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Geological Report on
Kennedy & Mitchell Inc.
Venohr #1-987-1
NE SE Sec. 3, T9N, R54W
Logan County Colorado

By
Tom L. Moore
for
Larsen Geo Logging

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WELL SUMMARY

OPERATOR: KENNEDY & MITCHELL INC.
WELL: VENOHR #1-987-1
LOCATION: SEC 3-T9N-R54W
COUNTY: LOGAN
STATE: COLORADO
FIELD: WILDCAT
SPUD DATE: 1/18/85
COMPLETION: 1/23/85
ELEVATION: GL 4261' KB 4271'
TOTAL DEPTH: 5235' DRILLER'S DEPTH, 5230" LOGGERS
CONTRACTOR: GEAR DRILLING INC.
RIG: #2
GEOLOGIST: TOM L. MOORE
ENGINEER: COURTNEY COOK
TOOL PUSHER: GENE MALABY
DRILLING MUD: GEL WITH WATER LOSS CONTROL
MUD ENGINEER: MACK STEEN, DIAMOND MUD CO.
MUD LOGGING: LARSEN GEO LOGGING
ELECTRIC LOGS: DIL/SFL/SP/GR, FDC/CNL/CAL/GR
DST CO: PICK DRILL STEM
DST INTERVAL: 5128' to 5138'
WELL STATUS: WILL RUN PIPE

FORMATION TOPS

ELEV. 4261'

KB 4271'

<u>FORMATION</u>	<u>PROG.</u>	<u>E-LOGS</u>	<u>DRILL DEPTH</u>
Niobrara	4190		4210
Fort Hayes	4501		4532
D ₁ Sand	4991	5009	5023
D ₂ Sand	5001	5014	5028
J Silt	5081	5094	5104
J ₁ Sand	5105	5118	5128
J ₃ Sand	5153	5183	5184
TD	5225	5230	5235

WELL CHRONOLOGY

<u>DATE</u>	<u>DEPTH</u> <u>(12:00 a.m.)</u>	<u>OPERATIONS</u>
1/19/85		Drilling 18 3/4/, Rig Serv 3/4, Mud up 3/4, Trip 3 3/4, Geologist arrived on location, logging @ 4150'
1/20/85	4190	Drilling 17½, Mix Drispac 3/4, Trip 4½, Serv Rig ½
1/21/85	5103	Drilling 10½, Circ &W00 4, Trip & Fishing for cone 9½,
1/22/85	5187	Drilling 6½, Rig Serv ¼, Trip for logs 2, Logging 4, Trip DST 3, Run DST 3¼, Trip out DST 3,
1/23/85	5235	Trip out DST 2, Geologist released

SAMPLE DESCRIPTION

- 4150-4210 50% SH- gy, lt gy, frm-sl sft, sl calc, tr blk carb gr, sme intbd sltst, tr Inoc prism, no flor
- 30% SLTST- lt br, lt gy, frm-sft, sl calc-sme sme calc, sme sd gr, tr intbd sh, sme intbd ss, v argin pt, no flor no show
- 10% SS- lt gy, clr, lt brn, f-v f gr, sub ang, w snt, cly-silc cmt, sme w/calc cmt, v dirty in pt, tr blk carb gr, poss glauc gr, no show
- 4210-4260 80% SH- gy, dk gy, sme blk, frm-sft, slty-sl slty, v calc-calc, sme intbd sltst, tr lt brn-brn ls, sme wh-off wh specks v calc, sme Inoc prism, no flor, tr v lt yel diffuse cut sme v lt yel slow strmg cut
- 20% SLTST- a/a sme v sdy, sme intbd ss
- 4260-4290 80% SH- a/a no show, no cut, increase in intbd sltst,
- 20% SLTST- a/a
- 4290-4340 90% SH- gy, dk gy, lt gy, frm, slty-sme v slty, calc, sme blk carb gr, sme wh calc specks, tr intbd sltst, no flor, no cut, sme Inoc prism, tr pyr,
- 10% SLTST- a/a
- 4340-4380 SH- gy, v lt gy, frm-sl sft, v calc-calc, sl slty, num wh specks, sme mot w wh specks-v calc, tr foss frag, sl chalky
- 4380-4400 SH- gy, v lt gy, sme wh, frm-sft, v calc-calc, tr mic, sme chalky, no flor no show, tr blue, lt brn bent
- 4400-4420 SH- gy, med gy, sme v lt gy, frm-sft, sl slty, calc-sl calc sy-sl calc, tr pyr, sme sl mic, tr lt brn-blue pyr bent, no flor no show
- 4420-4450 SH- gy, lt gy, sme wh, frm-sft, lt gy & wh v calc, mot wh wh calc specks, sme v chalky, gy-a/a, no flor, no show

4450-4470 SH- a/a-sme Inoc prism, sme grd to ls, sme w/blk dd oil stn, no cut, no flor

4470-4490 SH- lt gy, gy, sft-frm, v calc sl slty, mot w/wh speck, v chalky, tr dd oil stn, no cut, no flor, tr foss frag

4490-4530 SH- gy, lt gy, sme wh, frm-sft, sl slty, sl mic, blk carb gr thru in sme, mot in lt gy & wh-v calc, sme micxln brn ls, no cut, no flor

4530-4550 90% SH- gy, lt gy, sme brn, frm-sme sft, calc-v calc, sme mot, sme lt brn bent, gy sl mic, tr pyr, no flor, no cut
10% SLTST- lt brn, brn, frm-sft, v sdy in pt, sl bent, sme in tbd ss strg, no flor, no cut

4550-4570 90% SH- a/a, num Inoc prism,
10% LS- wh, sft-frm, micxln sme cryptoxln, poss foss frag or ool shadows, no flor no show

4570-4610 60% SH- a/a, sme w/intbd ss & sltst, no flor, Inoc prism
40% LS- wh, frm-sft, micxln sme xln, foss frag in sme, sme Inoc prism, tr poss v chalky in pt ool shadows, sme ss-clr, lt gy, w srt, sub ang, cly-sile cmt, fri, no cut

4610-4640 70% SH- gy, brn, frm-sme sft, sl calc-calc, pyr in sme, Inoc prism thru spl, sme gd gr-sme sh v slty, no flor, no cut
30% LS- a/a, in creas in ss-a/a

4640-4660 60% SH- a/a, w/num uncons sd gr
20% LS- a/a
10% SS- clr, lt gy, sme lt brn, f-v f gr, sb ang, silc-calc cmt, sl fri, poor vis-no vis \emptyset , no flor, tr glauc gr, no cut

4660-4680 70% SH- gy, lt gy, sme med gy, frm, slty-sme sdy, sl calc-sme non culc, num ss strg, sme blk carb flakes, no flor, no cut
20% SS- lt gy, clr, sme wh, v f gr-f gr, w srt, sub ang-sme sb rd, silc-calc cmt, fri, fair vis-poor vis \emptyset , no cut no show
10% LS- a/a

4960-4980 80% SH- a/a
20% SS- a/a

4980-5000 90% SH- gy, dk gy, frm-sme sft, calc-sl calc,
sl slty, mic in pt, Inoc prism num, sme
intbd sltst, no flor, no show
10% SS- a/a

5000-5020 90% SH- lt gy, gy sme dk gy, frm, calc-sl calc,
slty-sl slty, Inoc prism sl mic, tr pyr,
tr brn micxln ls, no flor, no show
10% SS- a/a poss cvgs, also wh Fort Hayes ls

5020-5035 80% SH- a/a, sme foss frag
20% SS- lt brn, clr, sme wh, f gr, sub rd-sub ang,
brn-wh cly cmt, sme sl calc, poor vis ø,
no flor no show,

5035-5039 70% SH- a/a
15% SS- clr, lt brn, v f gr, sub ang, silc-cly
cmt, w srt, sl fri, sme lt brn oil stn,
no cut, no flor, poor vis ø
15% SS- clr, wh, sme lt brn, sub ang-sme sub rd,
f gr, cly-silc cmt, w srt, sl fri, poor-
sme fair vis ø, sme v lt yel flor, no cut,
no show

5039-5055 90% SH- med gy, dk gy, gy, frm, gy-waxy, sl slty,
tr intbd brn sltst, sme sl mic, tr disem
pyr, no flor, no cut
10% SS- a/a

5055-5070 80% SH- med gy, brn, gy, frm, slty-v slty in brn,
intbd w/sltst, sme Inoc prism, tr sd gr,
no flor
10% SLTST- lt brn, brn, frm, v sdy-sl sdy, brn-arg,
sl calc-sme calc in sdy tr sd gr, sme blk
carb gr, tr pyr, no flor
10% SS- a/a

5070-5085 80% SH- a/a
20% SLTST- a/a w intbd v f gr ss

5085-5095 80% SH- med gy, gy, sme brn, frm-sme hd, sl slty-
slty, sl calc, sme sl mic, sme sl waxy,
sme brn micxln ls, no flor, no show
20% SLTST- a/a

4680-4700 60% SH- a/a
30% SS- a/a
10% LS- a/a-cvgs

4700-4730 60% SH- gy, dk gy, sme brn, frm, non calc-sl calc,
sme v slty, num pyr, tr intbd ss, no flor,
no cut
40% SS- dk gy, lt gy, clr, f-v f gr, sub ang,
silc cmt-calc cmt, fri, sme w/blk carb
flakes intbd, no flor, no cut

4730-4770 60% SH- brn, gy, frm, non calc-sl calc, sl mic,
tr sd gr, sme intbd ss & sltst, tr pyr,
tr brn ls; no flor, no cut
40% SS- a/a

4770-4790 80% SH- gy, med gy frm, non calc, tr sd gr, sme
blk carb gr, sl slty-non slty, sme Inoc
prism, no flor, no show
20% SS- a/a

4790-4840 60% SH- a/a, abdt pyr, Inoc prism smeintbd sltst,
lt brn-brn, no flor
40% SS- clt, wh, brn, lt brn, f-v f gr, w srt, sub
ang, sme grd to sltst, sme blk carb flakes,
cly-calc cmt, fair vis \emptyset , tr brn str, no
flor, no cut,

4840-4860 80% SH- gy, dk gy, brn, frm, sl calc slty-sl slty,
tr sd gr, sme intbd sltst, Inoc prism,
sme Fort Hayes cvgs, no flor, no cut
20% SS- a/a

4860-4890 90% SH- a/a, num pyr, sme v sdy, sme intbd ss, sme
sl mic,
10% SS- a/a

4860-4910 90% SH- gy, brn, dk gy, frm-sft, v slty, sme sdy,
ss strg num intbd, dk gy waxy, no flor
10% SS- a/a poss cvgs

4910-4940 80% Sh- a/a, sme v slty,
20% SS- lt brn, clr, lt gy, f-v f gr, brn cly-calc
cmt, sl fri, sme fair vis \emptyset , poss intbd
w/sh, sme v arg, no flor

4940-4960 90% SH- gy, dk gy, frm, sl calc, slty-sl slty, sl
mic, tr disem pyr, sme bent, sme blk carb
gr, sme gy, waxy, no flor, no cut
10% SS- a/a

5185-5195 90% SH- a/a, num Inoc prism
 10% SS- a/a, sme w/dd oil stn, no flor, no cut

5195-5210 80% SH- a/a
 20% SS- clr, wh, f-gr, w srt, sub ang, silc-wh
 cly cmt, fri-v fri, dd oil stn in sme,
 no flor, sme fair vis \emptyset -mostly poor vis
 \emptyset , no cut

5210-5220 80% SH- gy, dk gy, frm, blk-fiss, sl slty-sme
 sdy, sme f disem pyr, tr blk carb gy; no
 flor

5220-5235 20% SS- a/a, sme gy, brn gr, v f gr, no cut
 90% SH- a/a
 10% SS- clr, wh sme lt gy, w srt, f-sme v f gr,
 wh cly-silc cmt, poor vis \emptyset , sub ang, no
 stn, no flor, no cut

5095-5110 80% SH- a/a
10% SLTST- a/a
10% SS- brn, lt brn, sme clr, v f gr-f gr, v fri,
sl slty, poor vis \emptyset , no flor, no show

5110-5120 80% SH- med gy, brn, frm-sme hd, sl calc-non calc,
tr intbd ss in brn, tr foss frag, sme pyr,
Inoc prism thru
10% SLTST- a/a
10% SS- a/a

5120-5130 70% SH- a/a
20% SS- brn, v f gr-f gr, sub ang, w srt, v fri
grd to slty, sme arg, non calc-sl calc,
no flor
10% SLTST- a/a

5130-5140 70% SH- a/a
10% SS- a/a
10% SS- clr, wh, sme lt gy, f gr, sub rd-sub ang,
silc-cly cmt, fri-sl fri, poor-sme fair
vis \emptyset , no flor
10% SLTST- a/a

5140-5150 80% SH- a/a
20% SS- clr, wh sme lt gy, f gr-sme med gr, w/sme
poorly srt, sub ang, sub rd, cly-silc cmt,
poor-sme fair vis \emptyset , lt yel-flor, w/sme
lt yel slow strmg cut, good milky yel
ring cut in 10% of spl

5150-5155 90% SH- gy, med gy, frm-sme hd, fiss, sl slty, sme
f disem pyr, tr mic, no flor, no cut
10% SS- a/a, sme w/gy gr

5155-5170 90% SH- a/a Inoc prism in sme, sme calc-mostly sl
calc-non calc
10% SS- a/a, sme wh cly cmt, sme ss powdered by
bit

5170-5185 90% SH- gy, med gy, brn, frm, sl slty-slty, non calc-
sl calc, fis-blky, sme sltst strg, tr
disem pyr, no flor
10% SS- clr, wh, lt gy, f-v f gr, silc-wh cly cmt,
w srt, sub ang-sme sub rd, poor vis \emptyset , sme
fri, sme bit powder, tr bent, no flor-sme
reflec, no cut

GEOLOGICAL SUMMARY

OPERATOR: Kennedy & Mitchell Inc.

WELL: Venohr #1-987-1

The geologist arrived with the mudlogging unit at 4:00PM on January 19, 1985. Logging and geological monitoring began at a drill depth of 4150' and was completed at a depth of 5235' on January 23, 1985.

The D sand was drilled at a depth of 5023' (E-log 5009'). Samples were circulated and evaluated at 5040'. The D₂ consisted of sandstone with grains that were light brown, clear, and white in color. The sand was well sorted and sub-angular. Poor to fair visible porosity was observed but there was no fluorescence or cut.

The J₁ sand was drilled at a depth of 5128' with the E-log top of 5118' and was the main objective of the well. A drilling break was noted at the top to the J₁ sand. Drilling was stopped at 5136' and samples were circulated. The samples were sandstone which consisted of clear, white and light gray grains, and were well sorted. The grains were sub angular and showed poor to fair visible porosity. Light yellow fluorescence was noted in most of the J₁ sand cuttings in this interval. But only about 10% of the cuttings had poor to fair light yellow slow streaming cut.

Drilling was continued to TD at a depth of 5235' and E-logs were run. The logs and shows were evaluated and a DST was run at the interval 5128'-5138'. The DST was successful and on the final open a 10-20' flair was observed with some condensate that lasted for the entire 60 minutes of the open. The pipe recovery was 80' of oil cut mud and water. Production casing will be run.

WELL VENOHR #1-987-1

WELL

VENOHR #1-987-1

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WELL VENOHR #1-987-1

[illegible]

OPERATOR KENNEDY & MITCHELL WELL VENOHR #1-987-1

[illegible]

DRILL STEM TEST REPORT

DST No. 1 Successful XX Failure _____
 Operator KENNEDY & MITCHELL INC. Date 1/22/85
 Well VENOHR #1-987-1 Location Sec 3-T9N-R54W
 Formation J-1 SAND Interval 5128 TD 5138
 Testing Co. PICK Type Test CONVENTIONAL STRADDLE
 Cushion 88088 Hole Size 7 7/8 Packer Size _____
 Drill Pipe Size 4 1/2 Capacity _____

TEST DATA:

Time Duration (Min.)	Preflow	Initial Shutin	Final Flow	Final Shutin
	15	30	60	90

Fluid to Surface Time (Min.)	Gas	Oil	Water	Mud
	15	----	-----	-----

Flow Data Choke Size Time Pressure Rate
 Continue on back or separate sheet

Pressure Data:

	Top Chart	Bottom Chart
IHP	<u>2740</u>	<u>2735</u>
IFP	<u>2728</u>	<u>2722</u>
ISIP	<u>56</u>	<u>50</u>
FFP	<u>78</u>	<u>74</u>
FSIP	<u>90</u>	<u>74</u>
FHP	<u>160</u>	<u>149</u>
Temp.	<u>140°</u>	<u>140°</u>

Recovery:

Sample Chamber: Capacity 2150 cc Pressure _____
 Recovery 500 cc oil cut water
 Resistivity 10 @ 55° Temperature 55°
 Water: PPM Chlorides 625 Nitrates ----
 Drill Pipe Recovery 80'; 20' oil cut drilling mud, 30' of oil mud cut water, 30' of water w/oil scum

Remarks Got 10' to 20' flare on final open with some condensed water