

# J. C. MUSGROVE

*Petroleum Geologist*

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Farmland Industries  
#1 Dodge City Ammonia Plant  
Approximate C N/2 SW NE Section 22-26S-24W  
Ford County, Kansas

## 5½" CASING SET

CONTRACTOR: Garvey Drilling Co. (Rig #20)  
DRILLING COMMENCED: 2-4-68  
DRILLING COMPLETED: 2-28-68  
ELEVATION: 2561 K.B., 2559 D.F., 2553 G.L.  
CASING PROGRAM: Surface: 8-5/8" @ 1654'  
Production: 5½" @ 5835'  
ELECTRIC LOG: By WELEX: Radiation-Guard-Caliper  
MEASUREMENTS: All depths measured from Kelly Bushing  
FORMATION SAMPLES: Samples saved 2500' to the R.T.D.  
DRILLING TIME: One (1) foot drilling time recorded by  
Geolograph surface to R.T.D.  
FORMATION TESTING: There were three (3) drill stem tests  
run by Miller Testers.  
GEOLOGICAL SUPERVISION: Geologist on well site 4800' to the R.T.D.

## FORMATION TOPS

## ELECTRIC LOG DEPTH

## SUB-SEA DATUM

Anhydrite (driller)		
Hollenberg	2607	- 46
Fort Riley	2813	- 252
Florence	2928	- 367
Wreford	2983	- 422
Neva	3220	- 659
Wabaunsee	3581	-1020
Topeka	3792	-1231
Heebner	4216	-1655
Lansing	4329	-1768
Marmaton	4720	-2159
Cherokee Shale	4873	-2312
Conglomerate	4987	-2426
1st Sand	4995	-2434
2nd Sand	5010	-2449
3rd Sand	5049	-2488
Spergen	5061	-2500
Warsaw	5232	-2671
Osagian	5302	-2741
Kinderhook	5540	-2979

Viola	5679	-3118
Simpson	5765	-3204
Arbuckle	5820	-3259
Rotary Total Depth	5896	-3335

(All measurements are corrected to the Electric Log.)

SAMPLE ANALYSIS, SHOWS OF OIL, TESTING DATA, ETC.

There were no shows logged above the Cherokee-Conglomerate section.

CONGLOMERATE SECTION

4987-4995                      Shale; red to green, traces of pink to orange opaque chert.

4995-5002                      Sand; gray to greenish gray, fine grained, consolidated, well rounded, poorly sorted, dirty in part. Good stain and saturation. Fair show free oil. No odor. Fair to good fluorescence.

DST #1      4979-5003      (Miller Testers)  
(Corrected to Electric Log depth)

Open:                      I.F. 15"  
                                    F.F. 90"

Blow:                      Strong, gas to surface in 35 minutes, too small to measure. Decreasing by end of test.

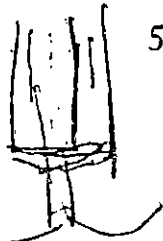
Recovery:                  1300' muddy gassey oil (Gravity 39°)

Pressures:                  ISIP 878 psi (45")  
                                    FSIP 659 psi (45")  
                                    IFP 183 - 229 psi  
                                    FFP 329 - 485 psi  
                                    HSH 2598 - 2562 psi

Mud Condition:              Weight 9#  
                                    Viscosity 43 sec.  
                                    Water Loss 8.4 cc

5005-5031

Sand; gray, fine to medium grained, consolidated, well sorted, well rounded. Good intergranular porosity. Good even stain and saturation. Good fluorescence. Good show of free oil and strong odor in fresh samples.



DST #2 5005-5013 (Miller Testers)  
(Corrected to Electric Log depth)

Open: I.F. 35"  
F.F. 2 hr. 38"  
Blow: Good decreasing  
Recovery: 60' slightly oil cut muddy  
water  
1250' very slightly oil cut  
water  
Pressures: ISIP 1464 psi (45")  
FSIP 1409 psi (45")  
IFP 37 - 265 psi  
FFP 302 - 586 psi  
HSH 2580 - 2544 psi  
Mud Condition: Weight 9#  
Viscosity 45 sec.  
Water Loss 8.4 cc

5031-5061

Sand as immediately above, grading to white fine grain loose sand grains. Abundant vari-colored waxey shale. Traces of gray to white semi-tripolitic chert, fair porosity and weak show of free oil in leached areas, plus white to gray vitreous chert.

DST #3 5033-5052 (Miller Testers)  
(Corrected to Electric Log depth)

Open: I.F. 30"  
F.F. 90"  
Blow: Strong decreasing to fair  
Recovery: 3070' water  
10' fine grain sand  
Pressures: ISIP 1500 psi (45")  
FSIP 1528 psi (45")  
FFP 1226 - 1482 psi  
HSH 2562 - 2525 psi  
Mud Condition: Weight 9.5#  
Viscosity 45 sec.  
Water Loss 10 cc

MISSISSIPPIAN SECTION

SPERGEN  
5061-5086

Chert; gray boney to white tripolitic, Fossiliferous chert. Good scattered spongy to fossil-cast porosity. Abundant buff finely crystalline dolomite.

- 5086-5144 Chert; white tripolitic, abundant gray to buff finely crystalline cherty dolomite, plus white chalky lime. No shows of oil.
- 5150-5177 Increase in white finely crystalline slightly fossiliferous dolomite, fair scattered vugular porosity. Abundant white boney to gray opaque chert.
- 5197-5225 Dolomite; gray to buff finely crystalline cherty dolomite. Scattered vugular to inter-crystalline porosity. Abundant white chalky lime, plus white boney to buff opaque blocky chert.

WARSAW

- 5232-5286 Dolomite; buff fine to medium crystalline, cherty, fair vugular porosity. Gray to white finely crystalline fossiliferous limestone. Abundant boney to gray blocky chert. Increase in chalky lime at base.

OSAGE

- 5302-5337 Dolomite; gray to buff, fine to medium crystalline, glauconitic, traces of gray blocky chert, plus vari-colored shale.
- 5337-5346 Chert; white gray boney to gray fossiliferous. Trace white to clear quartzite.
- 5346-5396 Dolomite; gray to buff, fine-medium crystalline glauconitic in part. Gray blocky to boney chert. Traces of white chalky lime.
- 5400-5450 Dolomite as immediately above. Increase in white chalky lime. Abundant gray boney to milky gray fossiliferous chert, plus dark gray opaque chert.
- 5450-5536 Increase gray to dark gray boney chert. Dark gray nodular limestone. Abundant gray to white medium crystalline, to cream sucrosic dolomite.

KINDERHOOK

- 5540-5548 Limestone; cream to gray, finely crystalline, fossiliferous in part.

- 5548-5553 Shale; gray to black.
- 5553-5594 Limestone; white to gray finely crystalline, fossiliferous, abundant buff medium crystalline limestone, plus white chalky lime. Traces of white boney chert.
- 5594-5679 Limestone; dark gray, finely crystalline, cherty. Dark gray blocky to mousey gray boney chert. Increase in gray to black shale.

VIOLA SECTION

- 5679-5766 Dolomite; cream to gray, fine to coarse crystalline, good scattered inter-crystalline to vugular porosity. Traces of white boney chert. Pale green waxey shale throughout.

SIMPSON SECTION

- 5766-5794 Dolomite; gray, finely crystalline, white boney fossiliferous chert. Yellowish gray fine-medium crystalline dolomite. Abundant green to gray waxey shale.
- 5794-5804 Shale; gray to pale green waxey to green arenaceous shale.
- 5804-5820 Sand; white, fine to coarse grained well sorted, consolidated, phosphatic and pyritic in part. Good inter-granular porosity. No shows of oil. Abundant green waxey shale.

ARBUCKLE SECTION

- 5820-5897 Dolomite; white to gray, coarse crystalline to oocastic, good oocastic porosity. Buff coarse crystalline dolomite with good inter-crystalline to vugular porosity. Abundant clear calcite crystals. Traces of gray to buff fine-medium crystalline arenaceous dolomite. Green-gray waxey shale throughout.

ROTARY TOTAL DEPTH 5897 (-3336).

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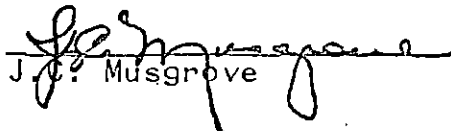
REMARKS

A lost circulation zone was encountered at 5897' and after mixing approximately 1500 barrels of mud, and loss circulation material, normal returns were gained.

After regaining circulation a Welex electrical survey was run and 5½" casing set in the Arbuckle Dolomite at a depth of 5835 feet.

A stage collar was set at 5080 feet to cover the sand body, 4995-5002', with cement for further testing through perforations.

Respectfully Submitted,

  
J.C. Musgrove