	:
· Production tests	:	· Well head	: VETCO
· Fishing	:	· Depollution	:
· Positioning	: DECCA SURVEY A/S	· Air transportation	: HELICOPTERE SERVICES A/S
· Electrical logging	: SCHLUMBERGER	· Sea transportation	:
· Meteo	: TOTAL ABERDEEN		: NORMAND VIBRAN
· Diving	: COMEX		: SIDDIS MARINER
· H.P Pumping	: DOWELL		: MANON (STAND BY BOAT)
· Bulking	:		:
	:		:

Beginning of well = first moving in date (if this date is known)
Beginning of drilling = spudding date
End of drilling = date of last bit pulling out or end of electrical logging operations, or pressure surge at the end of production casing cementing operation
End of well = end of well plugging operations laying down included or end of completion

** · Depths ot be calculated from the rotary table
· Drilled footage: distance RKB/ground (or mud line) not included, but side tracks resulting from fishing included
· Lost footage resulting from fishing or course modification without changing the geological objective. Should the geological objective vary, well name or number will change, and the previoos well drilled footage is not considered as a lost footage
· Except change in geological objective requiring a side track, the formula is: Drilled footage - Lost footage = Total depth - Distance RKB/ground

F3b Bis 2-78 | 13 ENVIRONMENT | WELL: 3/7-3

• AREA • LAND ☐ SEA ☒ SWAMP ☐ LAKE ☐

ALTITUDE : _____ WATER DEPTH : 67 meters

DISTANCE FROM BASE : 157 nautic miles DISTANCE FROM SHORE : 125 nautmile

• RELIEF Flat ☒ Slightly undulate ☐ Undulate ☐ Very undulate ☐

• SEA CONDITIONS Calm ☐ Medium ☒ Strong ☐ Very strong ☐

• POLLUTION RISK Low ☐ Medium ☒ High ☐ Very high ☐

• WEATHER Equatorial ☐ Hot ☐ Temperate ☐ Cold ☒ Arctic ☐

• POPULATION DENSITY Nil ☒ Low ☐ Medium ☐ High ☐ Very high ☐

MEANS USED

• NAME OF THE RIG (LAND) : _____

• SUPPORT •

• TYPE / Land ☐ Artificial island ☐ Jack-up ☐ Drillship ☐ Semi-submersible ☒

Swamp barge ☐ Non assisted Platform ☐ Assisted platform ☐ Tender ☐ Other ☐

• SEA SUPPORT NAME : DYVI ALPHA

• PROPULSION: Towed ☐ Self propelled ☒ Power : 6800 HP Speed : 6.4 knots

• POSITIONING

Mooring: Classical ☒ Dynamic ☐ Head : 305°

F3b' Bis 2-78 | 14 MEANS USED (ctd) | WELL : 3/7-3

• DRILLING EQUIPMENT •

DRAWORK MANUFACTURER NATIONAL 1625E CONTRACTOR : DYVI OFF 2/s

• RANGE • Light ☐ Medium ☐ Heavy ☒ Super Heavy ☐ Extra Heavy ☐

• TRANSMISSION • Mechanical ☐ Electric ☒ Hydraulic ☐

• MAIN PUMPS • Number 2 Total hydraulic power 3200 ☐

• RIG DESIGN • Normal design ☒ Compact ☐ Portable ☐ Helirig ☐

Flexorig ☐ Automatic racking ☐ Winterised ☐ ☐

• SURFACE OR SUBSEA EQUIPMENT

B.O.P. STACK	Diameter	API WP
Number 1 DIVERTER	22"	300PSI
Number 2	18 3/4	10000 PSI
Number 3		

WELL HEAD	Manufacturer	Type	Diameter	API WP
Number 1	VETCO	SGS	18 3/4	10000 PSI
Number 2				
Number 3				

MUD LINE SUSPENSION: ☐ yes ☐ no Manufacturer :

RISER

	Number 1	Number 2
Diameter :	22" x 1/2" wall	
Connector :	REGAN FC7	
Buoyancy system :	no ☒ yes ☐	no ☐ yes ☐

F3c Bis 2-78

15 TECHNICAL SECTION

WELL : 3/7-3

• OPEN HOLE SECTIONS •		• CASINGS •				
DIAMETER	TOTAL DEPTH	DIAMETER	COMPOSITE STRING DIAMETERS	SHOE DEPTH	HANGER DEPTH	TOP CEMENT IN ANNULUS
36"	153,50	30"		153	90	mud line
26"	666	20"	133 #/ft K55. Buff	653	–	mud line.
17 1/2	1970	13 3/8	72# N80 VAM 72# P110 VAM	1961	90,5	450
12 1/4	3253	9 5/8	47# P110 VAM 53,5# P110 VAM	3241	89,80	1860
8 1/2	3540					

F3c' Bis 2-78

/6 FOOTAGE (METERS OR FEET)

WELL : 3/7-3

Interval	Total footage in the interval	DRILLING			CORING			TURBODRILLING			SIMULTANEOUS PILOT DRILLING AND HOLE OPENING			HOLE OPENING		RE-DRILLING AND/OR REAMING		Abandonned footage in the interval	Drilling fluid
		Ø	m or ft	h	Ø	m or ft	h	Ø	m or ft	h	Ø	m or ft	h	m or ft	h	m or ft	h		
36"	61,50										26" 36"	61.50							Sea water + MUD
26"	512,50	17½	512,50	26^00										512,50	20^30				Bento mitique
17½	1304	17½	1304	106^00												4	1^00		Shale Trol LFC
12¼	1283	12¼	1265	295^00	8 15/32	18	13^4											12	FCL LC
8½	287	8½	276,50	122^00	8 5/32	10,50	15^00												FCL LC

F3d Bis 2-78

17 CORE DATA SUMMARY

WELL : 3/7.3

Core Number	DEPTH Ft or m. from	DEPTH Ft or m. to	% Recovered	Formation	Core Number	DEPTH Ft or m. from	DEPTH Ft or m. to	% Recovered	Formation
1	2830	2848	60	LIMESTONE					
2	3337,50	3339	20	Sandstone					
3	3339	3348	100	Sandstone					

CLABS

Run N°	DEPTH ft or m. from	DEPTH ft or m. to	Number of samples	Formation	Run N°	DEPTH ft or m. from	DEPTH ft or m. to	Number of samples	Formation
1	3504	3285,50	28	SANDSTONE					

F3d' Bis 2-78 | 18 FORMATION TEST SUMMARY | WELL : 3/7-3

Test N°	Date	Type of test *	Tested interval from ft or m.	Tested interval to ft or m.	Succeful Yes	Succeful No	Reason of failure (**)	Observations
			ELECTRICAL LOGGING SUMMARY					1/100 1/500
	8½	26/08/81	HDT VSP					3505 - 3240 × × 2500 3520

* TOHP - Test open hole full diameter
TOHR - Test open hole - rat hole
STOHP - Straddle test open hole full diameter
STOHR - Straddle test open hole rat hole
TCSG - Test casing
STCSG - Straddle test casing
FIT - Formation interval tester

** FP - Packer leak
BO - Tool plugged
NO - Test not opened
IN - Test interrupted
XX - Other (to be specified)

ELECTRICAL LOGGING SUMMARY

Interval	Date	Nature and Run N°	DEPTH ft or m. from	DEPTH ft or m. to	Scales 1/20	Scales 1/200	Scales 1/500
17½	24/06/81	LDL - GR ISF - SONIC . GR	666	153		× ×	× ×
17 1/2	10/7/81	ISF - SONIC - GR	1970	653		×	×
17 1/2	16/7/81	Thermo 13 3/8	1870	0		×	×
"	17/7/81	Perforation 13 3/8	1925				
"	19/7/81	Perforation 13 3/8	1912				
"	18/7/81	Thermo 13 3/8	1500	0		×	×
"	"	CBL 13 3/8	1935	500		×	×
12 1/4	30/7/81	GYROSCOPIC MULTISHOT SURVEY	1961	92			
12 1/4	3/8/81	ISF - SONIC - GR	2906	1961		×	×
12 1/4	11/8/81	ISF - SONIC - GR CNL - LDT - GR HDT	3251	1961		×	×
8 1/2	24/8/81	ISF-SONIC-GR CBL-VDL-GR	3540 3240	3240 1700		× ×	×
"	25/08/81	LDT CNL GR RFT 3323 3329 3341 3351 3366 3372	3540	3240		×	×

F3e Bis 2-78 | 19 TIME DISTRIBUTION | WELL : 3/7-3

		• ITEMS •	INTERVALS : Duration in hours									Duration
			MOVING	36"	26"	17½	12¼	8½	ABONDON			% by total duration
MOVING	D1	Rigging up, transportation and tearing down	15						7 45			
	D2	Waiting on weather	7									
	D3	Waiting : other										
DRILLING - CASING	F1	New hole drilling		9	26	106	295	122				
	F2	Drilling trips		1	3	24	56 30	30				
	F3	Miscellaneous drilling operations			49	65	10 30	29 30				
	F4	Casing and cementing		28	55	35 30	68					
FORMATION SURVEYS	G1	Coring					13	15 00				
	G2	Coring trips and miscellaneous					25	16 00				
	G3	Testing and related operations										
	G4	Electrical logging			11	39	26 30	56 00				
INTERRUPTIONS OF OPERATIONS UNDER F & G	A1	Sticking - Fishing										
	A2	Losses and well flowing mud treatment				238 30	4					
	A3	Waiting on weather										
	A4	Waiting : other				6	3 30	23 00				
COMPLETION AND PLUGGING	C1	Completion - Formation treatment and Production tests										
	C2	Abandon							123 45			
	C3	Waiting on weather										
	C4	Waiting : other										
DURATION BY INTERVAL →			22 00	38 00	144 00	514	602	291 30	131 30			

F3e' Bis 2-78

2° INTERRUPTIONS OF OPERATIONS

WELL : 3/7-3

OPERATIONS IN PROGRESS	DURATION \ REASONS	STICKING FISHING		LOSSES, FLOWING MUD TREATMENT		WAITING ON WEATHER		WAITING : OTHER	
		Number	Duration (h)	Number	Duration (h)	Number	Duration (h)	Number	Duration (h)
Moving (D2-D3)	Less than 24 h					1	7		
	From 1 to 5 days								
	More than 5 days								
	TOTAL →								
Drilling, casing formation surveys (A1-A2-A3-A4)	Less than 24 h							6	32 30
	From 1 to 5 days								
	More than 5 days								
	TOTAL →								
Completion (C3-C4)	Less than 24 h								
	From 1 to 5 days								
	More than 5 days								
	TOTAL →								
TOTAL →						1	7	6	32 30

TOTAL DURATION OF INTERRUPTIONS

During moving : 7 00

During drilling - Casing or formation surveys : 32 30

During completion and plugging :

TOTAL IN HOURS → 39 30

TOTAL IN DAYS →

F3f Bis 2-78 | 21 MUD SUMMARY BY INTERVAL | WELL : 3/7.3

INTERVAL : PHASE 36" From : 92 RLO to : 1535

Mud type used in this interval : SEA WATER - BENTONITE

• USEFUL DATA •

CASINGS

- Diameter : 30"
- Hanger :
- Shoe : 153
- Casing :
- Lenght : 61

BALANCE OF VOLUMES bbl or m3

- Initial volume : 0
- Added volume : 160
- Jetted volume : 160
- Losses in formation :
- Final volume : 0

DRILLING

Drilled (m or ~~ft~~) from : 92 to : 1535 duration (date) from : 20/06/81 to : 22/06

Footage (m or ft) : 615 in :

Average dllg rate drilling hours : 9

Internal casing vol. : 245 m³ Losses :

Pumping rate : 4800 l/mn 1500 psi

• MUD CHARACTERISTICS •

	mini	maxi	average
Weight: in flow / out flow			
Viscosity: M.V.			
A.V.			
P.V.			
Y.P.			
Gels: 0'			
10'			
API WL: API			
HP-HT			
Pressure T°			
Ph			
Pf			
Pm			
Ca^{++} (g/l)			
SO4Ca			
Clno			
CaCl2			
% water			
% oil			
oil/water ratio			
% solids			
Solids density			
% Sand			
T °C			

Depth (ft)	Lithology

• CONSUMPTIONS •

CHEMICALS	QUANTITY Total m³ or T	QUANTITY Kg/ft or m drilled	QUANTITY Kg/m³	COST Unit Price	COST Total Cost	%
CAUSTIC	0,5	8,1	3,1	652	326	2
BENTONITE	17	276	106	315	5355	25
G CEMENT	64			213	13632	63
D 77 accelerator	2,195			1057	2320	10
SEA WATER RLO	160					
SEA WATER CEMENT	20,6					
TOTAL					21.633	

Total cost of { Interval : 21.633 / Drilled meter ~~feet~~ 351,75

Currency : U.S. $

Conversion rate used :

F3f Bis 2-78 | **MUD SUMMARY BY INTERVAL** | **WELL : 317.3**

INTERVAL : 26" | From : 153,5 to : 666 m

Mud type used in this interval : BENTONITIQUE

• USEFUL DATA •

CASINGS

- Diameter : 20"
- Hanger :
- Shoe : 653
- Casing : 563
- Lenght : 563

BALANCE OF VOLUMES bbl or m3

- Initial volume : 0
- Added volume : 763
- Jetted volume : 763
- Losses in formation : 0
- Final volume : 0

DRILLING

Drilled (m or ft) {from : 153,5 / to : 666} duration (date) {from : 23/06 / to : 27/06}

Footage (m or ft) : 512,5 in : 265 j

Average dllg rate 19,7 m/h. drilling hours : 26 H

Internal casing vol. : 97,5 Losses : 0

Pumping rate : 4400 l/mn.

• MUD CHARACTERISTICS •

	mini	maxi	average
Weight: in flow	1.14	1.18	
Weight: out flow	1.18	1.30	
Viscosity: M.V.	50	100	
Viscosity: A.V.			
Viscosity: P.V.	20		
Viscosity: Y.P.	16		
Gels: 0'	6		
Gels: 10'	36		
API WL: API	6.7		
API WL: HP-HT			
API WL: Pressure			
API WL: T°			
Ph	9.5		
Pf	0.4		
Pm			
Ca^{++} (g/l)			
SO4Ca			
Clna	22		
CaCl2			
% water	89		
% oil			
oil/water ratio			
% solids			
Solids density			
% Sand	0.4	4	
T °C			

• CONSUMPTIONS •

CHEMICALS	QUANTITY Total m^3 or T	QUANTITY Kg/ft or m drilled	QUANTITY Kg/m^3	COST Unit Price	COST Total Cost	%
BARITE	150	292	196	134	20100	20,8
BENTONITE	66	128	86	328	21648	22,5
SOUDE	3,175	6,2	4.2	545	1730	1,8
FCL	2,825.	5.5	3,7	511	1444	1,5
STAFLO R.	1,525	3	2	4950	7548	7,8
CMC LV	0,4	0,8	0,5	2314	926	1
BEMALOID	0,06	E	E	3777	227	0,2
CIMENTS	160			213	34080	35,4
D.75.	4,850			1787	8667	9
TOTAL					96370	

Depth (ft)	Lithology
153	SAND-ARGILLAY
360	
666	CLAY.

Total cost of { Interval : 96 370 $ / Drilled meter / feet 188

Currency : US $

Conversion rate used :

F3f Bis 2-78 — **MUD SUMMARY BY INTERVAL** — **WELL : 3/7-3**

INTERVAL 17 1/2 — From : 666 m to : 1970 m

Mud type used in this interval : Sea Water / SST 202 / FCL

• USEFUL DATA •

CASINGS

- Diameter : 13 3/8
- Hanger :
- Shoe : 1963
- Casing :
- Lenght :

BALANCE OF VOLUMES bbl or m3

- Initial volume : 0
- Added volume : 1428
- Jetted volume : 672
- Losses in formation : 402
- Final volume : 354

DRILLING

Drilled (m or ft) from : 666 to : 1970 — duration (date) from : 29/06/81 to : 19/07

Footage (m or ft) : 1304 in : 21 days

Average dllg rate ____ drilling hours : 103*30

Internal casing vol. : 160 Losses :

Pumping rate : 3900 l / 2500 psi

• MUD CHARACTERISTICS •

	mini	maxi	average
Weight in flow	1.13	1.55	
Weight out flow			
Viscosity M.V.	45	60	
Viscosity A.V.	28	51	
Viscosity P.V.	20	43	
Viscosity Y.P.	16	16	
Gels 0'	3	4	
Gels 10'	5	28	
API WL API	4.5	5.4	
API WL HP-HT			
API WL Pressure T°			
Ph	9.5	9.8	
Pf	0	0.4	
Pm			
Ca^{++} (g/l)			
SO4Ca			
Clna	32	38	
CaCl2			
% water			
% oil			
oil/water ratio			
% solids	7	23	
Solids density			
% Sand	0.5	0.4	
T °C			

• CONSUMPTIONS •

CHEMICALS	QUANTITY Total m^3 or T	Kg/t or m drilled	Kg/m^3	COST Unit Price	Total Cost	%
BARYTE	1 291	990	877	1.34	172994	46.5
BENTONITE	68	52	46	315	21420	5.3
CAUSTIC	19,8	15,2	13.4	652	12910	3.2
FCL	34,75	2.6	23.6	619	21510	5.3
LC	0,9	0.7	0.6	1004	904	0.2
CMC LV	3,4	2.6	2.3	4950	16830	4.1
CMC HV	2,5	1.9	1.7	4950	12375	3
STAFLO	1,675	1.3	1.1	5360	8978	2.2
STAFLO R	3,545	2.7	2.4	5700	20207	5
BICARBONATE	0,900	0.7	0.6	386	347	E
DRIS BAC	1,7	1.3	1.2	5360	9112	2.2
DEFOAMER	0,800	0.6	0.5	3777	3022	0,7
SST 202	13,350	10.2	9	1356	18103	4.5
DETERGENT	0,800	0.6	0.5	1806	1445	0.4
BAR FREE	0,850			4500	3825	0,9
LCM	6,305			1345	8480	2.1
NATROSOL	0,075			7738	580	E
G CEMENT	273			196	53508	13.2
D 47	0,020			5700	114	E
D 73	0,154			12616	1943	0.5
D 75	4,275			1783	7622	1.9
D 77	2,195			1057	2320	0.6
D 80	0,350			7186	2515	0.6
D 81	1,040			5284	5495	1.4
TOTAL					406.558	

Depth (ft)	Lithology
	Shales and
	Clays

Total cost of { Interval : 406.558 ; Drilled meter / feet 312 US $

Currency : U.S. $

Conversion rate used :

F3f Bis 2-78 | **MUD SUMMARY BY INTERVAL** | WELL : 3/7-3

INTERVAL 12 1/4 | From : 1970 m to : 3253 m

Mud type used in this interval : Sea Water, FCL, LC

• USEFUL DATA •

CASINGS

- Diameter : 9 5/8
- Hanger :
- Shoe : 3211
- Casing :
- Lenght :

BALANCE OF VOLUMES bbl or m3

- Initial volume : 344
- Added volume : 491
- Jetted volume : 507
- Losses in formation : 10
- Final volume : 318

DRILLING

Drilled (m or ft) from : 1970 to : 3253 | duration (date) from : 20/07-81 to : 14.08

Footage (m or ft) : 1283 in : 26 days

Average dllg rate ____ drilling hours : 302.30

Internal casing vol. : 118 Losses :

Pumping rate : 2400 l/mn. — 2400 esi

• MUD CHARACTERISTICS •

		mini	maxi	average
Weight	in flow	1.63	1.63	
	out flow			
Viscosity	M.V.	50	65	
	A.V.	50	71	
	P.V.	40	57	
	Y.P.	20	28	
Gels	0'	2	6	
	10'	12	32	
API WL	API	2.6	4.0	
	HP-HT			
	Pressure			
	T°			
	Ph			
	Pf	0,3	1	
	Pm	2.2	5	
	Ca^{++} (g/l)	0,2	0,4	
	SO4Ca			
	Clna	38	40	
	CaCl2			
	% water	74	76	
	% oil			
	oil/water ratio			
	% solids			
	Solids density			
	% Sand			
T °C				

• CONSUMPTIONS •

CHEMICALS	QUANTITY Total m^3 or T	Kg/ft or m drilled	Kg/m^3	COST Unit Price	Total Cost	%
BARYTE	450	357	932	134	61372	36.7
BENTONITH	19	14.8	38.6	328	6232	3.7
CAUSTIC	7,850	6 1	15.9	545	4278	2.6
FCL	33,875	26.4	68.9	551	18665	11.2
LC	11,815	9.2	24	1004	11862	7.1
CMC HV	0,1	ε	0,2	2612	261	0.2
STAFLO	0,9	0.7	1,8	4435	3992	2.4
STAFLO R	1,35	1	2.7	4950	6683	4
BICARBONATE	0,5	0.4	1	388	194	0.1
DEFOAMER	0,740	0.6	1.5	3777	2795	1.7
LIME	0,2	0.2	0.4	181	36	ε
DETERGENT	0,6	0.4	1.2	1806	1084	0.6
MATROL	0,075	-		7738	580	0.3
G CEMENT	88			213	18744	11.2
D 73	1,270			12616	16022	9.6
D 75	1,040			1787	1859	1.1
D 80	0,850			7197	6109	3.7
D 81	1,155			528	6103	3.7
TOTAL					166.871	

Depth (ft)	Lithology
1970	SHALES W/ SAND - LIGHT GREY AND DOLORITE
2723	
2741	SHALES W/ MARLS, LIMESTONE - SANDSTONE
2920	
3243	ARGILLACEOUS LIMESTONE WITH CHERTS
3253	MARLS W/ LIMESTONE

Total cost of { Interval : 166871 US $ / Drilled meter 130

Currency : US $

Conversion rate used :

F3f Bis 2-78 | 21 MUD SUMMARY BY INTERVAL | WELL : 3/7.3

INTERVAL 287 M 8 1/2 | From : 3253 M | to : 3540 M

Mud type used in this interval : SEA WATER FCL/LC

• USEFUL DATA •

CASINGS

- Diameter :
- Hanger :
- Shoe : 3241 M
- Casing : 9 5/8
- Lenght :

BALANCE OF VOLUMES bbl on m3

- Initial volume : 318
- Added volume : 75
- Jetted volume : 393
- Losses in formation : -
- Final volume : -

DRILLING

Drilled (m or ft) { from : 3253 M / to : 3540 M } duration (date) { from : 14.08 / to : 24.08 }

Footage (m or ft) : 287 M in : 11 days

Average dllg rate - drilling hours : 116 50 H

Internal casing vol. : 119 M3 Losses :

Pumping rate : 1500 L/mn @ 2500 Psi

• MUD CHARACTERISTICS •

	mini	maxi	average
Weight in flow	1.64	1.65	1.64*
Weight out flow	1.65	1.66	1.65*
Viscosity M.V.	55	70	62
Viscosity A.V.	57	71	64
Viscosity P.V.	46	52	49
Viscosity Y.P.	22	28	25
Gels 0'	4	10	7
Gels 10'	16	60	38
API WL API	2.2	3	2.6
API WL HP-HT	-	-	-
API WL Pressure	-	-	-
API WL T°	-	-	-
Ph	11.5	11.5	11.5
Pf	0.80	0.95	0.90
Pm	3.5	4.5	4
Ca^{++} (g/l)	0.80	0.95	0.90
SO4Ca			
Cl ne	40	62	51
CaCl2			
% water	75	75	75
% oil	0	0	0
oil/water ratio			
% solids	25	25	25
Solids density			
% Sand	0.25	0.25	0.25
T °C	48	56	52

• CONSUMPTIONS •

CHEMICALS	QUANTITY Total m3 or T	Kg/ft or m drilled	Kg/m3	COST Unit Price	Total Cost	%
BARYTE	105	380.	1453	134	14608	15.6
BENTONITE	5	17.44	66	328	1640	1.8
CAUSTIC	1.05	3.66	14	545	572.43	0.6
CMC HV	.4	1.39	5.3	2612	1044.80	1.1
STAPLO R	.25	0.87	3	4950	1237.50	1.3
STAPLO LO	.45	1.56	5.3	4435	1774	1.9
FCL	5.25	18.29	70	531	2892.75	3.1
LC	3.25	11.32	43	1004	3263	3.5
DEFOAMER	0.08	0.28	1	3777	302.16	0.3
LIME	0.04	0.14	0.5	181	7.24	E
	BOUE	CIMENT				
SEA WATER	50 M3	-				
FRESH WATER	25 M3	11 M3				
				$/T		
CMT G	131			213	27903	29,9
				$/M3		
D 73	1.8 M3			12616	22708.8	24.3
D 80	.5 "			7187	3593.5	3.8
D 81	.005 "			5284	26.44	
D 109	.060 "			7001	420.06	0.4
D 77	3.773			1057	3988.06	4.3
	SPACER					
NATROSOL	.125			7738	967.25	1
BARYTE	48			134	6432	6.9
TOTAL	178.03 T				93378.81	

Depth (ft)	Lithology
→ 3231 M	MARL
-	SHALE BROWN TO DARK
→ 3504	SANDSTONE
	ANHYDRITE
3520 M → 3540 M	SALT

Total cost of { Interval : 93 378,81 / Drilled meter / foot : 325,36 }

Currency : $ US.

Conversion rate used :

F3g Bis 2-78

22 DRILL STRING COMPOSITION AND DEVIATION SURVEYS

WELL : 3/7-3

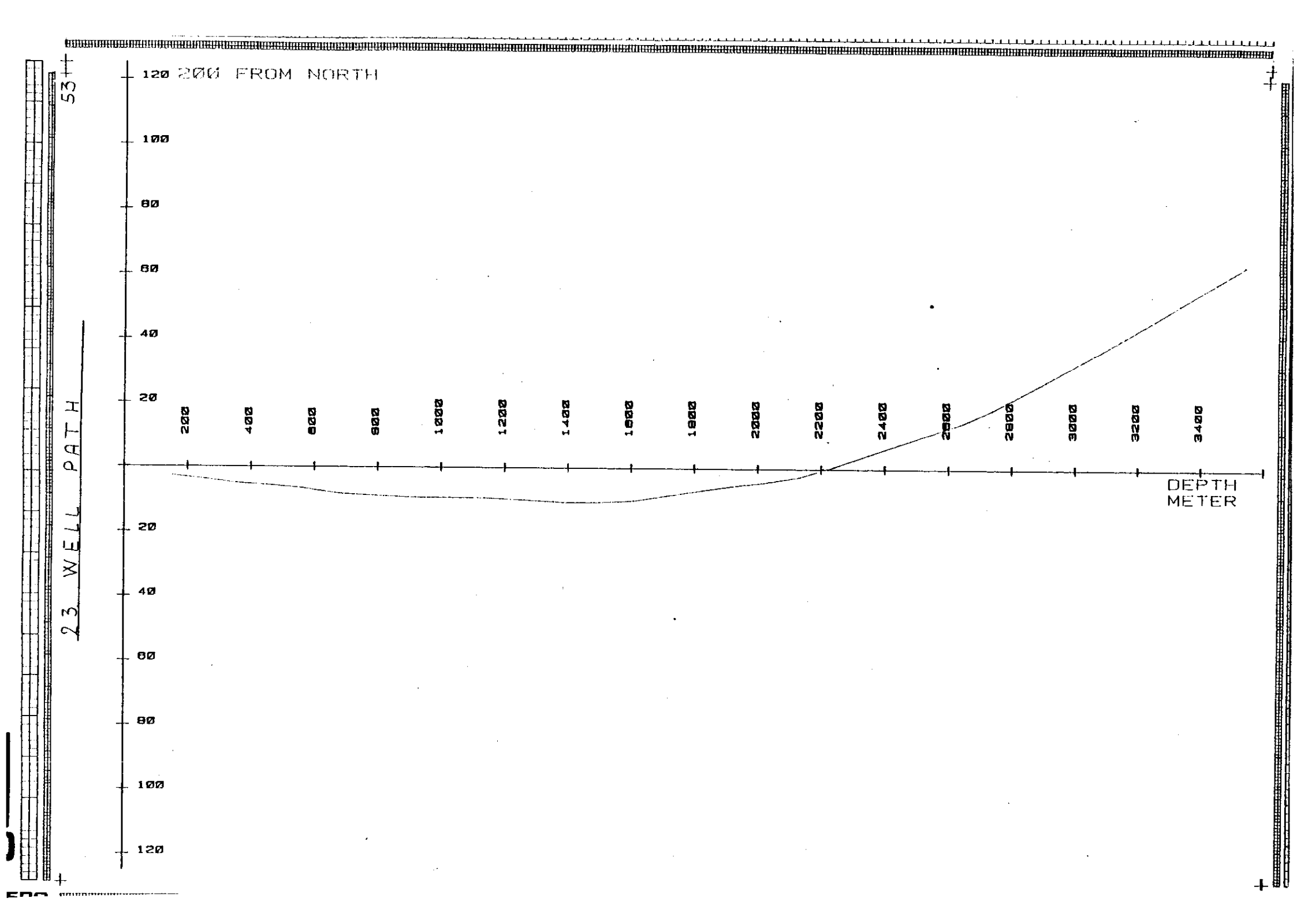
RUN NUMBER	INTERVAL	DRILL STRING	. DRILLING .			. SURVEYS .				
			Weight on bit K lbs	R.P.M.	Flow rate L/m	Number	Date	Drilled depth (m or ft)	Inclination (°)	Direction (°)
1	92 153.50	26" Bit 4 o 36" Bit sub 3DC 9½ 9DC 8" xo	10/25	40/60	1800	1		153	030	Tot co
2	666	17½ Bit . NB 1DC 9½ - STB . 2DC 9½ - STB . xo . 9DC 8" . xo 1 HWDP - DART SUB - 14 HWDP	2/20	60/100	3600 4000			265 354 443	0 45 0.45 0	
3	153 TO 666 666 - 700	17½ Bit + 26" UR + 1DC 9½ - STB - 2DC 9½ STB xo 9DC 8" Bit . Bit Sub + 3 9½ DC + xo + 15 8¾ DC + xo + 1 HWDP + DART SUB + 14 HWDP	5/10 5/15	60 60	3600 4000			567 666 700	1° 0° 6 1/4°	
4	700 1384	17½ Bit + NB STB + 3 DART DC 9½ + STB + MONEL 9½ + 1 9½ DC + STAB xo + 15 DC 8" + xo + 1 HWDP + DART SUB + 14 HWDP.	5/20	120	4000			800 1027 1384	½ N 40 W 1/4 W 3/4 N 85 W	
5	1384 1716	INCORPORATED DRILLING JAR 8" BOWEN . below the Last 3 - 8" DC IN THE BHA . N° 4	20/35	135	3750			1499 1607 1716	1/4 S 60 W 1/2 S 75 W 2 3/4 S 10 W	
6	1716 1970	11	20/40	120	3750			1824 1932	1 1/4 S 10 W 1 1/4 S 35 E	
7		Bit . Bit Sub - 4 DC 8" - xo - 1 HW - Dart Sub - 13 HW - DP			2200					
8	1970 2027	Bit - Bit Sub - 12 DC 8" - Jar - xo - 1 HW - Dart sub - 14 HW - DP	20	100	2400					
9		Bit - Bit Sub - Monel - 1 DC 9½ - xo - 12 DC 8" - Jar - 3 DC 8" - xo - 1 HW - Dart Sub - 14 HW - DP								
10	2027 2455	Bit - Near bit - short DC 9½ - Stab - Monel - 1 DC 9½ - Stab - xo - 12 DC 8" - Jar - 3 DC 8" - xo - 1 HW - Dart sub - 14 HW - DP	20	100	2400	20 21 22	22/7/81 23/7/81	2019 2131 2340	1° : S 30 E 1½ ; S 5 E 2 : S 30 W	
11		11	25/35	120	2450	24 25	27/7/81 28/7/81	2645 2735	2 1/4 S 3° S 30 W	
12	2736 2830	11	30/35	120	2450 1900	26	30/7/81	2830	3° S 15 W	
13		B - C - XO - 12 DC 8" - 1 JR - 3 DC 8" - XO - 1 HW - 1 DART SUB 14 HW - DP -	15/20	80/90	800					
14	2848 2906	B - N.B - SHORT DC 9½ - SB - MONEL - 1 DC 9½ - ST - XO - 12 DC 8" 1 JR - 3 DC 8" - XO - 1 HW - DART SUB - 14 HW - DP -	30/45	115/100	2200	27	31/8/81	2906	3 1/4 S 15 W	
15		11	45	55/65	2300	28 29	5/8/81 6/8/81	3022 3062	3° S 33 W 3 1/4 S 30 W	
16	3062 3158	11	45	55/95	2300	30	8/8/81	3158	3 1/4 S 30 W	

F3g Bis 2-78

DRILL STRING COMPOSITION AND DEVIATION SURVEYS

WELL : 3/7-3

RUN NUMBER	INTERVAL	DRILL STRING	. DRILLING .			. SURVEYS .				
			Weight on bit	R.P.M.	Flow rate	Number	Date	Drilled depth (m or ft)	Inclination (°)	Direction (°)
17	3158 3253	B - NB - Short DC 9½ - SB - Monel - 1DC 9½ - ST - XO - 12DC 8" - 1JR - 3DC 8" - XO - 1HW - Dart Sub - 14HW - DP -	45	95	2300	31	10/8/81	3253		
18	3253 3270	Bit - Bit Sub - Short DC - K Monel - 19 DC 6½ - Jar - 3DC 6½ - 15 HW - Dart Sub - DP	25/30	100	1700					
19	3270 3540	Bit. Near bit - Short DC - Stab - K Monel - Stab - 1DC 6½ - Stab - 21 DC 6½ - Jar - 14 HW - Dart Sub - 1HW - DP 5"	20/35	80/100	1300	32 33 34	17/8/81 21/8/81 23/8/81	3332 3448 3492	3 3/4 3° 3 1/2	S 40 W S 33 W S 25 W
20	3332 3339	Core bit - Core barrel - XO - 21 DC 6½ Jar - 14 HW - Dart Sub - 1HW - DP	20	80	900					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100
80
60
40
20
200 FROM NORTH
200
400
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1200
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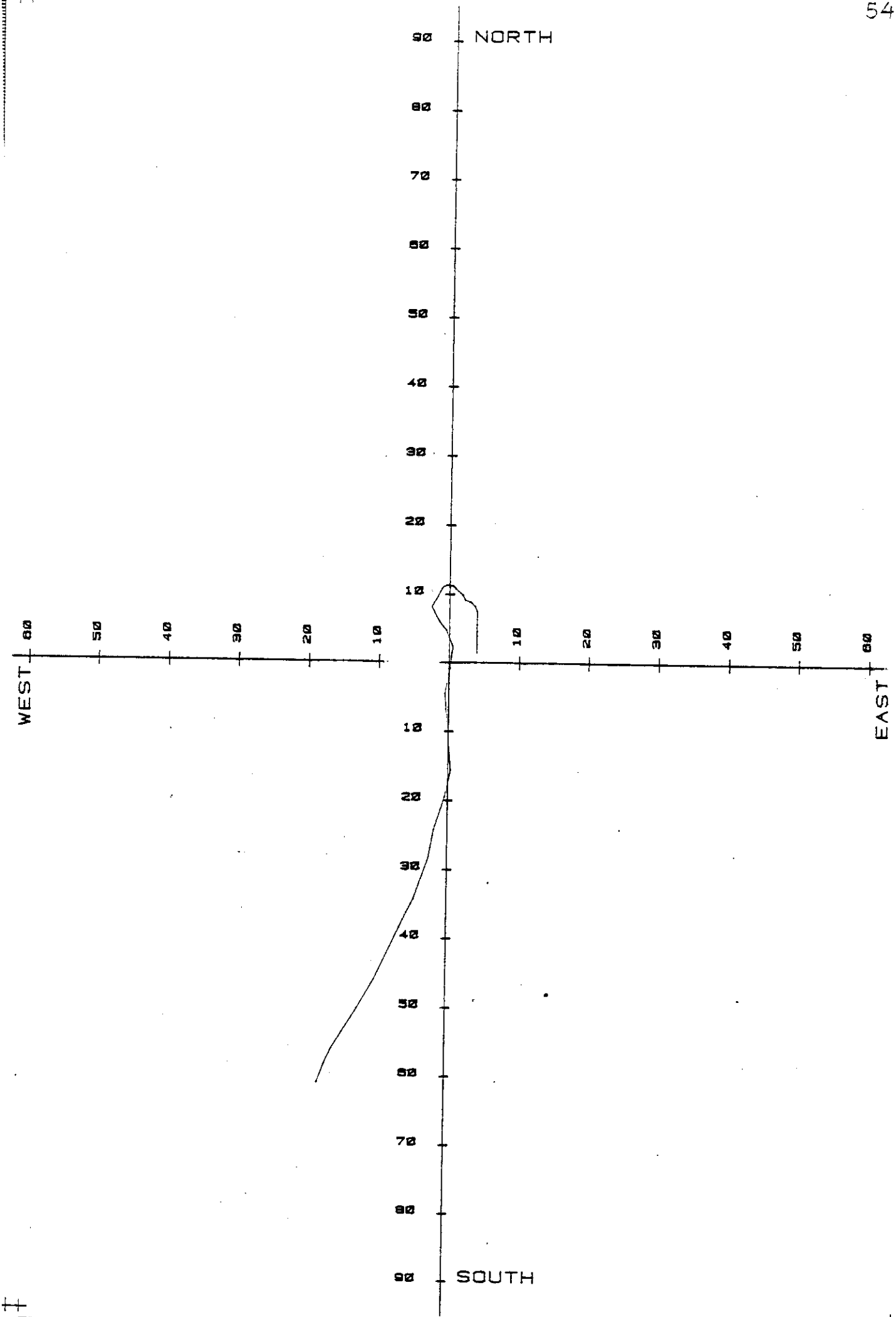
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WEST
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EAST
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20
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70
80
90
SOUTH

F3 h Bis 2-78 | 24 COMPLETION STATUS | WELL: 3/7-3

1) COMPLETION (If carried out by the drilling rig)

yes ☐

no ☐

2) - CASINGS, TUBINGS AND ANNULUS STATUS

CASING AND TUBING DIAMETER	SHOE DEPTH	HANGER DEPTH	CASING CUT DEPTH (event)	CEMENT TOPS		ANNULUS FLUIDS	
				OD	ID	NATURE	SG
30"	153	90		MUDLINE		SLURRY Cement	1,90
20"	653	"		MUDLINE		SLURRY Cement	1,50 1,96
13 3/8	1961	90,5		450 m		Mud Lead slurry Tail slurry	1,55 1,58 1,90
9 5/8	3241	89,80		1860	3198	Mud Lead slurry Tail slurry	1,63 1,63 1,90

Depths of perforations :

Tubing anchoring device and packer depth(s) :

3) - CEMENT PLUGSAND BRIDGE PLUGS (CP and BP)

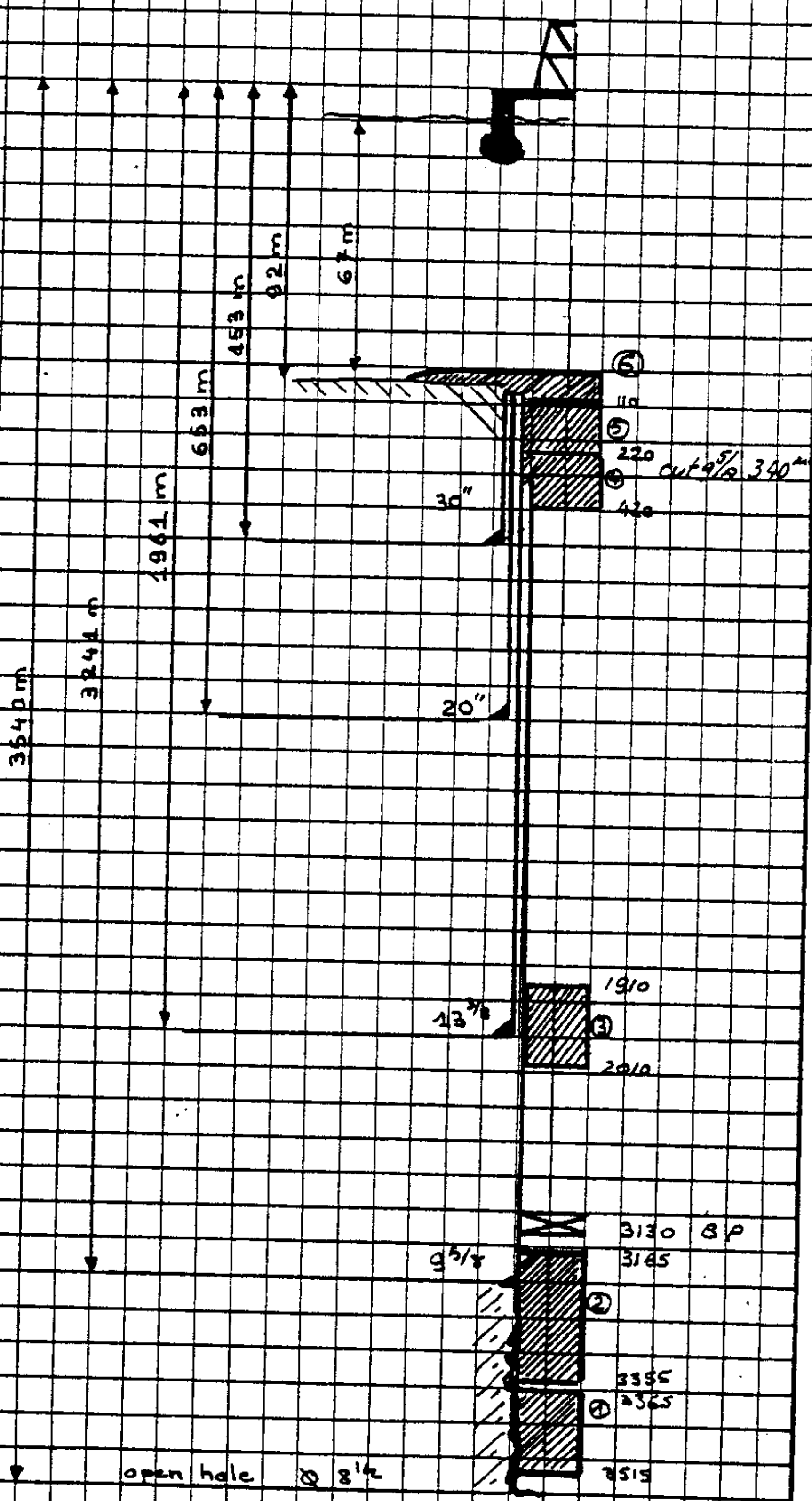
CEMENT PLUG (CP) BRIDGE PLUG (BP)	CP n°1	CP 2	BP	CP 3	CP 4	CP 5	CP SURFACE		
FROM (m or ft)	3515	3355	3130	2010	420	220	110		
TO (m or ft)	3365	3165		1910	220	110	seabed		
TESTED	☐ yes ☒ no	☐ yes ☒ no	☐ yes ☒ no	☐ yes ☒ no	☐ yes ☒ no	☐ yes ☒ no	☐ yes ☒ no	☐ yes ☐ no	☐ yes ☐ no
BY PRESSURE OR WEIGHT									

4) - WELL HEAD

Description of abandonned equipment : _____

RELOCALIZATION DEVICE { yes ☐ / no ☒ } TYPE : _____

F3h' Bis 2-78 WELL TECHNICAL SECTION (COMPLETION STATUS) WELL : 3/7-3



Try to cut the 13 3/8 Csg at 213 m, recovered Csg
No succes up 300.000 lbs overpull

After plug Nbers 4 and 5
Cut Csg 13 3/8 at 105 m
recovered same

9 5/8 Perforated at 230 m
13 3/8 " at 200 m

		cement		D73	D80	D109	D77	D81	D47	R.
Cement Plugs	①	9,5 T	FW 4m3	283 L	200 L	48 L				
	②	10,4 T	FW 4,6	184 L	184 L	19 L			5 L	1,90
Bridge Plug	set at 3130								3,5 L	1,90
Cement plug	③	6 T	FW 2,5		105 L			5,37 L	3 L	1,90
	④	16 T	SW 7				572 L			1,90
	⑤	9,5 T	SW 4				337 L		4,8 L	1,90
	⑥	55 T	SW 24				1950 L			1,90

F3 i Bis 2-78 | 26 MAIN CONSUMPTIONS OF THE WELL | WELL: 3/7-3

ROCK BITS AND CORE BITS

BIT DIAMETER	CONE BITS				DIAMOND BITS			BITS		Total by interval
	Tooth tricone bits	Insert tricone bits	Removable center	Bicone bits	Drilling bits	Core bits	Removable center	Drag bits	Special bits	
26" +HO 36"	1									1
17½ +UR 26"	1									1
17 1/2	3									3
12 1/4	6	2				1/4				8 1/4
8 1/2	3	2				1/4				5 1/4
								TOTAL →		—

CASINGS

Diameter	Weight (lbs/Ft)	Thread	Grade	Length (Ft or m)	Observations
30"	310	Sgunck Joint	X52	49.75	
20"	133	Butt	K55	555.21	
13 3/8	72	VAM	N80 P110	1255,61 614,12	
9 5/8	53,5#; 47#	VAM	P110	3151	

F3i' Bis 2-78	MAIN CONSUMPTIONS OF THE WELL	WELL: 3/Z-3

• CEMENTS •

Class	QUANTITY (T)			Class	QUANTITY (T)		
	Casing	Well abandon	Plugging losses		Casing	Well abandon	Plugging losses
G	30" 49T			G	9 5/8 73T		
G	20" 140T						
G	13 3/8 108T		135T				

CHEMICALS

CHEMICAL NAME	QUANTITIES ADDED m³ or T	CHEMICAL NAME	QUANTITIES ADDED m³ or T
CAUSTIC SODA	32.375	D 73	3.254
BENTONITE	175.	D80	1.700
BARYTE	2009.	D81	1.045
FCL	76.7	D109	.060
LC	15.365	D 77	5.190
STAFLO R	6.670	D75	10.165
STAFLO EXLO	2.375		
CMC LV	4.100	CEMENT G	716
DEFOAMER - BEVALOID -	1.680	NATROSOL	.285
CMC HV	3.000		
BICARBONNATE	1.400		
DRISPAC	1.700		
SST 202	13.350		
DRILLING DETERGENT	1.400		
PIPE FREE	.850		
Loss MATERIAL CIRCULATION	6.305		
LIME	0.240		

WATER - DIESEL/OIL (not added in mud)

FRESH WATER (m³)	25		
DIESEL-OIL (m³)			

WELL HEADS, HANGERS (Ø - API working pressure - Type)

VETCO 18 3/4 10000 PSI WP TYPE SG5 WELLHEAD HOUSING

W/ 20" OD Extension

18 3/4 x 13 3/8 Csg hanger

18 3/4 x 9 5/8 Csg hanger.

F3 k Bis 2-78 | 27 MONTHLY METEOROLOGICAL SHEET | WELL: 3/7-3

MONTH: JUNE | WELL: 3/7-3

YEAR 19__	DAILY MORNING OBSERVATIONS							UNIT MOTIONS				
	Wind		Waves			Current					Temperature °C	Visibility (miles)
DATE	Speed	Direction	Height (Ft ~~cm~~)	Period (sec.)	Direction	Speed (Knt)	Direction	Roll (°)	Pitch (°)	Heave (Ft ~~cm~~)		
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												
16												
17												
18												
19												
20												
21	35	360	14	6.8	360			2	1	-	9½	CLOUDY
22	7	330	5	9	330			½	¼	-	10	"
23	9	190	3	6.8	190			¼	¼	¼	10	"
24	10	240	3	7-9	240			¼	¼	¼	12	RAIN
25	18	80	5	6.8	80			¼	¼	½	10½	"
26	20	350	5	"	350			1	½	1	10	CLOUDY
27	12	10	5	"	10			1½	1	1	8	"
28	12	290	2	3-4	290			½	½	1	10	"
29	20	350	8	5-6	350			¼	¼	¼	9.5	CLOUDY
30	18	325	7	5-6	325			½	1	¼	11	CLOUDY
31	X											

F3k Bis 2-78 | MONTHLY METEOROLOGICAL SHEET | WELL: 3/7-3

MONTH: JULY | WELL: 3/7-3

YEAR 19__	DAILY MORNING OBSERVATIONS							UNIT MOTIONS			Temperature °C	Visibility (miles)
	Wind		Waves			Current						
DATE	Speed	Direction	Height (Ft or m)	Period (sec.)	Direction	Speed (Kn)	Direction	Roll (°)	Pitch (°)	Heave (Ft or m)		
1	18	350	5	5-6	350			3/4	1/2	1/2	11	CLOUDY
2	20	250	6	6-7	250			1/4	1/4	1/2	11	CLEAR
3	10	190	1-2	6	190			1/4	1/4	1/2	13	CLEAR
4	15	280	1	6	280			1/4	1/4	1/2	12	CLEAR
5	20	270	1	6	270			1/4	1/4	1/2	12	"
6	28	210	5	6	210			1/2	1/2	2	15	"
7	25	250	10	6	250			1	1/2	2	11	"
8	20	240	7	6	240			1/2	1/4	1-2	12	"
9	12	170	5	6	170			1/2	1/2	1-2	15	"
10	32	150	5-6	6-7	150			1/2	1/2	1-2	15	cloudy
11	6	320	3	5-6	320			1/8	1/8	0	13	Clear
12	5	250	1 1/2	6-7	250			1/4	1/4	0	14	Cloudy
13	26	295	8-9	4-5	295			1/3	1/3	1/4	12	Showers
14	14	310	6	6	310			1/2	1/3	1/3	13	
15	20	250	7	6	250			1/2	1/4	1/2	14	
16	18	320	5	6	320			-	-	1/2	11	
17	20	320	7	8	-			1	1/2	1	14	
18	20	310	5	6	310			1 1/2	1/2	1/2	13	
19	10	310	3	6	310			1/4	1/4	1/4	14	
20	10	310	4	6	310			-	-	-	14	
21	10	260	2	10	-			1/4	1/4	-	15	
22	15	170	2	-	170			-	-	-	16	
23	12	120	2	7	120			1/4	1/4	-	12	
24	12	35	5	6	35			1/2	1/4	1/4	15	
25	12	305	5	8	305			1/4	1/4	1/4	14	
26	28	335	8	6	335			1	3/4	1/2	14	
27	18	325	5	8	325			1/2	1/4	1/4	10	Cloudy
28	20	270	2	6	270			1/2	1/2	1/2	15,5	"
29	20	330	2	6	330			1/2	1/2	1/2	14	"
30	14	280	2	4	280			1/4	1/4	1/4	14	"
31	12	360	2	4	360			1/2	1/2	3/4	12,5	"

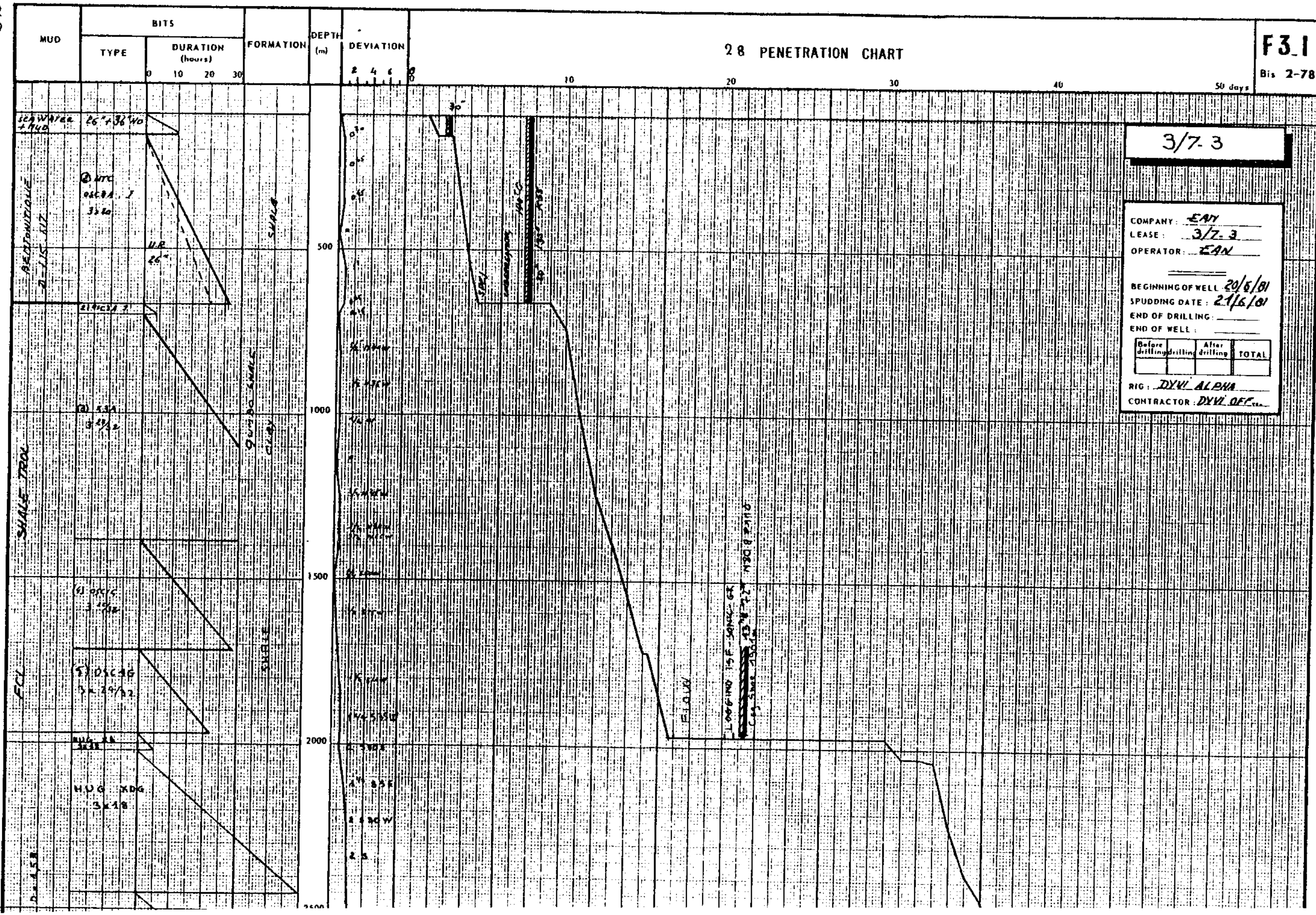
F3k Bis 2-78 | **MONTHLY METEOROLOGICAL SHEET** | WELL: 317-3

MONTH: AUGUST | WELL: 317-3

YEAR 19__	DAILY MORNING OBSERVATIONS							UNIT MOTIONS			Temperature °C	Visibility (miles)
	Wind		Waves			Current						
DATE	Speed Knt	Direction °	Height (Ft or m)	Period (sec.)	Direction °	Speed (Knt)	Direction	Roll (°)	Pitch (°)	Heave (Ft or m)		
1	10	270	2	3-4	270			1/2	1/2	1/2	13	Clear
2	10	270	2	3-4	270			1/2	1/2	1/2	14	Cloudy
3	16	240	1	3-4	240			1/4	1/2	1/4	16	Clear
4	10	230	—	—	—			—	—	—	17	"
5	8	350	—	—	—			—	—	—	15	Cloudy
6	20	030	7	6	030			—	—	—	15	Clear
7	16	030	5	6	030			1	1/2	1/2	15	Clear
8	12	040	2	6	040			1/2	1/2	2	20	"
9	24	350	10-12	-	350			1-2	1-2	1-2	13	"
10	10	270	5	6	270			1/2	1/2	1	17	"
11	15	230	4	6	230			1/4	1/4	1/2	15	"
12	18	230	4	6	230			1/4	1/4	1/2	16	"
13	12	235	3	5	230			1/8	1/8	1/8	17	"
14	16	350	4	4	350			1/2	1/2	1/2	14	Hazy
15	24	295	8	5	295			1/4	1/4	1/4	15	cloudy
16	30	355	16	6	355			1 1/2	1	2	13	cloudy
17	20	270	4	4	270			3/4	1/2	1/2	15	"
18	18	280	3	4				1 1/2	1/2	1/2	15	"
19	18	45	3	4	45			1/2	1/2	1/2	13	Rain
20	28	355	7	6	350			3/4	1	1 1/2	15	Strong Breeze
21	18	315	2	5	315			1/2	1/2	—	14	Cloudy
22	25	350	6	7	350			1/2	1	3/4	15	Strong breeze
23	10	340	4	5	315			—	—	—	14	Clear
24	6	310	—	—	—			1/4	—	—	15	Light Breeze
25	6	310	—	—	—			—	—	—	15	"
26	22	330	3	6-8	330			0	0	0	14	cloudy
27	20	320	7	6	320			1/2	1	1	15	RAIN
28	20	350	4	4-6	350			3/4	1/2	—	14	cloudy
29	14	350	4	6	350			1/4	1/2	—	14	cloudy
30	10	350	1	5	350			0	0	0	14	clear
31	16	35	5	4-6	35			6	3	—	15	clear

28 PENETRATION CHART

F3.1
Bis 2-78



3/7-3

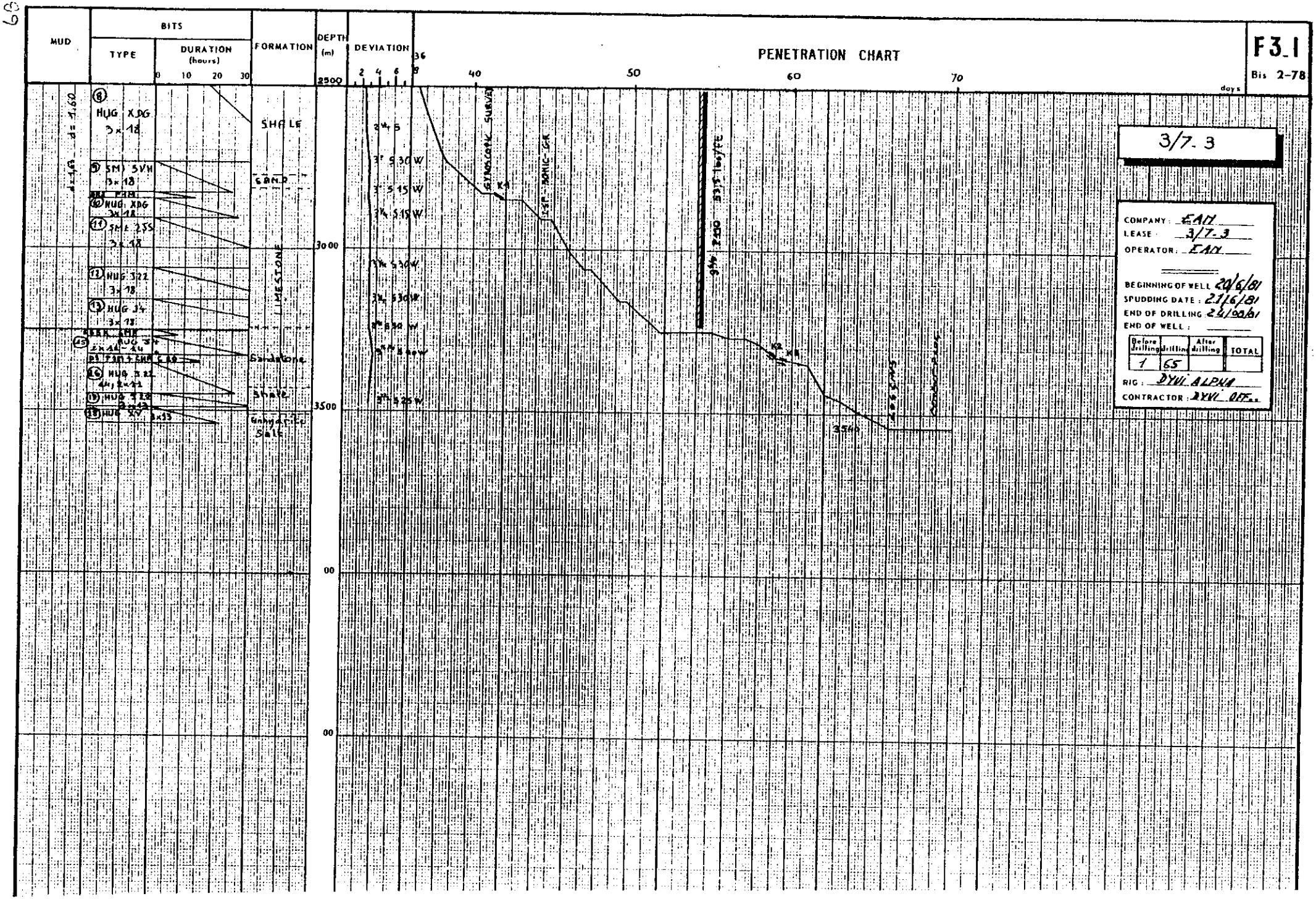
COMPANY: EAN
LEASE: 3/7-3
OPERATOR: EAN

BEGINNING OF WELL: 20/6/81
SPUDDING DATE: 21/6/81
END OF DRILLING: ______
END OF WELL: ______

Before drilling	drilling	After drilling	TOTAL

RIG: DYVI ALPHA
CONTRACTOR: DYVI OFF...

62


MUD
BITS
TYPE
DURATION (hours)
0 10 20 30
FORMATION
DEPTH (m)
2500
DEVIATION
2 4 6
36
PENETRATION CHART
40
50
60
70
days
F3_1
Bis 2-78
3/7-3
SHALE
SAND
LIMESTONE
Sandstone
Shale
Calcareous Shale
3000
3500
SINGLE SHOT SURVEY
SONIC-GR
K4
K3
K2
K1
3544
COMPANY: EAN
LEASE: 3/7-3
OPERATOR: EAN
BEGINNING OF WELL 20/6/81
SPUDDING DATE: 21/6/81
END OF DRILLING 24/06/81
END OF WELL:
Before drilling | Drilling | After drilling | TOTAL
1 | 65
RIG: DYVI ALPHA
CONTRACTOR: DYVI OFF.

29 CASING AND CEMENTING REPORT

F5 a Bis 2-78

WELL (Country)	RIG (Contractor)	R Ground / K Height / B M.L.	Ø Casing / Liner	SHOE MEASURED DEPTH	SHOE VERTICAL DEPTH	SUSPENSION DEPTH	OPERATION DATE
3/7-3 (NORWAY)	ALPHA (DYVI)	92 m / 25 m	30" /	-153 m /	/	TOP HOUSING 90 m	22.6.81

Open hole diameter : 36" Deviation : Maxi ° to m. Mini ° to m

Important caving (location - average diameter..) DRILLED WITHOUT RISER WITH SEA WATER

Losses during drilling (levels, extent)

Reamer runs (number) Reamer at m from the bit

Previous casing : Diameter Shoe at m

Bo. Ps on well when running in (Type - equipment, test pressure) NO

WELL CONDITION

MUD CHARACTERISTICS BEFORE INJECTING SLURRY	S.G.	W.L.	P.V.	Y.V.	VISCOSIMETER READINGS Vs R.P.M. 600	300				

Observations DRLG WITH SEA WATER.

CASING STRING

ELEMENT	MFG AND TYPE	THICKNESS mm	GRADE	UNIT WEIGHT kg/m	INSIDE VOLUME l/m	LENGTH (m)	NUMBER OF JOINTS
SHOE JOINT	BAKER FLOAT SHOE	25.4	X52	461	397	-12.51	1 X
	VETCO SOCH. JT ATD. RB						
COLLAR							
	INTERMEDIATE JOINT	"	"	"	"		X
		"	"	"	"	-12.39	1
		"	"	"	"	12.43	1
		"	"	"	"	12.42	1
HOUSING JOINT		38.1		705	368	13.52	1
Tripping joint :						89.72	X

Drift diameter in the thickest joint 711 mm TOTAL > 153 m 5 JOINTS

Maximum permissible tension

Theoretical weight of the casing string : 31 T 5 In air in mud :

CENTRALIZERS	SCRATCHERS	OTHER EQUIPMENT (Description - Location)
MGF :	MGF :	
TYPE :	TYPE :	
NUMBER :	NUMBER :	
DEPTH/RKB :	DEPTH/RKB :	

4 - RUNNING CASING

Making-up of joint : SQUUNCH JOINT VETCO ATD RD
Grease type used for threads :
Average torque to make-up the joints
Filling frequency
Intermediate circulation (duration - depth)
RUN LAST JOINT W/ CIRCULATION
Total running time (with circulations) h average rate joints/h
Troubles during running

Bottom hole circulation : Duration Rate Pressure
Reciprocating : Duration Rate Amplitude
M.D. indications after stop of bottom hole circulation :
Observations :

CEMENTING

Service cy DOWELL
Mixing pump DW
Slurry injection pump DW
Displacement pump(s) DW

Beginning of slurry making at 10 45 h
End of slurry making at 11 30 h.
End of displacement at 11 35 h.
Pressure released in casing at NO ? h.

	NATURE OR CLASS OF CEMENTS	SACKS or BULK	CEMENT WGT INCREASE %	WATER USED	ADDITIVES USED	TONNAGES USED
1	G	B		130 bbl	D77: 43,7 gal/10bbl	4,9 T
2						T
3	SURFACE LOSSES					1,5 T

CHARACTERISTICS OF SLURRIES	S.G.	P.V.	Y.V.	VISCOSIMETER READINGS VS R.P.M. 600	300	200	100	gel 0	gel 10
1	1,88			180	109	84	56	17	65
2									
3									
SPACER PLUGS									
1									
2									

Slurry injection rate 800 l/mn 750 psi Displacement rate 800 l/mn

Displacement fluid nature SEAWATER Pumped volume 17 BBL / 4 bbl / mn
Pressure at the beginning of displacement 200 psi at the end 300 psi at the surge
Estimated losses
Casing string pressuring up at Result
Residual pressure (eventual) after bleeding off

SPOOL

M.D. indication at the end of displacement
M.D. indication after cement betting setting tension on spool → T.
Casing string set on spool h. after the end of displacement
Spool : MFG Nominal dimensions API WP
Suspension and seal type
Additional seal (type - dimensions)
Distance between the upper part of the spool and R.K.B.
Cut casing cm above the spool

Temperature well logging after h. setting
Cementing log after h. setting
Result of these logs (or enclose a copy)
Top cement annulus → SEA BED m

Test casing string - B.O.P.(blind and pipe rams) Test pressure →
Packer depth :
Test result :

CASING AND CEMENTING REPORT

66

F5 a Bis 2-78

WELL (Country)	RIG (Contractor)	R Ground / K Height / B M.L.	ø Casing / Liner	SHOE MEASURED DEPTH	SHOE VERTICAL DEPTH	SUSPENSION DEPTH	OPERATION DATE
3/7.3 NORWAY	DYVI ∝ (DYVI-OFF.)	92	20"	653 m		90 m	27.06.81

Open hole diameter : 26 Deviation : Maxi 1° to 557 m. Mini 0° to 449 m

Important caving (location - average diameter..) 17½ rat hole for Logging, underreamed 26" central hole w/ 26" BIT Caving + 24" From 153 to 253. From 426 to 530

Losses during drilling (levels, extent)

Reamer runs (number) Reamer at m from the bit

Previous casing : Diameter 30" Shoe at 153 m m

Bo. Ps on well when running in (Type - equipment, test pressure) REGAN KFDS 22"

WELL CONDITION

MUD CHARACTERISTICS BEFORE INJECTING SLURRY	S.G.	W.L.	P.V.	Y.V.	VISCOSIMETER READINGS Vs R.P.M. 600	300				
	1,33	6,5								

Observations At the end underreaming SG 1.15 - increase SG to 1.24 before displacing mud in riser by sea water - increase SG to 1.33 after central hole w/ 26" BIT Before Running casing.

CASING STRING

ELEMENT	MFG AND TYPE	THICKNESS mm	GRADE	UNIT WEIGHT kg/m	INSIDE VOLUME l/m	LENGTH (m)	NUMBER OF JOINTS
SHOE						0.52	X
	Casing 13⅜"					12.71	1
COLLAR						0.48	X
	Casing						
	X-O Butt Pin x VETCO LX					529.98	43
	Wellhead					12.52	1
	Top Wellhead					6.87	
						0.89	
Tripping joint :						89.11	X

Drift diameter in the thickest joint 470.9 m/m TOTAL > 653.08 m 45

Maximum permissible tension 945 (10³ daN)

Theoretical weight of the casing string : In air in mud :

CENTRALIZERS	SCRATCHERS	OTHER EQUIPMENT (Description - Location)
MGF : Weatherford	MGF :	
TYPE : Bow Positive	TYPE :	
NUMBER : 2 2	NUMBER :	
DEPTH/RKB :	DEPTH/RKB :	
Bow Positive		
530 130		Wellhead housing
645 132		10 3/4 x 10mm fill

4 - RUNNING CASING

Making-up of joint : Hydraulic ECKEL Tong
Grease type used for threads : Jet Lube
Average torque to make-up the joints 13000 Ft/lbs
Filling frequency each
Intermediate circulation (duration - depth)

Total running time (with circulations) 10 h 30 average rate joints/h
Troubles during running

Bottom hole circulation : Duration 0 30 Rate 2200 l/mn Pressure 1000 psi
Reciprocating : Duration Rate Amplitude
M.D. indications after stop of bottom hole circulation : 320.000 lbs
Observations :

Service cy DOWELL
Mixing pump
Slurry injection pump
Displacement pump(s) Rig pump

Beginning of slurry making at 13 30 h
End of slurry making at 16 45 h.
End of displacement at 17 40 h
Pressure released in casing at 17 55 h.

NATURE OR CLASS OF CEMENTS	SACKS or BULK	CEMENT WGT INCREASE %	WATER USED	ADDITIVES USED	TONNAGES USED
1 Lead. "G"	V	125% in bbl.	Sea water	D75 4,5%	96 T
2 Tail "G"	V		Fresh water		44,5 T
3					T

CHARACTERISTICS OF SLURRIES	S.G.	P.V.	Y.V.	VISCOSIMETER READINGS VS R.P.M. 600	300				
1	1.50			57	36	30	23		
2	1.96			160	95	73	48		
3									
SPACER PLUGS									
1									
2									

Slurry injection rate 1000 to 800 l/mn Displacement rate 2200 l/mn to 800 l/mn

Displacement fluid nature Sea water Pumped volume 97800 l
Pressure at the beginning of displacement 1200 psi at the end 750 psi at the surge 1200 psi
Estimated losses
Casing string pressuring up at 1200 psi (15mn) Result OK
Residual pressure (eventual) after bleeding off

5 - SPOOL

M.D. indication at the end of displacement
M.D. indication after cement betting setting tension on spool T
Casing string set on spool h. after the end of displacement
Spool : MFG Nominal dimensions API WP
Suspension and seal type
Additional seal (type - dimensions)
Distance between the upper part of the spool and R.K.B.
Cut casing cm above the spool

Temperature well logging after h. setting
Cementing log after h. setting Top cement annulus m
Result of these logs (or enclose a copy)

Test casing string - B.O.P.(blind and pipe rams) Test pressure
Packer depth :
Test result :

DETAILED COMPOSITION OF THE CASING STRING

F 5 c Bis 2 - 78

Well site: 3/7-3 | Casing diameter: 20" | RKB distance above the ground or above the mud-line in off-shore: 92 m

Equipment joint number	Thickness and grade	Threads	Unit length	Cumulated length	Equipment joint number	Thickness and grade	Threads	Unit length	Cumulated length
Landing string +					40	133 # /ft K55	Butt	12,72	
VETCO R TOOL +			90,00		41			12,41	601,51
TOP WELLHEAD					42			12,44	
					43			12,77	626,72
UMBER	Baseplate		6,87	96,87	44	Cent Bow		12,65	639,37
XOVER	Butpin x VETCO LxBox		12,52	109,39	FLOAT COLLAR			0,48	639,85
					45	Cent Bow		12,71	652,56
Cent	133 #/ft K55	Butt	11,67		SHOE			0,52	653,08
Cent			11,19	132,25					
			11,32						
			12,77	156,34					
			12,69						
			11,50	180,53					
			12,33						
			12,48	205,34					
			11,17						
			12,42	228,93					
			11,72						
			11,96	252,61					
			12,66						
			12,11	277,38					
			12,82						
			11,84	302,04					
			11,44						
			11,88	325,36					
			12,81						
			11,51	349,68					
			12,56						
			12,02	374,26					
			12,33						
			12,69	399,28					
			13,27						
			13,09	425,64					
			12,49						
			12,93	451,06					
			12,67						
			12,31	476,04					
			12,18						
			12,14	500,36					
			12,88						
			12,24	525,48					
			12,74						
			12,38	550,60					
			12,77						
			13,01	576,38					

IMPORTANT: the detailed composition of the casing string should be given from top to bottom. For the upper joint the length under RKB will only be considered. So each cumulated length will be the RKB true measured depth of each corresponding joint.

CASING AND CEMENTING REPORT

F5 a Bis 2-78

WELL (Country)	RIG (Contractor)	R K B Ground Height ☐ M.L. ☒	ø Casing ☒ Liner ☐	SHOE MEASURED DEPTH	SHOE VERTICAL DEPTH	SUSPENSION DEPTH	OPERATION DATE
17-3 NORWAY	DYVI α (DYVI OFF.)	92m	13 3/8	1961,3 m		90,5 m	11/7/81

Open hole diameter : 17 1/2 Deviation : Maxi 2 ° 3/4 to 1716 m. Mini 0 ° to 1136 m

Important caving (location - average diameter..) /

Losses during drilling (levels, extent) /

Reamer runs (number) / Reamer at / m from the bit

Previous casing : Diameter 20" Shoe at 653 m

Bo. Ps on well when running in (Type - equipment, test pressure) RUCKER SHAFFER - Triple LWS 18 3/4 10.000 w/ 5" P. Rams - Single LWS 18 3/4 10.000 w/ Blind Ram - Dual spherical 18 3/4 5000

MUD CHARACTERISTICS BEFORE INJECTING SLURRY	S.G.	W.L.	P.V.	Y.V.	VISCOSIMETER READINGS Vs R.P.M. 600	300	200	100	G0	G10.
	1,55	5.5.	20	15	55	35	24	18	3	18

Observations

CASING STRING

ELEMENT	MFG AND TYPE	THICKNESS mm	GRADE	UNIT WEIGHT kg/m	INSIDE VOLUME l/m	LENGTH (m)	NUMBER OF JOINTS
SHOE	Baker Float shoe					0,58	x
COLLAR	Baker Float collar					0,49	x
Csg	13 3/8 72#	13,06	N 80	106,65	77,24	1255,61	101
Csg	"	"	P 110	"	"	609,82	48
Csg	Pup jnt 13 3/8 72#	"	"	"	"	4,30	1
Tripping joint :	Landing string 13 3/8 + Csg Hgr	"	N 80	"	"	90,50	x
					TOTAL >	1961,3 m	149

Drift diameter in the thickest joint 309,7 mm

Maximum permissible tension N80 : 738 10^3 daN P110 : 970 10^3 daN

Theoretical weight of the casing string : 209,17 T In air 167,96 T in mud :

CENTRALIZERS	SCRATCHERS	OTHER EQUIPMENT (Description + Location)
MGF : Weather Ford	MGF :	
TYPE : Bow	TYPE :	
NUMBER : 9	NUMBER :	
DEPTH/RKB :	DEPTH/RKB :	
636 m		
648		
1870		
1896		
1920		
1940		
1944		
1952		
1958		

4 - RUNNING CASING

Making-up of joint : Hydraulic ECKEL Tong
Grease type used for threads : Lube seal
Average torque to make-up the joints 12 000 Ft/lbs
Filling frequency Each 5nr.
Intermediate circulation (duration - depth) /

Total running time (with circulations) 13 h average rate 12 joints/h
Troubles during running

Bottom hole circulation : Duration 3 30 Rate 1500 l/mn Pressure 850 psi
Reciprocating : Duration Rate Amplitude
M.D. indications after stop of bottom hole circulation : /
Observations :
After 1 30 Circ. - Well Flowing - Circ through choke

CEMENTING STRING ON FINAL CASING

Service cy DOWELL
Mixing pump "
Slurry injection pump "
Displacement pump(s) Rig pump

Beginning of slurry making at 17 h
End of slurry making at 19 10 h.
End of displacement at 21 10 h.
Pressure released in casing at 21 25 h.

NATURE OR CLASS OF CEMENTS	SACKS or BULK	CEMENT WGT INCREASE %	WATER USED	ADDITIVES USED	TONNAGES USED
1 Lead G	Bulk	30	Fresh water	D75: 4l/100kg D81: 0,9	88 T
2 Tail G	"	"	"	D73: 1,33 l/100kg D80: 0,59	20 T
3				D81: 0,29 / 100kg	T

CHARACTERISTICS OF SLURRIES	S.G.	P.V.	Y.V.	VISCOSIMETER READINGS VS R.P.M. 600	300	200	200	6 0	6 10.
1 LEAD SLURRY	1,58	20		37	17	12	8	3	12
2 TAIL SLURRY	1,90	57		104	47	32	17	3	29
3									
SPACER PLUGS									
1 NATROSOL	1.57	29		108	79	65	47	6	12
2									

Slurry injection rate 6 bbl / mn Displacement rate 1500 l/mn → 1100 l/mn

Displacement fluid nature Mud Pumped volume 150 m³
Pressure at the beginning of displacement 700 psi at the end 600 psi at the surge
Estimated losses /
Casing string pressuring up at 2500 psi Result OK
Residual pressure (eventual) after bleeding off /

SPOOL

M.D. indication at the end of displacement
M.D. indication after cement betting setting tension on spool → T.
Casing string set on spool h. after the end of displacement
Spool : MFG Nominal dimensions API WP
Suspension and seal type
Additional seal (type - dimensions)
Distance between the upper part of the spool and R.K.B.
Cut casing cm above the spool

Temperature well logging after h. setting
Cementing log after h. setting Top cement annulus → m
Result of these logs (or enclose a copy)

Test casing string + B.O.P.(blind and pipe rams) Test pressure →
Packer depth :
Test result :

DETAILED COMPOSITION OF THE CASING STRING

F 5 c Bis 2 - 78

Well site: 3/7-3 | Casing diameter: 13 3/8 | RKB distance above the ground or above the mud-line in off-shore: 92 m

Equipment joint number	Thickness and grade	Threads	Unit length	Cumulated length	Equipment joint number	Thickness and grade	Threads	Unit length	Cumulated length
Landing string	N80		90,15		40	72* P110	VAM	12,87	604,88
					41	"	"	12,75	617,63
Csg Hanger			0,35	90,50	42			12,65	630,28
					43 15,6			12,65	642,93
Csg Hang + Pup Jnt P110		VAM	4,30	94,80	44 15,6			12,04	654,97
					45			12,22	667,19
1	72* P110	VAM	12,74	107,54	46			12,80	679,99
2	"	"	12,46	120,00	47			12,45	692,44
3			12,65	132,65	48			12,18	704,62
4			12,89	145,54	49	72* N80	VAM	12,43	717,05
5			12,74	158,28	50	"	"	11,43	728,48
6			12,96	171,24	51			12,51	740,99
7			12,78	184,02	52			12,42	753,41
8			12,28	196,30	53			12,48	765,89
9			12,89	209,19	54			12,86	778,75
0			12,48	221,67	55			12,72	791,47
11			12,92	234,59	56			12,89	804,36
12			12,95	247,54	57			12,50	816,86
13			12,96	260,50	58			12,79	829,65
14			12,85	273,35	59			12,68	842,33
15			13,12	286,47	60			12,45	854,78
16			12,21	298,68	61			12,59	867,37
17			12,35	311,03	62			12,79	880,16
18			12,27	323,30	63			12,63	892,79
19			12,94	336,24	64			12,51	905,30
20			12,72	348,96	65			12,26	917,56
21			13,04	362,00	66			12,77	930,33
22			13,14	375,14	67			11,92	942,25
23			12,79	387,93	68			12,80	955,05
24			12,94	400,87	69			12,06	967,11
25			12,97	413,84	70			11,34	978,45
26			12,85	426,69	71			11,73	990,18
27			12,71	439,40	72			11,90	1002,08
28			12,91	452,31	73			12,92	1015,00
29			12,80	465,11	74			12,53	1027,53
30			12,65	477,76	75			12,57	1040,10
31			12,86	490,62	76			12,45	1052,55
32			12,29	502,91	77			12,82	1065,37
33			12,77	515,68	78			12,91	1078,28
34			12,78	528,46	79			12,87	1091,15
35			12,60	541,06	80			12,89	1104,04
36			12,78	553,84	81			12,68	1116,72
37			12,78	566,62	82			11,93	1128,65
38			12,64	579,26	83			12,64	1141,29
39			12,75	592,01	84			12,85	1154,14

IMPORTANT: the detailed composition of the casing string should be given from top to bottom. For the upper joint the lengths under KB will only be considered. So each cumulated length will be the RKB true measured depth of each corresponding joint.

DETAILED COMPOSITION OF THE CASING STRING

F 5 c Bis 2 - 78

Well site: 317-3 | Casing diameter: 13 3/8 | RKB distance above the ground or above the mud-line in off-shore: 92 m

Equipment joint number	Thickness and grade	Threads	Unit length	Cumulated length	Equipment joint number	Thickness and grade	Threads	Unit length	Cumulated length
85	72* N80	VAM	12,34	1166,48	130	72* N80	VAM	12,69	1731,13
86	"	"	12,59	1179,07	131			12,71	1743,84
87			12,44	1191,51	132			12,60	1756,44
88			12,73	1204,24	133			11,92	1768,36
89			13,04	1217,28	134			11,28	1779,64
90			12,97	1230,25	135			12,23	1791,87
91			12,35	1242,60	136			11,63	1803,50
92			13,02	1255,62	137			11,42	1814,92
93			12,88	1268,50	138			11,10	1826,02
94			12,47	1280,97	139			12,00	1838,02
95			12,84	1293,81	140			12,43	1850,45
96			13,34	1307,15	141			12,48	1862,93
97			11,69	1318,84	142 1C 15.6.			13,03	1875,96
98			12,02	1330,86	143			13,47	1889,43
99			12,39	1343,25	144 1C 15.6.			12,58	1902,01
100			12,03	1355,28	145			12,78	1914,79
101			10,97	1366,25	146 1C 15.6.			11,39	1926,18
102			12,57	1378,82	147			10,32	1936,50
103			12,05	1390,87	Float collar			0,49	1936,99
104			12,18	1403,05	148 2C 25.6.			11,97	1948,96
105			12,50	1415,55	149 2C 25.6.			11,76	1960,72
106			12,96	1428,51	Float shoe			0,58	1961,30
107			12,53	1441,04					
108			11,59	1452,63					
109			12,57	1465,20					
110			12,68	1477,88					
111			12,93	1490,81					
112			12,86	1503,67					
113			11,54	1515,21					
114			12,85	1528,06					
115			12,79	1540,85					
116			12,59	1553,44					
117			12,91	1566,35					
118			12,72	1579,07					
119			12,50	1591,57					
120			12,70	1604,27					
121			11,88	1616,15					
122			12,93	1629,08					
123			12,80	1641,88					
124			12,85	1654,73					
125			12,67	1667,40					
126			12,75	1680,15					
127			12,87	1693,02					
128			12,37	1705,39					
129			13,05	1718,44					

IMPORTANT: the detailed composition of the casing string should be given from top to bottom. For the upper joint the length under RKB will only be considered. So each cumulated length will be the RKB true measured depth of each corresponding joint.

CASING AND CEMENTING REPORT

F5 a Bis 2-78

WELL (Country)	RIG (Contractor)	R Ground / K Height / B M.L.	Ø Casing / Liner	SHOE MEASURED DEPTH	SHOE VERTICAL DEPTH	SUSPENSION DEPTH	OPERATION DATE
3/7-3 NORWAY	DYVI ∝ DYVI OFF	99 m	9 5/8	3241 m	3241 m	89,80 m	13/8/81

Open hole diameter : 19 1/4 Deviation : Maxi 3 ° 1/4 to 3158 m. Mini 1 ° to 2019 m

Important caving (location - average diameter..) /

Losses during drilling (levels, extent) /

Reamer runs (number) / Reamer at / from the bit

Previous casing : Diameter 13 3/8 Shoe at 1961,30 m

Bo. Ps on well when running in (Type - equipment, test pressure) BUCKER SHAFFER 18 3/4 10000

MUD CHARACTERISTICS BEFORE INJECTING SLURRY	S.G.	W.L.	P.V.	Y.V.	VISCOSIMETER READINGS Vs R.P.M. 600	300	200	100	6 °	G 10
	1,63	48	35	15	85	50	35	22	2	12

Observations

CASING STRING

ELEMENT	MFG AND TYPE	THICKNESS mm	GRADE	UNIT WEIGHT kg/m	INSIDE VOLUME l/m	LENGTH (m)	NUMBER OF JOINTS
SHOE	Baker Float Shoe					0,40	X
COLLAR	Baker Float collar					0,40	X
Csg	9 5/8 53,5 #	13,84	P110	78,72	36,92	2998,69	228
Csg	9 5/8 47 #	11,99	P110	68,73	32,19	153,41	18
Csg	Pup it 53,5 #	13,84	P110	78,72	36,92	4,30	1
Tripping joint : landing string		13,84	P110	78,72	36,92	89,80	X
					TOTAL >	3241 m	

Drift diameter in the thickest joint

Maximum permissible tension CS 9.163 daN

Theoretical weight of the casing string : 266 t In air 206 t in mud :

CENTRALIZERS

MGF : Weatherford

TYPE : Bow

NUMBER : 33

DEPTH/RKB :

3235	3101	2802
3230	3088	2776
3223	3062	2750
3218	3036	2724
3205	3010	2698
3192	2984	2672
3179	2958	1924
3166	2932	1960
3153	2906	1947
3140	2880	
3127	2854	
3114	2828	

SCRATCHERS

MGF :

TYPE :

NUMBER :

DEPTH/RKB :

OTHER EQUIPMENT

(Description - Location)

4 - RUNNING CASING

Making-up of joint : Hydraulic Heckel tong
Grease type used for threads : Lube Seal
Average torque to make-up the joints 18 000 lbs. ft
Filling frequency Each joint
Intermediate circulation (duration - depth)

Total running time (with circulations) 14 h 20 average rate 16 joints/h
Troubles during running Problems with Weatherford gages

Bottom hole circulation : Duration 5 Rate 1500 l/mn Pressure 125a psi
Reciprocating : Duration Rate Amplitude
M.D. indications after stop of bottom hole circulation :
Observations : No mud return during the first 30 mn

5 - CEMENTING JOB ON FIRST STAGE CEMENTING

Service cy Dowell
Mixing pump "
Slurry injection pump "
Displacement pump(s) Big pump

Beginning of slurry making at 0h 55 h
End of slurry making at 2h 05 h
End of displacement at 3h 5-a h
Pressure released in casing at 3h 55 h

NATURE OR CLASS OF CEMENTS	SACKS or BULK	CEMENT WGT INCREASE %	WATER USED	ADDITIVES USED	TONNAGES USED
1 Lead "G"	B	-	Fresh water	D75 1,5 D73 1,85 % D80a 0,85 % D81 0 %	54 T
2 Tail "G"	B	-	"	D73 D80a D81 1,78 % 0,89 % 0,3 %	19 T
3					T
					T

CHARACTERISTICS OF SLURRIES	S.G.	P.V.	Y.V.	VISCOSIMETER READINGS VS R.P.M. 600	300	200	100	gel 0	gel 10
1 Lead	1,63			75	42	30	19	4	35
2 Tail	1,90			225	115	74	38	3	28
3									
SPACER PLUGS									
1 Mud + Barite	1,63			115	93	75	54	6	10
2									

Slurry injection rate 1000 l/mn Displacement rate 1300 l/mn and 750 l/mn

Displacement fluid nature Mud Pumped volume 119 m3
Pressure at the beginning of displacement 130a at the end 1700 psi at the surge NO BUMP
Estimated losses
Casing string pressuring up at 3500 PSI x Result OK x BEFORE DRLG FLOAT COLLAR
Residual pressure (eventual) after bleeding off

SPOUL

M.D. indication at the end of displacement
M.D. indication after cement betting setting tension on spool T
Casing string set on spool h. after the end of displacement
Spool : MFG Nominal dimensions API WP
Suspension and seal type
Additional seal (type - dimensions)
Distance between the upper part of the spool and R.K.B.
Cut casing cm above the spool

Temperature well logging after h. setting
Cementing log after h. setting Top cement annulus m
Result of these logs (or enclose a copy)

Test casing string + B.O.P.(blind and pipe rams) Test pressure
Packer depth :
Test result :

DETAILED COMPOSITION OF THE CASING STRING

F 5 c Bis 2 - 78

Well site: 3/7-3 | Casing diameter: 9⁵/₈ | RKB distance above the ground or above the mud-line in off-shore: 92 m

Equipment joint number	Thickness and grade	Threads	Unit length	Cumulated length	Equipment joint number	Thickness and grade	Threads	Unit length	Cumulated length
RT - csg hanger			89,80	89,80	44	P11e 53,5lb/ft	VAM	13,18	
Sup. Joint			4,30		45			13,17	685,03
1	P11e 53,5lb/ft VAM		13,25	107,35	46			13,42	
2			13,19		47			13,35	
3			13,05		48			13,33	
4			13,39		49			13,56	
5			13,28	160,96	50			13,28	351,97
6			13,16		51			13,36	
7			13,53		52			13,48	
8			13,40		53			13,45	
9			13,02		54			13,23	
10			13,46	226,83	55			13,51	819,00
11			13,56		56			13,15	
12			13,33		57			13,4	
13			13,43		58			13,26	
14			13,29		59			13,02	
15			13,23	293,67	60			13,18	884,75
16			13,30		61			13,53	
17			13,30		62			13,36	
18			13,41		63			13,36	
19			13,35		64			13,13	
20			13,09	360,12	65			13,57	951,70
21			12,85		66			13,28	
22			13,15		67			12,90	
23			13,08		68			13,19	
24			13,45		69			13,21	
25			13,37	486,02	70			13,15	1017,43
26			12,74		71			13,19	
27			13,34		72			12,94	
28			13,20		73			13,31	
29			13,40		74			13,17	
30			13,05	491,25	75			13,33	1083,37
31			13,21		76			13,33	
32			12,94		77			13,38	
33			13,30		78			13,48	
34			13,19		79			13,28	
35			13,14	557,03	80			13,11	1149,94
36			12,94		81			12,65	
37			13,34		82			13,32	
38			13,21		83			13,18	
39			13,16		84			13,60	
40			11,94	621,62	85			13,25	1215,94
41			11,54		86			13,04	
42			13,11		87			13,32	
43			12,41		88			13,35	

IMPORTANT: the detailed composition of the casing string should be given from top to bottom. For the upper joint the length under RKB will only be considered. So each cumulated length will be the RKB true measured depth of each corresponding joint.

DETAILED COMPOSITION OF THE CASING STRING

F 5 c Bis 2 - 78

Well site: 3/7-3 | Casing diameter: 9 5/8 | RKB distance above the ground or above the mud-line in off-shore: 92 m

Equipment joint number	Thickness and grade	Threads	Unit length	Cumulated length	Equipment joint number	Thickness and grade	Threads	Unit length	Cumulated length
89	P11a 53,5 lb/ft	VAM	13,31		134	P11a 53,5 lb/ft	VAM	12,77	
90			13,35	1289,31	135			13,32	1868,35
91			13,17		136			11,91	
92			13,25		137			13,00	
93			12,46		138			13,40	
94			13,12		139			13,18	
95			13,13	1342,64	140			13,14	1992,98
96			13,56		141			13,48	
97			13,34		142			13,27	
98			13,36		143			13,22	
99			13,45		144			13,42	
100			13,04	1414,19	145			13,32	1999,69
101			13,00		146			13,67	
02			13,32		147			13,45	
03			13,36		148			13,35	
104			13,16		149			10,09	
05			13,17	1480,70	150			12,80	2063,05
106			13,11		151			13,46	
107			13,34		152			12,80	
108			13,47		153			13,18	
109			12,67		154			13,38	
110			13,17	1545,96	155			13,35	2129,22
111			13,23		156			13,48	
112			11,75		152			13,34	
113			13,36		158			13,36	
114			13,44		159			13,39	
15			13,18	1610,99	160			13,18	2195,97
116			13,09		161			13,25	
117			13,30		167			13,47	
18			13,30		163			13,04	
119			12,41		164			13,25	
20			13,30	1676,32	165			13,28	2262,26
121			13,35		166			13,30	
122			13,37		167			13,43	
123			10,98		168			13,01	
24			11,34		169			13,38	
125			13,27	1738,63	170			13,33	2328,71
26			13,08		171			13,26	
27			13,32		172			12,88	
28			13,17		173			13,79	
29			11,27		174			13,30	
30			13,09	1802,56	175			12,28	2393,82
131			12,85		176			12,73	
32			13,40		177			13,49	
33			13,50		178			13,02	

IMPORTANT: the detailed composition of the casing string should be given from top to bottom. For the upper joint the length under RKB will only be considered. So each cumulated length will be the RKB true measured depth of each corresponding joint.

DETAILED COMPOSITION OF THE CASING STRING

F 5 c Bis 2 - 78

Well site: S/7-3 | Casing diameter: 9 5/8 | RKB distance above the ground or above the mud-line in off-shore: 92.00

Equipment joint number	Thickness and grade	Threads	Unit length	Cumulated length	Equipment joint number	Thickness and grade	Threads	Unit length	Cumulated length
179	Pile 535 lbs/ft	VAM	13,41		224	Pile 535 #	VAM	13,41	
180			13,35	2459,89	225			13,19	3048,76
181			13,34		226			13,39	
182			13,52		227	Pile 47 #		13,00	
183			13,00		228			12,72	
184			12,96		229			12,59	
185			12,08	959,72	230			11,49	3111,88
186			12,88		231			12,28	
187			13,47		232			12,88	
188			13,43		233			12,54	
189			13,38		234			12,95	
190			13,18	2591,06	235			12,62	3175,65
191			12,24		236			12,43	
192			13,40		237			12,83	
193			13,29		238			12,89	
194			13,09		Collar			0,40	3914,66
195			12,82	2655,95	239	Pile 535 #		12,94	
196			13,19		240	Pile 535 #		13,40	
197			12,81		Shoe			0,40	3941
198			12,81						
199			12,74						
200			13,19	2792,69					
201			13,22						
202			13,21						
203			13,24						
204			13,12						
205			13,25	2986,98					
206			11,65						
207			12,82						
208			12,46						
209			13,32						
210			12,91	2849,94					
211			13,51						
212			13,31						
213			13,14						
214			13,28						
215			13,17	2916,35					
216			13,33						
217			13,15						
218			13,43						
219			12,91						
220			13,25	9982,42					
221			13,19						
222			13,21						
223			13,34						

IMPORTANT. the detailed composition of the casing string should be given from top to bottom. For the upper joint the length under RKB will only be considered. So each cumulated length will be the RKB true measured depth of each corresponding joint.

GENERAL DATA			DRILLING BIT								PERFORMANCES					PARAMETERS				MUD				DULL BIT CONDITION						TURBODRILLED			
Run number	Operation	Drive	Bit type	Bit Diameter	Manufacturer	Code IADC	Serial number	Nozzles 1 /32	Nozzles 2 /32	Nozzles 3 /32	Operation starting depth	Footage in this operation	Drilling time (hours)	Drilling rate	Deviation	Weight on bit K lbs	R.P.M.	Flow rate L/mn	Pressure PSI	Density (mud weight)	Viscosity (cp)	Solid content (%)	Water loss (cc)	T	B	G	Observations on grading	GEOLOGICAL FORMATION	Reason for tripping	Type of turbodrill	Turbodrill diameter	Turbodrilled footage	Total time (hours)
1	P.E	R	T	26" 36"	TSK - SEC	3SJ	6963				92,00	61.50	9^{00}	6.80	153 = 0^{30}	10/25	40/60	1800	1700									S	E				
2	F	R	T	17½	HUG	OSC3A	948JR	20	20	20	153.50	512.50	26^{00}	19,70	255: 0^{45} 354: 0^{45} 449: 0	2/20	60/100	3600/4000	2900	1,15	50	11		2	3	0		S M	E				
2R	E	R	T	17½ 26"	" LOCKOMATIC	"	"	"	"	"	153.50	512.50	20^{30}	25,00	589: 1° 666: 0^{45}	0/10	60	3600	2100	1,15	55	11											
2R	RA F	R	T	17½	HUG	OSC3A	948JR	20	20	20	639,00 666	27.00 34,00	4^{00} 4^{00}	8.50	700: ¼°	5/15	60	4000	2300	1,13	45	7		2	5	0		A M	E				
3	F	R	T	17½	HUG	X3A	FK535	22	22	22	700	684,00	57^{30}	13,30	810: ¼ N... 1027: ¼ W 1364: ¾ N15W	5/25	120	4000	215-265	1,13 - 1,20	45	8/11	4.5	4	5	2		A M	A D				
4	F	R	T	17½	HUG	OSC1G	HM225	22	22	22	1384	332,00	28^{30}	11.65	1489: ½ S... 1607: ½ S15W	25/35	140/140	4000	3100	1,19	60	16	6	2	4	0		A M	E				
5	F	R	T	17½	HUG	OSC1G	HM085	24	24	24	1716	254	22	11,5	1824; 1¼ S4W 1936; 1¼ S17E	25/40	120	3750	3000	1,31	50	16						M M					
6	RA	R	T	12¼	HUG	X3	786JF	18	18	18	1791	144	1	96				3500	2200	1,65													
6R	RA	R	T	"	"	"	"	"	"	"	1819	151	11	13,7		20	100	2400	1800	1,59	55		6,5					Cement					
	F	R	T	"	"	"	"	"	"	"	1970	57	5	11,4		"	"	"	"									M					
6RR	RA	R	T	"	"	"	"				1901	118	9^{30}	12,4		"	60	"	1500	1,57	60			2	2	0		Cement	E				
7	RA	R	T	"	HUG	XDG	064ML	18	18	18	2019	8	1	8	2019 1 S30E	10	100	2400	2200	1,59	60	35											
	F	R	T	"	"	"	"	"	"	"	2027	428	49^{30}	8,6	2131; 1¼ SSE 2240; 2 S30W 2340; 2 S	29/30	120	2400	2600	1,60	63	23		4	L			M	D				
8	F	R	T	"	"	"	004PL	"	"	"	2455	281	46^{30}	6,04	2645, 2¼ S 2735; 3° S30W	25/35	120	2450	2750	1,60	60	22	4	6	5	-		M	D				
9	RA	R	T	"	SMI	SVH	WP326	"	"	"	2330	406	6	67,6		10	120	2450	2950	1,63	60	24	4										
9	F	R	T	"	"	"	"	"	"	"	2736	94	24^{30}	3,83	2830 m 3° S15W	30/35	120	2450 1900	2750 2000	1,63	62	25	3,5	4	4	0		M-C-S	E				
K10	K	R	C	8 15/32	DRI	P1M	MD1098	-	-	-	2830	18	13	1,38		15/20	80/90	800	900/1000	1,63	63	25	3,8					C					
10	RA	R	T	12¼	HUG	XDG	824NL	18	18	18	2830	18	5	3,6		30	120	2200	2300	1,63	63	25											
10	F	R	"	"	"	"	"	"	"	"	2848	58	26^{30}	2,18	2906 m 3¼ S15W	30/45	115/100	2200	2300	1,63	58	25	3,2	4	6	-		C	A				
11	F	R	"	"	SMI	2SS	WT654	"	"	"	2906	156	50^{30}	3,09	3022 3° S33W 3062 3¾ S30W	45	55/65	2300	2650	1,63	55	25	3	2	4	-		C	B				

OPERATION
F Drilling
K Coring
RA { Redrilling (formation or cement) / Reaming and control trip
P Pilot hole drilling
E Hole opening
PE Simultaneous piloting and hole opening

Note: Use one line for each operation

Ex.: Redrilling followed by drilling 2 lines

DRIVE
R Rotary
T Turbine
M Bottom hole motor other than turbine

BIT DESIGN
T Tricones (rock bits)
B Bicones
M - Other cone rock bits
F - Mill
D - Diamond bit
C Diamond core head
A - Rock bit w/removable center
E Diamond bit w/removable center
L - Drag bit
S Special

MANUFACTURER
The code constitute the first three letters of the manufacturer name
HUG Hughes
SMI Smith
REE Reed
SEC - Security
SMF - SMF
DIA Diamond board
DRI Drilling service
CHR Christensen

CODE
(ACD) code for rock bits (SEE Formulaire Foreur, p. 200 à 204).

DULL BIT CONDITION
T1 Tooth hight 1/8 gone
T2 Tooth hight 1/4 gone
T3 Tooth hight 3/8 gone
T4 Tooth hight 1/2 gone
T5 Tooth hight 5/8 gone
T6 Tooth hight 3/4 gone
T7 Tooth hight 7/8 gone
T8 Tooth hight all gone

Bearing wear B1 to B8
B1 1/8 of life elapsed
B2 - 2/8 of life elapsed
B8 Out of service

OBSERVATION ON GRADING

Teeth and cones
CT Chipped teeth
ET Eroded teeth or inserts
BT Broken teeth or inserts
BU Bit balled up
RG Rounded gauge teeth or inserts
WG Worn or lost gauge teeth or inserts
FC Flat crested
EC Eroded cone shell
BS Broken, worn or lost spear point

Bearings
CL - Cone(s) locked
BF - Bearing failure
SF - Seal failure
LC - Lost cone(s)
BP Broken bearing pins or journals

Bit body
BL Bent legs Pinched
PN - Plugged nozzle(s)
EN - Eroded nozzle(s)
LN - Lost nozzle(s)
DN Damaged nozzle(s)

FORMATION
A Clay
C - Limestone or dolomite
M - Marl or shale
D Chalk
S Sand
G Sandstone
Q Quartz
V Chert
X Granite
K Conglomerate
I Gypsum Anhydrite
L Salts

The lithology drilled in the previous 24 Hrs will be defined by the codes of the last formations drilled, with a maximum of three placed in order of relative importance.

Ex. (1) Ap Plastic clay
(2) AS : Clay and sand
(3) Mct Marl and soft limestone
(4) MChv Marl and tight dolomite w/Chert

Add if necessary a small letter showing the formation characteristics : p plastic, h tight, l laminated ; t ; soft
Ex. 1) Al : laminated clay - 2) Ch - Tight dolomite

- REASON FOR TRIPPING
A - Penetration slowing down
B - Increasing torque
C - Hydraulic problems
D Bit drill maximum hours allowed
E - Reason other than bit problems

Ex. (1) Drillstring modification
(2) Casing
(3) Test
etc...

GENERAL DATA			DRILLING BIT								PERFORMANCES					PARAMETERS				MUD				DULL BIT CONDITION						TURBODRILLED			
Run number	Operation	Drive	Bit type	Bit Diameter	Manufacturer	Code IADC	Serial number	Nozzles 1 /32	Nozzles 2 /32	Nozzles 3 /32	Operation starting depth	Footage in this operation	Drilling time (hours)	Drilling rate	Déviation	Weight on bit klbs	R.P.M.	Flow rate L/mn	Pressure PSI	Density (mud weight)	Marsh Viscosity (cp)	Solid content (%)	Water loss (cc)	T	B	G	Observations on grading	GEOLOGICAL FORMATION	Reason for tripping	Type of turbodrill	Turbodrill diameter	Turbodrilled footage	Total time (hours)
12	F	R	T	12 1/4	HUG	J22	796ES	18	18	18	3062	96	41[30]	2,31	3158 m 3/4 S30W	45	55/95	2300	2650	1,63	55	26	3	8	8	-		C	A				
13	"	"	"	"	"	J4	425EL	"	"	"	3158	95	51	1,86	3253 3/4 S20W	45	95	2300	2650	1,63	53	27	2,8	4	5	O		C	B				
A4	RA	"	"	8 1/2	SMF	6SSK	20389				3199	55	2[30]	22		5/15	60	2200	3000									Cement					
A4	F	"	"	"	"	"	"				3253	17	8[30]	2,12		20/20	100	1700	1300	1,64	56		2,2	4	/	0		E	H				
15	RA F	R	T	8 1/2	HUG	J4	ZR467	11	11	14	3241 3270	29 62	1[00] 31[30]	1,97	3332 3 3/4 S40W	35/45	80	1700	3300	1,64	53	25	2,2	8	5	0		G C	A				
16	F	R	T	8 1/2	HUG	J22	723ML	11	11	14	3332	5,5	0[30]	11,—		20	80	1700	3300	1,64	58	25	2,5		GOOD				E				
K2	K	R	C	8 15/32	DS	P1M	MD1098				3337.50	1.50	4[00]	0.38		10/15/20	80	950	1300	1,64	58	25	2,5		GOOD				A				
K3	K	R	C	"	CHR	C20	PS4876				3339	9,00	11[00]	0.82		20	80	950	2000	1.64	55	25	2.5		GOOD				E				
16R	F	R	T	8 1/2	HUG	J22	723ML	11	11	14	3348	100	26[—]	3.85	3448 3° S33W	30	60	1300	2300	1.65	55	25	2.6	3	4	0		G.M	A				
17	F	R	T	8 1/2	HUG	J22	993RF	13	13	13	3448	44	34[00]	1.29	3492 3 1/2 S25W	45	50	1500	2500	1,64	60	25	2,6	2	5	0		M	A				
18	F	R	T	8 1/2	HUG	XV	61990	13	13	13	3492	48	21[30]	2,26		40/30	60/80	1500	2400	1,64	60	25	2.8	4	6	0		M.I L	E				
											3540																						

OPERATION
F Drilling
K Coring
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P Pilot hole drilling
E Hole opening
PE Simultaneous piloting and hole opening

Note: Use one line for each operation

DRIVE
R Rotary
T Turbine
M Bottom hole motor other than turbine

BIT DESIGN
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D Diamond bit
C Diamond core head

MANUFACTURER
HUG Hughes
SMI Smith
REE Reed
SEC Security
SMF SMF
DIA Diamond boart
DRI Drilling service
CHR Christensen

IACD : Code for rock bits (SEE formulaire forsur p. 200 à 204)

DULL BIT CONDITION
T1 Tooth height 1/8 gone
T4 Tooth height 1/2 gone
T5 Tooth height 5/8 gone
T8 Tooth height all gone

Bearing wear B1 to B8
B1 - 1/8 of life elapsed
B2 - 2/8 of life elapsed
B8 - Out of service

OBSERVATION ON GRADING :
BT Broken teeth or inserts
BU Bit balled up
RG Rounded gauge teeth or inserts
WG Worn or lost gauge teeth or inserts
CL Cones locked
BF Bearing failure
SF Seal failure
LC Lost cone(s)
BP Broken bearing pins or journals

Bit body
BL Bent legs, Pinched
PN Plugged nozzle

FORMATION
A Clay
C Limestone or dolomite
M Marl or shale
B Chalk
S Sand
G Sandstone
Q Quartz
V Chert
K Conglomerate
I Gypsum, Anhydrite

The lithology drilled in the previous 24 Hrs will be defined by the codes of the last formations drilled, with a maximum of three placed in order of relative importance

Ex (1) Ap Plastic clay
(2) AS Clay and sand
(3) Mcr Marl and soft limestone
(4) MChv Marl and tight dolomite w Chert

Additional necessary a small letter showing the formation characteristics : p : plastic ; h : tight ; l : laminated ; t : soft
Ex. 1) Al : laminated clay - 2) Ch : Tight dolomite

REASON FOR TRIPPING
A Penetration slowing down
B Increasing torque
C Hydraulic problems
D Bit drift maximum hours allowed
E Reason other than bit problems

Ex (1) Drillstring modification
(2) Casing
(3) Test
etc...

D/R "DYVI ALPHA" 31/08/81

SEA BED CLEARENCE INSPECTION REPORT:

The 31st of August 1981 at 1800 hours after the base plate was pulled, one observation dive was performed for visual inspection of the sea bed around the well site on location 3/7-2.

Visibility was reported to be approx. 40 feet. There were no visual objects of debris to see.

John Potter
Comex Diver

Frank Day
Comex Diver

Arild Skisland
Diving Supervisor

Garry Boyd
Rig Superintendant

Rune Kirkhus
ELF Representative

Elf Aquitaine Norge A/S
Drilling Department
311E-W 81/113/JLI/kn

Stavanger, August 6, 1981

Well 3/7-3

Report on water influx after
13 3/8" cementing operation and
subsequent problems.

J.L. IDELOVICI

- SNEA(P) - Departement Forages: MM Letard/Felix
- NPD - Att: Drilling Section : Mr. Ølberg

INTRODUCTION

17½" drilling started on June 29th from 666 m. 17½" final depth was reached on July 6th at 1970 m after an unexpected sand layer was reached at 1968 m where a break in the penetration rate was recorded (penetration decreased from 6 min/m to 1.5 min/m).

The mud weight had been, more or less regularly, increased from 1.15 (at 666 m) to 1.30 at 1970 m during drilling.

A flow check at 1970 m indicated then that the well was flowing (2 bbls/min). The well was shut and the observation of the pressures gave: PT = 280 psi PA = 400 psi. From that point it took about 4 days to stabilize the well after the mud weight had been increased step by step from 1.30 to 1.55.

Saturday 11.07.81

00.00 - - Stablized well with mud d = 1.55. Flow check OK
- POOH
- Logging ISF-Sonic-GR
- RIH (no reaming) - POOH. Flow check OK.
- Ran 13 3/8" casing, shoe at 1961 m (Fig. 1)

- 17.00 - Circulated 1500 1/min 20 min. Well flowing. Circulated through choke 2 hours. Well dead. Flow check OK.

17.00 - Started mixing cement.
19.15 - End mixing cement.
21.30 - End displacement. Bumped plug 15 min OK w/2500 psi
21.30 - 22.30 - Unlatched running tool. Cleaned wellhead (flowrate 3500 1/min 1500 psi)
22.30 - Started pulling landing string.
23.00 - Noticed well flowing (Geoservice)
23.45 - SHUT IN WELL after gaining 14 m^3 mud and cement slurry in 45 min. Pstatic = 550 psi

Suncay 12.07.81

00.00 - - Squeezed 11 m^3 d = 1.80 (flowrate 1100 1/min.) through kill line. Pressure 360 psi (while pumping).
- After squeeze Pstatic = 180 psi
- Squeezed 11 m^3 mud d= 1.80. Flow rate 1100 1/min. through kill line. Injection pressure 400 psi going down to 300 psi.

- 02.00 - After squeeze Flow = 0 Pstatic = 0
02.00 - 05.30 - Pstatic increase to 200 psi until 02.30 and then remain stable till 05.30.
05.30 - Pstatic going down to 150 psi
08.30 - OPENED WELL: flowrate 3 bbl/m (30 m^3/hour). Closed in well.
09.00 - Squeezed 11 m^3 mud d = 1.80. Flow rate 1100 1/min. Pressure start injection 500 psi. Pressure end inj. 300 psi.
09.15 - Stopped pumping. Pressure = 0 to 50 psi. Well flowing 0.5 bbl/min.
- Ran open ended drill pipe and close lower pipe rams just above lowest tool joint.
11.00 - OPENED WELL: Flow check OK.

12.00 - Lost 2 m^3 (12 bbls) in 1.30 hrs. Then lost regularly 3.5 m^3/hrs.

16.45 - Total losses = 100 bbls
Pumped 10 m^3 Baryte plug through choke line, d = 2.10, Q = 660 1/min. Displaced with mud d = 1.55 to shoe 20" (660 m). Opened well: noticed well was losing. Filled with 11 m^3 mud d = 1.55

18.30 - Well not stable Alternating losses and Flow (Pressure = 0 psi)

22.00 - Closed in well.

23.00 - Injected 17.4 m^3 cement slurry d = 1.60 (12 m^3 SW + 15T G. Cem. 3.5 1/100 kg D 75). Displaced with 23.7 m^3 mud d = 1.55. Flow rate 900 1/min. Pinj: 420 going up to 460 psi

Monday 13.07.81

- Flow check after displaceing cement slurry. Well flowing.
- Observed well pressure from 0 hrs. 15 to 04 hrs.: Pstatic = 150 psi from 04 hrs. to 6 hrs.: Pstatic going down to 50 psi and remain stable til 09.00.

09.00 - OPENED WELL: Flowing. Gain 12 bbl/hour (cement sample hard on surface)

09.30 - Retrieved Pack off assembly

11.30 - Closed well. Pstatic increased to 350 psi to allow opening well for drill pipes.
- Pumped 5 m^3 mud d = 1.80.

13.00 - Pumped 20 m^3 mud d = 1.55 for cleaning annulus
- Pumped 12 m^3 cement slurry d = 1.65 (31/100 kg retarder)

13.30 - Displaced cement slurry with 23.6 m^3 mud d = 1.55 psi Flow rate 1450 1/min. Pinj = 500 psi Pstatic = 150 psi after injection

17.30 - Pstatic going up to 200 psi

19.40 - Pstatic = 0 psi
- Opened well: small losses

23.00 - Losses stabilized at 900 1/hour.

Tuesday 14.07.81

00.00 - - Pumped 20 m^3 loss circ. material (10 m^3 CECPAC fine 100 kg/m^3 + 10 m^3 MICA fine 100 kg/m^3) + 25 m^3 cement slurry d = 1.90

- 02.30 - Displaced with 19.8 m^3 mud d = 1.55 flow rate 1100 l/min. Pressure after injection 150 psi

(Note: When the loss circ. material was pumped down to the 20" shoe the injection pressure went up to 150 psi, which indicated that the losing zone was situated just below the 20" shoe or about at 660 m)

OBSERVED PRESSURE:

02.30 - 03.00 - Pstatic ↘ to 100 psi; at 03.00 pumped 600 l Pstatic ↗ to 160 psi

03.00 - 04.00 - Pstatic stable ; at 04.00 pumped 600 l Pstatic ↗ to 180 psi

04.00 - 05.00 - Pstatic stable ; at 05.00 pumped 600 l Pstatic ↗ to 200 psi

05.00 - 06.00 - Pstatic down to 180 psi; at 06.00 pumped 600 l Pstatic ↗ to 220 psi

06.00 - 08.00 - Pumped 600 l every 1/2 hour

08.00 - Pstatic = 250 psi Total displacement 24.6 m^3 mud which gives bottom of cement plug at 20" shoe.

- Pumped 3300 l Pinj 500 psi Pstatic 250 psi

- Pumped 2200 l Pinj 400 psi Pstatic 260 psi

- 09.00 - Pumped 2200 l Pinj 400 psi Pstatic 200 psi

- Total pumped: 7.7 m^3 which gives top cement about 200 m above 20" shoe

09.00 - 14.15 - OBSERVED PRESSURE

14.15 - OPENED WELL - well flowed 10 bbl in 3 min. (32 m^3/hours)

- Closed well. Pstatic going up to 260 psi

16.45 - Let well flow 10 min. to control density density = 1.55. No traces of gas. Pressure going up to 300 psi in 3 min.

18.00 - Pstatic = 400 psi. Pumped 5 m^3 mud d= 1.80 to get the pressure down from 420 to 260 psi but at 24.00 hrs. the P was 275 psi

Wednesday 15.07.81

00.00 - 12.00 - Mixed mud and mud with loss circ. materials. Observed well Pstatic = 300 psi

12.00 - Pstatic = 300 psi

- Let well flow 2 min. Q = 60 m^3/hour. Closed well
- Pumped through drill pipe: 1) 32 m^3 LCM (100 - 110 kg/m^3 d = 2.00)
  followed by: 2) 130 m^3 Mud d = 1.85
  and by: 3) 23 m^3 Mud d = 1.55

DETAILS OF PUMPING OPERATIONS:

Fluid pumped	Total volume pumped	Flow rate	injection pressure	Wellhead pressure (read from kill line)
LCM d = 2.00	start	1400 l/min	500 psi	300 psi
	20 m^3	"	300 psi	0
Mud d = 1.85		2500 l/min	1700 psi	0
	52 m^3	2800/2900	2700 psi	100 psi
	67 m^3	2800/2900	2700 psi	150 psi
	85 m^3	2800/2900	2700 psi	150 ↘ 100 psi
	100 m^3	3200 l/min	3300 psi	200 psi
	162 m^3	3200 l/min	3300 psi	200 psi
Mud d = 1.65		2500 l/min through DP and KL	250/300	(No reading as pumping also through KL)
23 m^3	185 m^3			

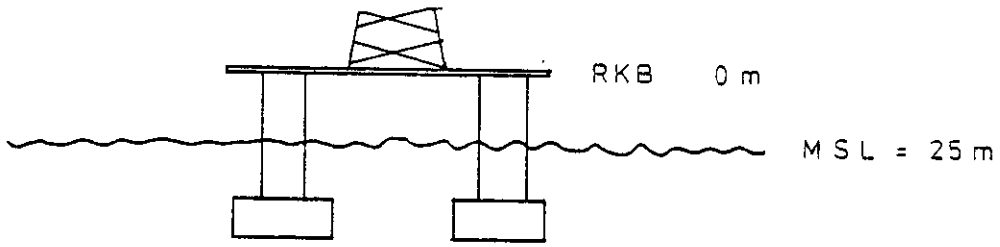
- Stop pumping P = 0
- Opened well. Flowing 4 bbls/min. Let flow 45 bbls.

13.45 - Closed well. Pstatic = 0

- Ran underwater TV camera: Nothing to report.

13.45 - 22.00 - Observed well. Pstatic between 0 and 40 psi

22.00 - Pumped 5 m^3 mud d = 1.80. The well lost a little, then flowed 3 to 4 bbls/min. Pumped another 5 m^3 mud d = 1.80. The well was losing a little, then got stable at 23.00 hrs.



SEA BED / RKB = 92 m

30" at 153 m

20" at 653 m

L.O.T. at 20" shoe = 1.65

Rig = s.s. DYVI ALPHA (Aker H3)

Wellhead: VETCO SG5 18 3/4" × 10.000

Fig. 1

13 3/8" at 1961 m

drilling break at 1968 m

TD 17 1/2" = 1970 m

Thursday 16.07.81

- RIH DP, one stand below CSG Hanger 13 3/8
- Pulled and cleaned top of Hanger - POOH
- RIH CSG Hanger RT with DP extension. Reconnected to hanger and pressure tested to 1500 psi OK.
- Temperature Log: first run tool failed, second run not able to run farther down than 1844 m (see fig. 2)
- Unscrewed and POOH casing hanger RT
- RIH 12 1/4 BIT and washed down 1791 - 1935 m (Float collar 1936.5 m)

Friday 17.07.81

- Conditioned mud. Increased density from 1.55 to 1.65
- While POOH well started to flow.
- Squeezed 4 times 5 m^3 mud d = 1.80 through 20" x 13 3/8" annulus
- Flow check OK. POOH
- Ran casing hanger running tool. Reconnected to hanger and pressure test to 1500 psi, OK
- Ran perforation gun (2 1/8" UNIJET. 2 feet - 4 slots/foot).
  Perforated at 1925 m with 500 psi in CSG. No pressure drop.
  Increased to 2000 psi, no pressure drop.
- Ran same perforation gun (6 feet - 4 slots/foot) and shot at 1913 m with 500 psi in CSG. Pressure drop.
  Increased to 600 psi. Pressure dropped
  Increased again to 600 psi. No pressure drop
  Increased to 1000 psi. No pressure drop
  Started injection with 1100 psi. Established injection rate: 400 l/min with 1500 psi. Total injected: 6 m^3. Pressure stabilized at 1100 psi when injection is stopped. No return through the annulus.

Saturday 18.07.81

- Squeezed 60^T (48 m^3) G cement d = 1.90 into the formation. through the annulus 20" x 13 3/8". Displaced by 40 m^3 mud d = 1.80
- Opened well. Lost 9 m^3 then well stabilized. Washed casing hanger area.

03.00 - 08.00 - WOC

- Ran VETCO Tap and flush tool. Cleaned pack off any sealing area.
- Ran and set pack off assy. Torqued to 18000 lbs/ft. Tested 7500 psi OK.
- Ran temperature log 1500 m to 0 (see Fig. 3)
- Ran CBL 1935 m to 500 m.
- CBL results:

1925 m - 1905 m	25 mV	10% adherence
1905 m - 1865 m	5-10 mV	80-95% adherence
1865 m - 1650 m	10-15 mV	50-70% adherence
1650 m - 1500 m	15-25 mV	30-50% adherence
1500 m - 1175 m	30-35 mV	10-20% adherence
1175 m - 650 m	25 mV	30 % adherence
650 m - 510 m	30-35 mV	10-20% adherence

Top cement at 510 m

Sunday 19.07.81

- RIH free pipe down to upper perforations
- Circ
- Pumped 5 m^3 spacer; 10 m^3 slurry; 2 m^3 spacer. Dispaced same.
- POOH 6 stds, reversed circulation. Squeezed 4 m^3 slurry (1500 psi - 400 l/min)
- 4 hours: WOC with 1500 psi - POOH
- Tested BOP and set wear bushing

Monday 20.07.81

- RIH 12 1/4 bit
- Drilling out cement from 1819 to 1946 m
- Pressure test: Casing pressure dropped from 1500 to 800 psi
- Drilling out cement from 1946 to 1970 m
- Drilling from 1970 to 1972 losing (8.5 bbls in 5 min.)
- Drilling from 1972 to 1982 while reducing mud weight from 1.65 to 1.59.
- Well stabilized.
- Drilling from 1982 to 2027 m withou losses.

Tuesday 21.07.81

- Circulation and POOH
- RIH open ended DP
- Mixed 10 m^3 slurry d = 1.90 and displaced same. POOH 6 stds - reversed circulation. Attempted to squeeze cement with 1500 psi

03.30 - WOC P = 1500 psi

- Well steady POOH
- RIH new BHA
- Washed down from 1874 m to 1901 m Top cement 1901.

Wednesday 22.07.81

- Drilling out cement from 1901 to 2019 m
- Circulated bottoms up
- Drop survey
- LOT pressure 620 psi deq. = 1.80
- POOH
- Make up BHA . RIH
- Ream from shoe to 2019 m
- Drilling cement from 2019 to 2027 m
- Resumed drilling.

1st run.

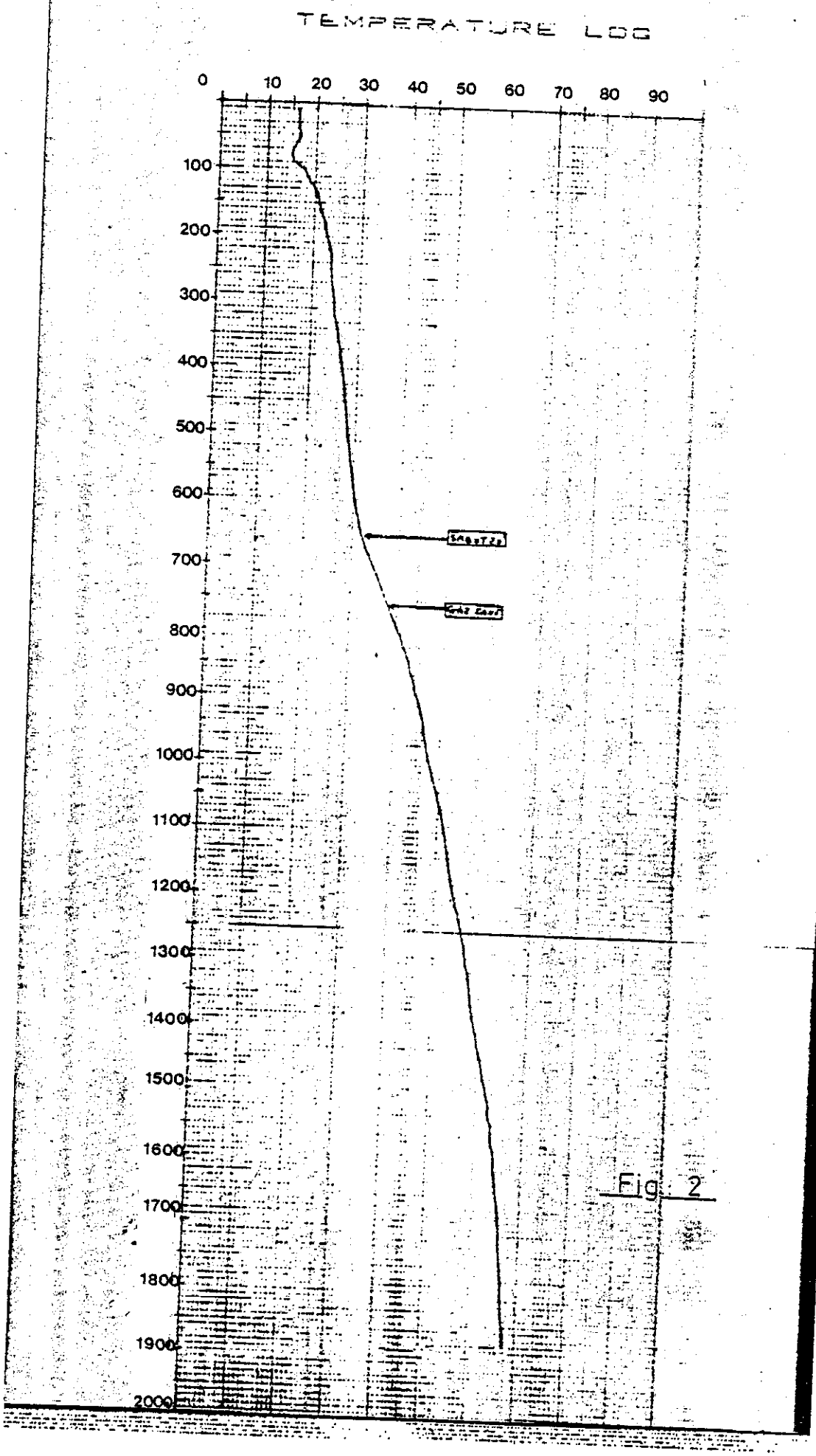

TEMPERATURE LOG
0
10
20
30
40
50
60
70
80
90
100
200
300
400
500
600
700
800
900
1000
1100
1200
1300
1400
1500
1600
1700
1800
1900
2000

Fig. 2

19-7-81

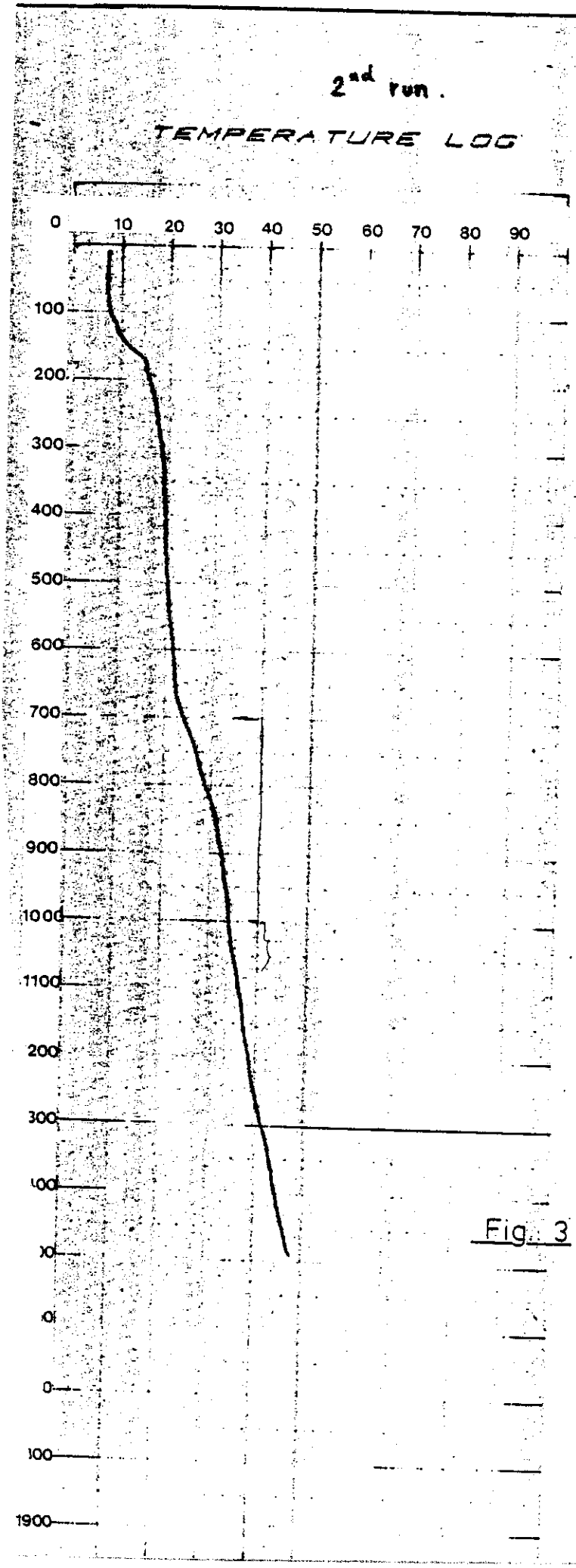

2nd run.
TEMPERATURE LOG
0
10
20
30
40
50
60
70
80
90
100
200
300
400
500
600
700
800
900
1000
1100
200
300
0
100
1900

Fig. 3