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Geological Well Report

American Petrofina Company of Texas

No. 1 McNish

SE SW Section 22 - T-12-N - R-51-W

Logan County, Colorado

DVR	
FJP	✓
HHM	✓
JAM	✓
JJD	✓
RLS	
CGM	



00290627

file

American Petrofina Company of Texas

No. 1 McNish
SE SW Section 22 - T-12-N - R-51-W

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Elevations: GL 4372', KB 4385'
 Survey: 2000' FWL, 660' FSL
 Spud Date: April 13, 1980
 Surface Casing: Ran 247 feet of 8-5/8" casing,
 Set @ 258 feet. Cemented w/275
 sacks of cement. Plugdown
 @ 6:15 P.M., April 13, 1980.
 Cores: None
 Tests: None
 Drilling Fluid: Salt base mud
 Log Surveys: Schlumberger Dual Laterolog,
 Compensated Neutron-Formation
 Density Log, Integrated Borehole
 Compensated Sonic Log.

Formation Tops:	Formation	Depth	(Subsea)
	Niobrara shale	3927'	(+ 456)
	Fort Hayes limestone	4246'	(+ 137)
	Carlile shale	4280'	(+ 103)
	Greenhorn limestone	4468'	(- 85)
	Graneros shale	4526'	(- 143)
	"X"-Bentonite Marker	4618'	(- 235)
	"D" sandstone	4714'	(- 331)
	"G" sandstone	4776'	(- 393)
	Huntsman shale	4798'	(- 415)
	"J" sandstone	4835'	(- 452)
	Skull Creek shale	4868'	(- 484)
	"M" sandstone	5022'	(- 639)
	"O" sandstone	5075'	(- 692)
	"R" sandstone	5187'	(- 804)
	"T" sandstone	5271'	(- 888)
	Morrison shale	5309'	(- 926)
	Cedar Hills sandstone	5598'	(- 1215)
	Blaine anhydrite	5786'	(- 1403)
	Wolfcamp	6120'	(- 1737)
	Virgil limestone	6605'	(- 2223)
	Missouri limestone	6778'	(- 2395)
	Marmaton limestone	6957'	(- 2573)
	Cherokee limestone	7054'	(- 2671)
	Atoka	7160'	(- 2777)
	Morrow	7364'	(- 2981)
	Basal Penn sandstone	7470'	(- 3087)
	Pre-Cambrian granite	7513'	(- 3130)

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Total Depth Drilled 7,520', Logged 7,531'

Status: Plugged and abandoned May 5, 1980 COLO. OIL & GAS CONS. COMM.

Contractor: Exeter Drilling Company,
 Rig #4
 Toolpusher, Emmit Taylor

Geologist: Wayne Cruthis

Engineer: Mack Tillman

Field Supervisor: Ted Redman

Sample Lithologic Description
Depths Adjusted To The Electric Log

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NIOBRARA SHALE

3927' - 4246' Shale: dark grey to grey-green, blocky to platy, part silty, occasional slightly calcareous, soft to firm, abundant calcareous nodules

FORT HAYES LIMESTONE

4246' - 4280' Limestone: buff, chalky, firm to brittle, dense, trace inoceramus and pyrite

CARLILE SHALE

4280' - 4468' Shale: light grey to grey, soft, waxy, trace dark grey calcareous nodules

GREENHORN LIMESTONE

4468' - 4526' Limestone: buff to light grey, microcrystalline, partly mottled, partly chalky, brittle, partly sandy

GRANEROS SHALE

4526' - 4714' Shale: dark grey to grey green, blocky, part silty, calcareous, firm, occasional calcareous nodules, trace inoceramus

"D" SANDSTONE

4714' - 4776' Sandstone: white to grey, very fine to fine grained, friable, tight, slightly silty with trace inoceramus anhydrite, occasional black asphaltic stain, trace of porosity, interbedded shale

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"G" SANDSTONE

4776' - 4798' Sandstone: as above, with trace dolomite, tan, microcrystalline, hard dense, pyrite, no shows

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HUNTSMAN SHALE

4798' - 4835' Shale: dark grey, grey to green, grey to brown, fissile, partly calcareous, interbedded sandstone

"J" SANDSTONE

4835' - 4868' Sandstone: white to buff, very fine to fine grained, subrounded, tight, firm to friable, hard, interbedded shale, no shows

SKULL CREEK SHALE

4868' - 5022' Shale: predominate dark grey to green, blocky to platy, calcareous, firm with abundant pyrite and dolomite

"M" SANDSTONE

5022' - 5075' samples from 5030' through 5100' were lost due to high mud viscosity

"O" SANDSTONE

5075' - 5187' Sandstone: white to light grey, fine grained, tight, firm, with trace pyrite, interbedded shale, trace asphaltic stain, weak cut

"R" SANDSTONE

5187' - 5271' Siltstone: grey, calcareous, firm, interbedded shale, no shows

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"T" SANDSTONE

5271' - 5309' Sandstone: white, very fine to fine grained,
friable, unconsolidated, silty,
interbedded shale, no shows

MORRISON SHALE

5309' - 5542' Shale: predominate grey to green,
occasional light green to green
waxy, blocky, firm with interbedded
sandstone, very fine to fine grained,
firm, tight

5542' - 5560' Anhydrite: clear, white, partly sucrosic

5560' - 5598' Shale: as above

CEDAR HILLS SANDSTONE

5598' - 5638' Sandstone: unconsolidated, clear, very fine to
fine grained, subangular

5638' - 5786' Anhydrite: as above, halite, interbedded shale,
dark grey, red, blocky, soft to firm

BLAINE ANHYDRITE

5786' - 5848' Anhydrite: as above

5848' - 5886' Shale: as above

5886' - 6120' Anhydrite: as above, with interbedded shale,
as above

WOLFCAMP

6120' - 6180' Sandstone: red, very fine grained, friable,
silty, interbedded shale, and
limestone, brown, microcrystalline,
hard dense, partly dolomitic

6180' - 6210' Shale: as above, with anhydrite, white,
brittle, sucrosic

6210' - 6240' Dolomite: light brown, microcrystalline, chalky,
mottled, part sucrosic

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6240' - 6252' Shale: as above
6252' - 6300' Limestone: buff to tan, microcrystalline,
chalky, brittle, occasional very
soft, dolomite, brown, dense, hard
6300' - 6410' Dolomite: as above, interbedded shale
6410' - 6426' Shale: as above
6426' - 6476' Dolomite: as above, trace dead oil; anhydrite,
white to clear, sucrosic, brittle
6476' - 6506' Shale: as above
6506' - 6605' Dolomite & Anhydrite: as above

VIRGIL LIMESTONE

6605' - 6686' Limestone: buff to tan, microcrystalline,
brittle, light grey, chalky, soft
to firm; dolomite; as above,
no shows
6686' - 6701' Limestone: predominate buff to tan, light
grey to grey, chalky, part brown,
microcrystalline, partly mottled,
brittle; dolomite, with trace
asphaltic stain, fairly strong cut
6701' - 6742' Limestone: as above, with trace asphaltic
stain, weak cut
6742' - 6754' Limestone: as above, trace asphaltic stain,
fair to good strong cut, chert,
orange, clear
6754' - 6778' Limestone: as above, no shows, chert, as above

MISSOURI LIMESTONE

6778' - 6798' Limestone: buff to tan, chalky, partly
microcrystalline, brittle,
no shows

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- 6798' - 6813' Shale: as above
- 6813' - 6832' Limestone: buff to tan, grey to dark grey, chalky, part dolomitic, brittle to hard with anhydrite, white, partly sucrosic, no shows
- 6832' - 6849' Siltstone: red, brown, argillaceous, friable
- 6849' - 6892' Limestone: buff to tan, grey, as above, with siltstone, as above
- 6892' - 6922' Limestone: buff to light grey, chalky, partly microcrystalline, brittle, abundant asphaltic stain, good strong cut.
- 6922' - 6957' Limestone: as above

MARMATON LIMESTONE

- 6957' - 6970' Limestone: as above, trace asphaltic stain, weak cut
- 6970' - 7054' Limestone: as above, interbedded shales and siltstones, as above

CHEROKEE LIMESTONE

- 7054' - 7076' Limestone: buff to light grey, chalky, brittle, hard, partly soft with shale as above
- 7076' - 7083' Limestone: as above, trace asphaltic stain, fair cut
- 7083' - 7160' Limestone: buff to light grey, chalky, microcrystalline, mottled, brittle, chert, clear to brown, no shows

ATOKA

- 7160' - 7364' Limestone: buff to tan, light grey, predominate chalky, marly, interbedded shale, red, dark grey, very calcareous, very soft, marly, no shows

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MORROW

7364' - 7470' Limestone: as above, no shows

BASAL PENN SANDSTONE

7470' - 7513' Sandstone: Maroon, very fine grained, silty,
angular, loose quartz, clear yellow,
granite wash, no shows

PRE-CAMBRIAN GRANITE

7513' - 7520' Granite: light green, quartz and feldspar,
biotite, hornblende, peridotite

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DRILLING PROGRESS SUMMARY

- 4-14-80 Drlg 400' (drld 400' in 4 hrs.) in Shale. Spudded @ 3:15 PM 4/13/80. Ran 247' of 8-5/8" casing, set @ 258'. Cemented w/275 sxs. Plugdown @ 6:15 PM, (cement circulated). Dev. 1/4 deg @ 250'. Tstd BOP pipe & blind rams, held okay, (500# blind rams and 1500# pipe rams). Mud-fresh water. Bit #1 in @ 260', Reed Y-11. Have 9 DC's & 15 jts. eight pipe. WOC 15-18,000#; PP 1200#; 5-1/2" X 14" X 65 strokes.
- 15 Drlg 3778' (drld 3378' in 18-3/4 hrs.) in Shale. Mudding up. Bit #1 Reed Y-11 in @ 260', out @ 3204' (drld 2944' in 13 hrs.). Bit #2 Smith DT in @ 3204'; Dev 1-1/4 degs @ 3204'.
- 16 Drlg @ 4336' (drld 558' in 10-1/4 hrs.) in Sh/Lm. Mud 9.6#, Vis 42, W/L 5, FC 2/32, pH 9. Bit #2 Smith DT in @ 3204', out @ 4336' (made 1132' in 15-1/4 hrs.). Bit #3 Smith DT GIH. WOB 25,000#, RMP 175, PP 1200#, Liner Size 5-1/2" X 14", SPM 65.
- 17 Drlg @ 4787' (drld 451' in 11-1/4 hrs.) in Sa. Mud 9.1#, Vis 60, W/L 6, pH 8.5. Bit #3 Smith DT in @ 4336'. WOB 30,000#, RPM 80, PP 600#, SPM 65. NOTE: Lost circulation at various times from 3800' to 4300' (exact depths unknown). Lost approx. 400 bbls. Mixed cotton seed hulls, cedar fibers and sawdust to regain circulation. Circulation okay at this time.
- 18 Drlg @ 5102' (drld 315' in 14 hrs.). Changing mud over. Bit #3 Smith DT in @ 4346', out @ 4846' (made 510' in 13-1/4 hrs.). Bit #4 Smith F-3 rerun, in @ 4846'. Dev. 2 degs @ 4846'.
- 19 Depth 5212' (drld 110' in 7-1/4 hrs) in Shale. While drlg @ 5212' lost partial circulation, pulled bit and ran tracer survey, lost circulation zone 430-440' 99%, 440-470' 1%. Ran pipe and bit to 500'. Mixed 45 sxs loss circulation material, regained circulation. Ran pipe to TD and started drlg & mixing loss circulation material. Lost partial returns and POOH.
- 20 Depth 5212' (drld 0' in 24 hrs.). Mud 10#, Vis 38. Mixing salt. Ran DP & bit to 515', pumped 100 sxs Cl "G" cmt w/4% CaCl. Plugdown @ 2:15 PM. Pulled DP and loaded hole w/mud. Lost 80' mud in one hr. WOC 8 hrs. Ran bit & DP to top of cmt @ 430'. Drld cmt to 530'. Ran bit to TD & circ. Good circulation fr bottom, no loss of mud.
- 21 Trpg @ 5401' (drld 189' in 17-3/4 hrs.). Mud 10.6#, Vis 38, W/L 6, pH 8.5, Cl 190,000 ppm, Solids 18%. Bit #6 out @ 5401', drld 189' in 17-3/4 hrs. Ran Bit #7 Reed FT-53 (button) bit, hit bridge @ 3600', could not drl through, prep to pull button bit & run tooth bit.

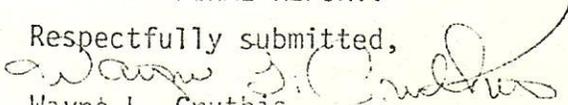
DRILLING PROGRESS SUMMARY...Continued

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- 4-22-80 Depth 5401' (drld 0' in 24 hrs.). Mud 10.4#, Vis 75, W/L 5.0, pH 8.5, Solids 18%, CI 185,000 ppm. Pulled button bit, ran tooth bit, hit bridge @ 3200'. C & C mud. Wsh and rmd to 3850'. Continuing to ream to bottom.
- 23 Drlg @ 5488' (drld 87' in 13-3/4 hrs.) in Sh/Lm. Mud 10.3#, Vis 65, W/L 6, pH 8.5, Solids 17%, CI 185,000 ppm. Bit #7 Reed Y-21 rerun in @ 5401', out @ 5436' (drld 35' in 5-1/2 hrs.). Bit #8 Reed FT-53 in @ 5436'.
- 24 Drlg @ 5794' (drld 306' in 23-1/4 hrs.) in Sa/Lm/Anhy. Mud 10.6#, Vis 63, W/L 6, pH 8.5, FC 2/32, Solids 18%, CI 185,000 ppm. Sample Top: Cedar Hill 5611'.
- 25 Depth 6026' (drld 232' in 15-1/4 hrs.). Pulling magnet. Mud 10.6#, Vis 58, W/L 5.0, pH 8.5, Solids 18%, CI 185,000 ppm. Bit #8 Reed FP 53 in @ 5436', out @ 6026' (made 590' in 46-1/2 hrs.). Lost inside of one cone, ran magnet.
- 26 Drlg @ 6224' (drld 200' in 17-3/4 hrs.) in Lm. Mud 10.6#, Vis 52, W/L 6, pH 8.5, CI 180,000 ppm. Trp 00H, recovered bit cone. Ran Bit #9 Smith F-3 in @ 6024'.
- 27 Drlg 6404' (drld 180' in 22-1/2 hrs.) in Lm. Mud 10.6#, Vis 63 W/L 6, pH 8.5, CI 180,000 ppm. WOB 35,000#, RPM 45, PP 1100#.
- 28 Drlg @ 6589' (drld 185' in 23-1/4 hrs.) in Lm/sh. Mud 10.7#, Vis 63, W/L 6.4, pH 8.5, CI 183,000 ppm, Solids 18%.
- 29 Drlg @ 6809' (drld 229' in 22-3/4 hrs.) in Lm. Mud 10.7#, Vis 63, W/L 8.4, pH 8.5, Solids 18%, CI 180,000 ppm, WOB 35,000#, RPM 45, PP 1100#.
- 30 Drlg @ 7000' (drld 192' in 23 hrs.) in Lm. Mud 10.7#, Vis 59, W/L 9.2, pH 8.5, CI 180,000 ppm. Bit #9 still in hole. WOB 35,000#, RPM 45, PP 1100#.
- 5-01-80 Drlg @ 7109' (drld 108' in 17-3/4 hrs.) in Lm. Mud 10.6#, Vis 60, W/L 9, pH 8.5; CI 180,000 ppm. Bit #9 Smith F-S in @ 6026', out @ 7026' (made 1000' in 110-1/2 hrs.). Bit #10 Smith F-3 in @ 7026'. Dev. 1/4 deg @ 7026'.
- 02 Drlg @ 7265' (drld 155' in 22-1/2 hrs.) in Sh/Lm. Mud 10.7#, Vis 58, W/L 6.4, FC 2/32, pH 9, Solids 18%, CI 175,000 ppm. Bit #10 still in hole.
- 03 Drlg @ 7440' (drld 175' in 23-1/4 hrs.) in Lm/Sh. Mud 10.6#, Vis 70, W/L 6.2, pH 9, Solids 18%, CI 170,000 ppm
- 04 TD 7520' (drld 80' in 10 hrs.) in Granite. Operation: Logging. Mud 10.6#, Vis 75, W/L 6, pH 9, Solids 18%, CI 180,000 ppm. Dev. 2-3/4 dgs @ 7520'. Strapped DP @ 7520', no correction. Bit #10 Smith F-3 out @ 7520'.
- 05 TD 7520'. Ran Dual Laterolog, Density/Neutron, Sonic logs. Plugged well as follows: 1st plug 230-296' 20 sx regular cmt. 20 sx cmt in top of surface. RR @ 12:00 PM, 5-4-80. Well P & A. FINAL REPORT.

Respectfully submitted,


Wayne L. Crutcher

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LOG ANALYSIS

FORMATION	DEPTH	R W	RILD AVG.	CNL Ø AVG	FDC Ø AVG	S W (from Ø D)
"D" SAND	4713'-4717'	.48	2.9	30	22	100%
"J" SAND	4854'-4860'	.33	4.0	33	14	100%
"O" SAND	5080'-5090'	0.30	.6	22	12	100%
WOLFCAMP	6240'-6250'	.24	.9	35	17	100%
VIRGIL	6624'-6626'	.20	2	32	15	100%
	5628'-6630'	.20	3.1	26	8	100%
	6652'-6656'	.20	10	15	10	100%
	6691'-6695'	.20	8	25	8	100%
	6724'-6730'	.20	5	36	6	100%
	6730'-6738'	.20	6	15	10	100%
MISSOURI	6894'-6897'	.19	90	13	5	92%
	6906'-6913'	.19	30	17	10	80%
MARMATON	7006'-7710'	.19	32	16	12	64%
MORROW	7378'-7382'	.18	4.7	17	14	100%
	7388'-7392'	.18	7	18	15	100%
	7452'-7454'	.18	6	30	16	100%
BASAL PENN SS	7471'-7474'	.18	18	18	12	83%