

General

Conoco-Pelican-Gulf well 7/9-1 was drilled in the Norwegian North Sea in April and May 1971. The well was spudded on 22nd April and required 33 days to complete. T.D. was 9614'. The Zapata jackup, "Maersk Explorer", was used on this well. Water depth was 224' and conventional surface control equipment was used. In general the operations were trouble-free and the well was plugged and permanently abandoned as a dry hole.

Bits

Seventeen bits were used as follows:

No.	Size	Footage	Hours	Ft./Hrs.
1	26"	1172	36	32.6
1	17-1/2"	2029	35	58.2
4	12-1/4"	3527	75 1/2	46.8
10	8-1/2"	2235	102	21.9
1	8-7/16"	284	34 1/2	8.25
1	8-15/32" core head	37	6 1/2	5.7

All bits were jet type except the 26", and all except the 26" and 17 1/2" were sealed bearing. In the upper part of the hole some of the bits were pulled prematurely. A copy of the bit record is attached.

Coring

Two cores were attempted using a Christensen conventional core barrel and a Christensen C-22 core head.

The first core, 7249 - 7273, recovered 15 1/2 feet. The core barrel had jammed. Formation was a chalky limestone of Danian age. The second core, 7403 - 7416, recovered 10 feet. The barrel had jammed again. Formation was a chalky limestone of Maestrichtian age. The cores were cut using 10 - 12,000 lbs weight and 130 - 160 R.P.M. Pump pressure was 1400 - 1500 and circulation rate 260 G.P.M.

Casing and Cementing.

30" conductor pipe was driven to refusal at 355' RKB - 25' penetration using a D-44 Hammer. By using a high viscosity gel mud and careful drilling, circulation was maintained and the hole was drilled to the 20" casing point, 1502'.

The 20" 8 round casing stuck; after running 20 joints, at 793'. The pipe was cemented with 800 sacks class B + 12% gel cement, tailed in with 300 sacks neat class B. Cement was returned to the surface.

GEOLOGICAL LIBRARY

Cont...2..

The 13-3/8" casing was run at 3511' after a 17 1/2" hole had been drilled to 3531'. 92 joints of K-55 buttress were used. The pipe was cemented with 1800 sacks of class B + 12% gel followed by 300 sacks class B neat. A Cameron mud line hanger run at 341', was backed off to wash the cement out of the annulus. Considerable difficulty was experienced in the attempt to reconnect this riser, finally requiring the removal of the lower threads on the pin end of the hanger.

172 joints 47 lbs 9-5/8" N-80 buttress casing, a total of 7034', was run and landed in the mud line hanger at 341'. The pipe was cemented with 1700 sacks class B + 4% gel tailed in with 800 sacks neat class B, retarded.

Some cement returns were observed. The annulus was washed out and the mud line hanger reconnected and tested without incident.

Mud

Total mud cost on this well was approximately \$ 70,000. The well was spudded using a high viscosity gel-seawater mud. After drilling out of the 20" casing, which stuck at 793', the mud was converted to a ligno sulfonate-seawater. The 700' of 26" rathole left below the 20" casing gave considerable trouble by acting as a build up area for large balls of gumbo which collected there as 17 1/2" hole was being made. Annular velocity in this part of the hole, even with a circulation rate of 900 G.P.M. was probably less than 30 f.p.m. An attempt to run electric logs at the 13-3/8" casing point failed because of the fill at 1450'.

Drilling detergent was used to reduce torque and drag and was successful in the upper part of the hole. Toward T.D. an increase in mud weight to 14.0 ppb was necessary to further reduce excessive torque.

Mud supplier was Magcobar. A copy of the mud summary is attached.

Comments

The total rig days charged to the well include 5 days waiting on weather at the end of the operation.

A deviation problem arose in the 8 1/2" hole, starting around 7400' where the angle was 4 1/2°. It increased steadily and at 8933' the last survey point was 5 1/2°. Light bit weight, high rotary speeds, and a bottom hole assembly usually successful in dropping angle had no effect.

3rd May 1971.

SUMMARY OF DRILLING OPERATIONSCONOCO-PELICAN-GULF 7/9/1

1530 Hours April 20th - 0800 Hours May 3rd, 1971
 Reports as of 0800 am for day reported covering previous 24 hours.

APRIL 21, 1971

16½ Hrs. - Under tow and positioning rig.

APRIL 22, 1971

11 Hrs. - Rigging up.
 10 Hrs. - Run and drive 30'' - 1'' wall conductor to 355'
 RKB, 25' penetration, conductor refused.
 3 Hrs. - Rigging up to drill.

Water depth 224'. RKB to Mud Line 330'.
 RKB to mean low wave 106. Air Gap 55'
 Leg penetration 17'

Final DECCA Coordinates:

57° 20' 37.116'' N
 02° 51' 21.426'' E

APRIL 23, 1971

T.D. 735' Progress 735' D.S.S. 1

8½ Hrs. - Rigging up to drill out, pick up E.H.A.
 5½ Hrs. - Drilling to 433'
 ½ Hrs. - TOTCO 427' - 1'
 2 Hrs. - Trip for drill collars
 7½ Hrs. - Drilling

APRIL 24, 1971

T.D. 1495' Progress 760' D.S.S. 2

22 Hrs. - Drilling
 2 Hrs. - Clean out flow line.

APRIL 25, 1971

T.D. 1502' Progress 7' D.S.S. 3

1 Hr. - Drill to 1502'
 ½ Hr. - TOTCO 1502' - ½'
 17½ Hrs. - Condition Hole, two trips.
 5 Hrs. - Running 20'' casing.

Summary of Drilling Operations cont...

13

APRIL 26, 1971

T.D. 1502' Progress 0' D.S.S. 4

- 7½ Hrs. - Ran 20 Joints 94 Pound 3 rd 20'' casing. Casing stuck at 793'.
- 2 Hrs. - Cemented with 800 sacks 12% gel and 300 sacks class B cement. Cement returns to surface.
- 14½ Hrs. - W.O.C. Nippling up 20'' Hydril washed out 30'' - 20'' Annulus to 340' with 2 - 1'' lines.

5

APRIL 27, 1971

T.D. 2335' Progress 833' D.S.S. 5

- 9 Hrs. - Nipple up, test 20'' casing and 20'' Hydril to 500 p.s.i. ok.
- 3½ Hrs. - Go in hole, drill cement 764' - 793', clean 26'' hole to 1502'.
- 9½ Hrs. - Drilling with Bit No 2.
- 2 Hrs. - Clean out flow line.

1

APRIL 28, 1971

T.D. 3020' Progress 685' D.S.S. 6

- 1½ Hrs. - Drill to 2489'
- ½ Hr. - TOTCO 2489' - ½°
- 3 Hrs. - Short trip to clean hole.
- 9 Hrs. - Drilling to 3020'.
- 10 Hrs. - Short trip and clean flow line.

1

APRIL 29, 1971

T.D. 3531' Progress 511' D.S.S. 7

- 15 Hrs. - Drill to 3531'
- 4½ Hrs. - Circulate short trip, some drag.
- 1 Hr. - Circulate, condition hole.
- ½ Hr. - TOTCO 3531' - 1°
- 3 Hrs. - Measure out of hole, no correction.

1

APRIL 30, 1971

T.D. 3531' Progress 0 D.S.S. 8

- 1 Hr. - Attempt to log, stopped 1471'.
- 6 Hrs. - Trip to condition hole, bridge at 1471'.
- 1 Hr. - Attempt to log, stopped 1471'.
- 8 Hrs. - Trip to condition hole, increase mud weight to 12.0 pound/gal. Bridges at 1471' and 2900'.
- 8 Hrs. - Running 13-3/8'' casing.

1

Summary of Drilling Operations cont...

14

MAY 1, 1971T.D. 3531¹ Progress 0 D.S.S. 9

- 7 Hrs. - Finish running 13-3/8" casing. Ran 92 joints 13-3/8" K-55 casing set at 3511', float collar at 3436, mud line hanger at 341'. Cemented with 1800 sacks class B with 125 gal and 300 sacks class "B" neat. Cement returns to surface. Bumped plug with 1500 p.s.i. float held. Job complete 13.45 pm 30 April 1971.
- 17 Hrs. - W.O.C. released 13-3/8" riser. Washed cement out of 20' - 13-3/8" annulus. Could not re-connect riser. Pulled and layed down riser. Removed 20' hydril. Reran riser with centralizer. Could not connect.

5

MAY 2, 1971T.D. 3531¹ Progress 0 D.S.S. 10

- 10 Hrs. - Pulled riser, dressed threads on running tool. Ran and welded riser, screwed in 3 turns, would not hold pressure.
- 10 Hrs. - Pulled riser. Modified running tool by removing lower threads with grinder. Replaced O-ring and packing. Reran riser, connected, tested with 1000 p.s.i. o.k. Apparently third thread in hanger was damaged when riser was first removed.
- 4 Hrs. - Cut off casing. Nippling up.

5

MAY 3, 1971T.D. 3730¹ Progress 199¹ D.S.S. 11

- 1/2 Hr. - Pack K-bushing. Test bushing and casing 1500 p.s.i. o.k.
- 5 1/2 Hrs. - Nipple up B.O.P.
- 3 Hrs. - Test B.O.P., choke and kill lines to 5000 p.s.i. 2500 p.s.i on hydril o.k.
- 4 1/2 Hrs. - Pick up bottom hole assembly. Go in hole.
- 4 1/2 Hrs. - Drill Plug and float collar at 3431', shoe at 3511'.
- 6 Hrs. - Drilling.

/

18th May 1971

SUMMARY OF DRILLING OPERATIONSCONOCO-PELICAN-GULF 7/C-1

0800 Hours May 4th - 0800 Hours May 18th 1971

Reports as of 0800 am for day reported covering previous 24 hours.

MAY 4, 1971

T.D. 5128' Progress 1398' D.S.S. 12

11	Hrs.	- Drilling
1	Hr.	- Short trip - 40,000 overpull first 5 stands
1/2	Hr.	- Drilling
1/2	Hr.	- Circulate
11	Hrs.	- Drilling

MAY 5, 1971

T.D. 5880' Progress 752' D.S.S. 13

1	Hr.	- Finish short trip
2-1/2	Hrs.	- Drilling to 6244'
2	Hrs.	- Circulate and totco
5-1/2	Hrs.	- Trip for bit no. 4
13	Hrs.	- Drilling

MAY 6, 1971

T.D. 6369' Progress 489' D.S.S. 14

8	Hrs.	- Drilling to 6118'
1/2	Hr.	- Circulate and survey
7	Hrs.	- Trip for bit no. 5. Pick up 3 additional DC and rearranged stabilizers. Ran in hole. No drag and no fill
8-1/2	Hrs.	- Drilling 12-1/4 hole.

MAY 7, 1971

T.D. 7058' Progress 689' D.S.S. 15

8	Hrs.	- Drilling to 6713'
9	Hrs.	- Circulate, totco and trip for bit no. 6, no drag, no fill.
7	Hrs.	- Drilling to 7058'

Cont.....2....

Summary of Drilling Operations cont....

16

MAY 8, 1971

T.D. 7058'	Progress 0	D.S.S. 16
1-1/2 Hrs.	- Condition hole, short trip, 15' fill	
1-1/2 Hrs.	- Condition hole	
3-1/2 Hrs.	- Pull out to log	
10 Hrs.	- Ran Schlumberger gamma-ray sonic and IES logs. Schlumberger T.D. 7061'	
7 Hrs.	- Lay down 9-1/2 and 7-3/4 drill collars. Run in hole	
1/2 Hr.	- Condition hole.	

3

MAY 9, 1971

T.D. 7058'	Progress 0	D.S.S. 17
1/2 Hr.	- Condition hole	
2-1/2 Hrs.	- Pull out of hole	
2-1/2 Hrs.	- Set Cameron mud line hanger	
11 Hrs.	- Ran 172 joints 9-5/8" - 47 lbs buttress casing set at 7034' landed in sub sea hanger at 345' RKB.	
4 Hrs.	- Circulated casing and cemented with 1700 sacks 4% Gel and 800 sacks neat class "B" retarded cement. Approximately 75 sacks return to surface.	
1-1/2 Hrs.	- Removed riser, washed out cement, reconnected tested to 1500 psi. ok.	
2 Hrs.	- Rig down Halliburton - Nipple up while W.O.C.	

MAY 10, 1971

T.D. 7090'	Progress 32'	D.S.S. 18
10-1/2 Hrs.	- Nipple up	
2-1/2 Hrs.	- Test BOP, choke and kill lines to 5000 psi., Hydril and casing to 2500 psi. ok.	
1-1/2 Hrs.	- Pick up BHA	
4-1/2 Hrs.	- Go in hole, install casing protectors on every joint.	
3 Hrs.	- Drill plug and float collar at 6941'	
1-1/2 Hrs.	- Drill cement to 7020', tested casing to 2500 psi. ok, drill shoe at 7033'.	
1/2 Hrs.	- Drilling	

MAY 11, 1971

T.D. 7273'	Progress 183'	D.S.S. 19
6 Hrs.	- Drilling 7090' to 7249'	
1 Hr.	- Circulate for sample	
11 Hrs.	- Trip out, pick up core barrel, go in hole, circulate, drop bell.	
4 Hrs.	- Cutting core no. 1 - 7249 - 7273, 24 feet, barrel apparently jammed	
2 Hrs.	- Pulling out of hole	

MAY 12, 1971

T.D. 7415' Progress 142' D.S.S. 20

1-1/2 Hr. - Pull out with core no. 1
 1-1/2 Hr. - Recover core no 1 - 7249 - 7273', cut 24 feet, rec. 15-1/2 feet.
 3 Hrs. - Go in hole with bit no. 8.
 3 Hrs. - Drilling
 5 Hrs. - Condition mud, short trip into casing increase mud weight to 14.0 lb/gal. 2
 1-1/2 Hr. - Drilling to 7403'
 1 Hr. - Circulate, Totco
 5-1/2 Hr. - Trip for Core No. 2
 1/2 Hr. - Circulate, drop ball.
 1-1/2 Hr. - Cutting Core No. 2 - 7403 - 7415'

MAY 13, 1971

T.D. 7650' Progress 235' D.S.S. 21

1 Hr. - Cutting core No. 2 to 7416'. Barrél jammed.
 2-1/2 Hrs. - Pull out of hole
 2 Hrs. - Lay down core No. 2 7403 - 7416' - Recovered 10 feet
 1/2 Hr. - Slip and cut drilling line
 3 Hrs. - Go in hole.
 1/2 Hr. - Wash and ream 25' to bottom
 14-1/2 Hrs. - Drilling to 7650'.

MAY 14, 1971

T.D. 7891' Progress 241' D.S.S. 22

4 Hrs. - Trip for bit No. 10
 15-1/2 Hrs. - Drilling to 7891'
 4-1/2 Hrs. - Totco and trip for bit No. 11

MAY 18, 1971

T.D. 9281' Progress 1390' D.S.S. 26

2 Hrs. - Go in hole TP.U 9 DC
 10-1/2 Hrs. - Drilling
 1 Hr. - Circulate C
 3-1/2 Hrs. - Drilling
 1/2 Hrs. - Survey
 2-1/2 Hrs. - Pull out of hole
 3 Hrs. - Go in hole
 1 Hr. - Drilling
 8 Hrs. - Drilling
 1 Hr. - Circulate sample
 3-1/2 Hrs. - Drilling
 3 Hrs. - Pull out of hole
 2-1/2 Hrs. - Go in hole
 1 Hr. - Drilling
 1 Hr. - Circulate samples
 4 Hrs. - Drilling

Cont....4.

Summary of Drilling Operations cont....

MAY 18, 1971 cont..

- 6 Hrs. - Drilling
- 1/2 Hr. - Survey
- 6 Hrs. - Trip
- 3-1/2 Hrs. - Drilling
- 1 Hr. - Circulate
- 7 Hrs. - Drilling
- 2 Hrs. - Drilling
- 6 Hrs. - Trip for bit
- 6-1/2 Hrs. - Drilling
- 7-1/2 Hrs. - Trip for bit, BHA, cut drill line
- 2 Hrs. - Drilling

26th May 1971

SUMMARY OF DRILLING OPERATIONSCONOCO-PELICAN-GULF

0600 Hours May 19th - 0800 Hours May 26th 1971
 Reports as of 0800 am for day reported covering previous 24 hours.

MAY 19, 1971

T.D. 9487' Progress 206' D.S.S. 27
 24 Hrs. - Drilling

MAY 20, 1971

T.D. 9614' Progress 127' D.S.S. 28
 4 Hrs. - Drilling
 1-1/2 Hrs. - Short trip
 4-1/2 Hrs. - Drilling
 5 Hrs. - Trip for bit
 3 Hrs. - Drilling
 1 Hr. - Circulate
 1/2 Hr. - Drilling
 1 Hrs. - Circulate
 3-1/2 Hrs. - Pull out of Hole to log

MAY 21, 1971

T.D. 9614' Progress 0 D.S.S. 29
 24 Hrs. - Rig up and run IBS, PDC, SSL, MLL, Sonic - CR, HRD, Now shooting SWC

MAY 22, 1971

T.D. 9614' Progress 0 D.S.S. 30
 9 Hrs. - Sidewall coring. Recovered 74 of 90 shots.
 3-1/2 Hrs. - Lay down drill collars
 3 Hrs. - Go in hole, spot plug No. 1 7140' - 7300'
 with 75 sacks class E cement
 3 Hrs. - W.O.C. - Check top cement 7140'
 5-1/2 Hrs. - Set retainer in 9-5/8" casing at 6900'.
 Broke down formation below retainer at
 1000 p.s.i., mud weight 14.0 lb/per gal.
 Squeezed 150 sacks class "E" below retainer,
 spotted 50 sacks on top retainer.

Cont.....2...

Summary of Drilling Operations cont...

MAY 23, 1971

	T.D. 9614'	Progress 0	D.S.S. 31
1	Hr.	- Tested retainer, would not hold pressure	
4	Hrs.	- Full out of hole. Removed damaged cementing tool. Go in hole. Spotted 200 sacks cement on top of retainer. Tested 1500 p.s.i. ok.	
11	Hrs.	- Laying down drill pipe, nipple down BOP	
3	Hrs.	- Spot 50 sacks class B at 468', washed out at 350'	
5	Hrs.	- Could not remove 9-5/8" riser. Made two cuts. at 348 and 345'. Could not pull.	

6

MAY 24, 1971

	T.D. 9614'	Progress 0	D.S.S. 32
19	Hrs.	- Jarred 9-5/8" and 13-3/8" risers loose, layed down. Cut 20" at 339'. Layed down. Cut 30" at 335'.	
5	Hrs.	- Waiting on weather to pull 30" riser	

6

MAY 25, 1971

	T.D. P & A		D.S.S. 33
13	Hrs.	- Waiting on weather	
5	Hrs.	- Pull and lay down 30" conductor	
6	Hrs.	- Preparing to move	

4

MAY 26, 1971

			D.S.S. 34
24 hrs	Hrs.	- Waiting on weather	

4

MAY 27, 1971

			D.S.S. 35
24	Hrs.	- Waiting on weather	

4

MAY 28, 1971

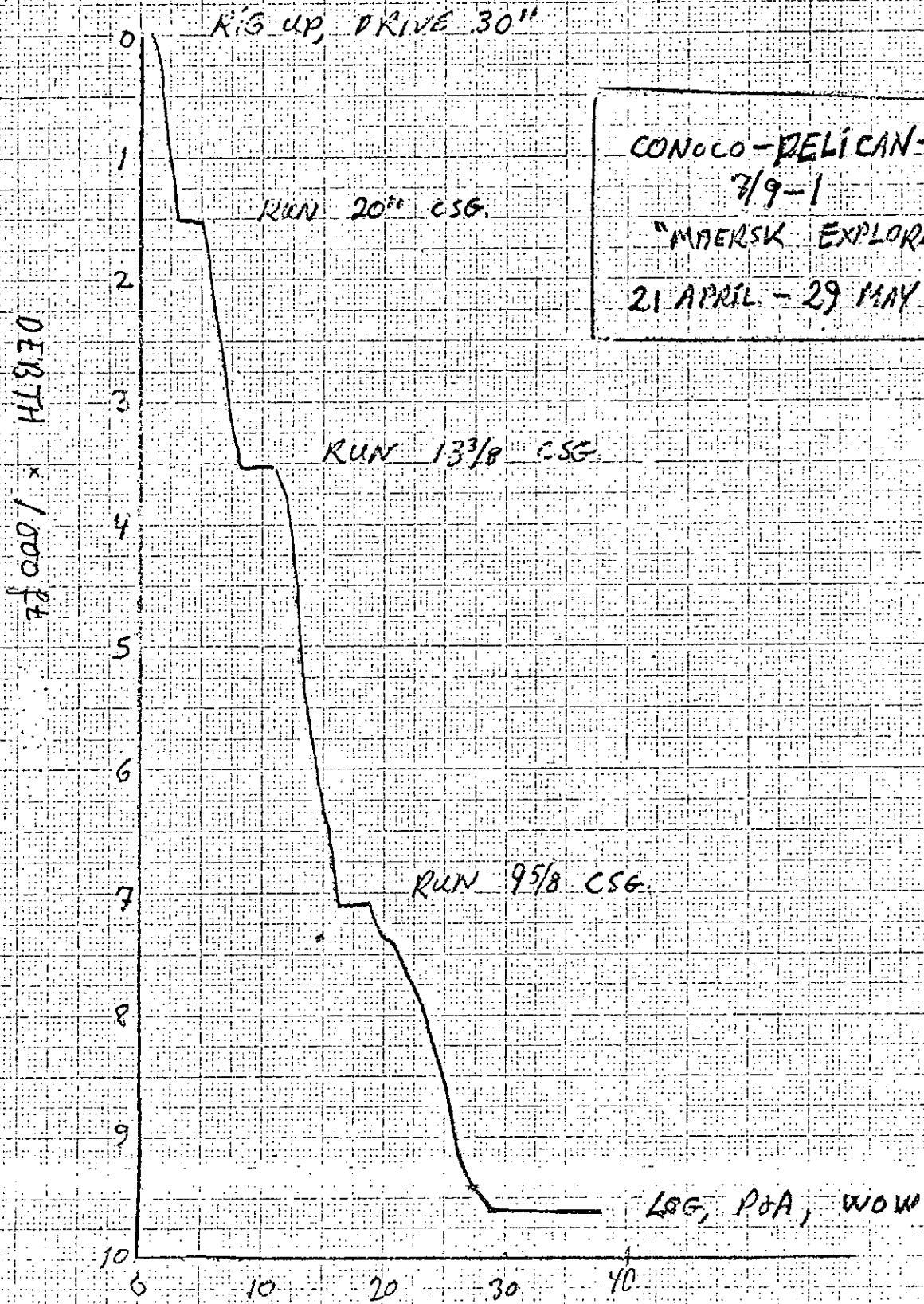
			D.S.S. 36
24	Hrs.	- Waiting on weather	

4

MAY 29, 1971

	T.D. P and A		D.S.S. 37
24	Hrs.	- Waiting on weather	
2	Hrs.	- Jacking down - Hooking up tugs - Under tow for 8/12-1 1000 hours May 29 1971. Final report for rig and well. Plugged and abandoned.	

4



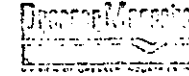
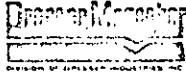
CONOCO-DELICAN-GULF
7/9-1
"MAERSK EXPLORER"
21 APRIL - 29 MAY 1971

CONOCO NORWAY INC.

CONOCO-PELICAN-GULF 7/9-1

Drilling Time Analysis

	<u>Hours</u>	<u>Days</u>	<u>o/o</u>
MOVING	18-1/2	0.8	2.1
RIG UP -- DOWN	17	0.7	1.8
CONDUCTOR	10	0.4	1.0
DRILLING	301	12.5	32.2
TRIPS -- DRILLING	106	4.4	11.3
REAM	1/2	-	-
CORING	30	1.2	3.1
CASING AND CEMENT	47	2.0	5.2
W.O.C. -- NIPPLE UP	101	4.2	10.9
CONDITION HOLE	65	2.7	7.0
TOTCO	4	0.2	0.5
CIRC. SAMPLES	5	0.2	0.5
LOGGING	52	2.2	5.7
P. AND A.	59-1/2	2.5	6.4
WOW TO MOVE	114	4.8	12.3
	<u>930-1/2</u>	<u>38.8</u>	<u>100.0</u>



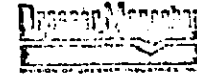
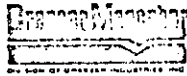
WELL DATA SHEET

MAC-545-A

OPERATOR UCILCO-PELISON-GULF	SURVEY SEC. T P	CASING SIZE	DEPTH	DRLG. DAYS	BIT SIZE
WELL 9/4-1	FIELD	SURFACE			
CONTRACTOR ADATA	COUNTY	INTERMEDIATE			
ENGINEER	STATE	COUNTRY	PRODUCTION		

DATE	DEPTH	WT.	VISCOSITY		CORR. 115°F		GELS		pH	FLUID LOSS		CL	ALKALINITY			CA ppm	Mg ppm	RETORT			ACTIVITY		RATIO		# Sbl	CEC		
			SEC.	CPS.	PV	YP	100 PSI API	500 PSI 300 °F HT-HP		BECK STRIP	PF		PIA	MF	% OIL			% SOL	% WATER	As	Am	OIL	H2O					
1/27		8.5	42						11.5																			
2/1		9.1	51						10.0																			
2/15		9.3	43						9.5																			
2/29		9.4	45						11.0																			
3/6																												
3/17	20.5	9.8	48			14	7	0	12	11.0	10.0	100	1.0				700			10	14	20						
3/24	40	10.4	50			15	8	0	10	11.5	11.0	75	0.8				500			10	14	20						
3/27	50.1	10.2	50			12	5	2	12	11.0	11.0	100	1.0	2.0			700			5	18	10						
3/30	55.4	10.0	50			17	8	2	10	11.5	8.0	100	1.0	2.0			700			5	18	20						
4/1/71		11.7	51			17	5	2	12	11.0	8.0	100	1.0	2.0			700			5	18	20						
4/1		12.5	53			15	6	2	10	11.5	6.0	100	2.0	4.0			700			6	12	22						
4/8	27.0	12.8	57			17	11	3	27	11.5	6.0	100	1.7	4.0			200			6	17	75						
4/15	40	14.4	53			21	11	3	9	11.5	5.0	100	1.5	3.0			700			6	22	78						
4/22	50	13.0	53			23	12	6	12	11.0	6.0	100	2.0	3.0			700			5	20	72						
4/29	60	13.2	49			20	10	2	6	11.0	6.0	100	1.3	2.0			700			5	24	71						
4/29	70.0	13.2	57			24	12	4	10	11.5	6.0	100	1.7	3.0			700			5	22	73						
5/6		15.1	53			27	10	2	8	11.5	6.0	100	1.5	2.0			700			5	20	72						
5/13		13.1	57			23	10	4	10	11.5	6.1	100	1.2	2.0			700			5	20	72						
5/20	80.0	13.5	53			21	10	6	12	11.0	6.0	100	2.0	2.0			700			10	24	70						
5/27	90.0	14.0	55			22	10	6	12	11.5	6.0	100	0.8	2.0			700			6	25	69						
5/27	200.0	14.0	50			17	7	2	15	11.0	7.0	100	1.2	2.0			700			6.5	20	70.5						
5/27	300.0	14.0	47			17	7	2	14	11.5	7.0	100	1.3	2.0			700			6.5	18	70.5						
5/27	400.0	14.0	45			18	8	2	12	11.5	6.0	100	1.2	2.0			700			7.0	24	67						
5/27	500.0	14.0	47			18	11	2	12	11.5	6.0	100	1.2	2.0			700			7.0	22	67						
5/27	600.0	13.0	37			15	11	2	12	11.5	6.0	100	1.4	2.0			700			7.0	20	67						
5/27	700.0	12.0	30			12	11	2	11	11.5	6.0	100	1.2	2.0			700			1.0	20	67						
5/27	800.0	12.0	28			12	11	2	11	11.5	6.0	100	1.0	2.0			700			1.0	20	67						

24



WELL DATA SHEET

MAG-5 10-A

OPERATOR <i>CONCO - FURMS - GULF</i>	SURVEY SEC. T R	CASING SIZE	DEPTH	DRLG. DAYS	BIT SIZE
WELL <i>7/7-1</i>	FIELD	SURFACE			
CONTRACTOR	COUNTY	INTERMEDIATE			
ENGINEER	STATE	COUNTRY	PRODUCTION		

DATE	DEPTH	WT.	VISCOSITY		CORR. 115°F		GELS		pH	FLUID LOSS			CL <input type="checkbox"/>	ALKALINITY			CA ppm	Mg ppm	RETORT			ACTIVITY		RATIO		# Bbl
			SEC.	CPS.	PV	YP	0	10		100 PSI API	500 SI 300 °F HT-HP	PF		PM	MF	% OIL			% SOL	% WATER	A _s	A _m	OIL	H ₂ O	CEC	
<i>12/1</i>	<i>147</i>	<i>141</i>	<i>41</i>		<i>2/11</i>	<i>2/12</i>	<i>110</i>	<i>7</i>		<i>15</i>	<i>0.5</i>	<i>2</i>	<i>100</i>				<i>6</i>	<i>27</i>	<i>6.5</i>							
<i>12/1</i>	<i>147</i>	<i>141</i>	<i>41</i>		<i>2/11</i>	<i>2/12</i>	<i>110</i>	<i>7</i>		<i>15</i>	<i>0.5</i>	<i>2</i>	<i>100</i>				<i>6</i>	<i>27</i>	<i>6.5</i>							
<i>12/1</i>	<i>147</i>	<i>141</i>	<i>41</i>		<i>2/11</i>	<i>2/12</i>	<i>110</i>	<i>7</i>		<i>15</i>	<i>0.5</i>	<i>2</i>	<i>100</i>				<i>6</i>	<i>27</i>	<i>6.5</i>							

DATE SPUD:	DATE T.O.:	B.H.T.	COMPLETION FLUID TYPE:	COST:
			PACKER MUD TYPE:	COST:

1. *Handwritten notes on graph paper, including a large diagram of a triangle with internal lines and various labels.*
 2. *Handwritten notes and diagrams, including a circular diagram with internal lines and labels.*
 3. *Handwritten notes and diagrams, including a circular diagram with internal lines and labels.*
 4. *Handwritten notes and diagrams, including a circular diagram with internal lines and labels.*
 5. *Handwritten notes and diagrams, including a circular diagram with internal lines and labels.*
 6. *Handwritten notes and diagrams, including a circular diagram with internal lines and labels.*
 7. *Handwritten notes and diagrams, including a circular diagram with internal lines and labels.*
 8. *Handwritten notes and diagrams, including a circular diagram with internal lines and labels.*
 9. *Handwritten notes and diagrams, including a circular diagram with internal lines and labels.*
 10. *Handwritten notes and diagrams, including a circular diagram with internal lines and labels.*