CORNISH
WIRELINE SERVICES, INC.
CHANUTE, KANSAS

GEOLOGICAL REPORT

Felts #31
API#: 15-125-32416-00-00
3405' FSL, 3125' FEL
Sec. 30 T34S R17E
SE NW
Montgomery County, Kansas

Date: 5/28/2014

Operator: **Serendipity Production Company, LC, 112 N Broad St., Guthrie, OK 73044**

Drilling Contractor: Melander Drilling, Chris Melander, driller

Wellsite Geologist: Julie Shaffer – On location from 200' to TD

Dates Drilled: Drilled on 5/21-22/2014

Total Depth: 716'

Elevation: 711' Est.

Drilling Fluid: Mud

Surface Casing: Set 25' of 7" surface casing on 5/20/2014

Electric Logs Run: Compensated Density-Neutron, Dual Induction and Temperature logs

Formation Tops: Formation tops were picked from field notes/geolograph and correlated to logs.

Rock Color Desc.: GSA rock color chart (dry cuttings)

Status: **OIL WELL**

Oil Shows:

Peru Limestone	342-346'	Trace oil show
Squirrel Sandstone	470-474'	Trace oil show
Red Fork Sandstone	593-599'	Fair oil show
Red Fork Sandstone	599-604'	Fair to Good oil show
Red Fork Sandstone	604-613'	Fair oil show (Wet)

Notes: Well cuttings were examined at the drill rig and discarded. Select samples of zones of interest were saved and examined in the laboratory with a binocular microscope and black-light. Cuttings were also sent to the Wichita Well Sample Library as per the request of the Kansas Geological Survey.

FIELD and LABORATORY SAMPLE EXAMINATION

0-200' Samples not examined

200-273' Shale, medium gray

273-276' Limestone

276-289' Shale, medium-light gray

Top of the Pawnee Limestone at 289' (+422')

289-310' Limestone

310-314' Shale, dark gray

314-322' Lexington Shale, black

322-331' Shale, dark gray

331-333' Lexington Coal

333-338' Shale, light gray

Top of the Peru Sandstone at 338' (+373') ***(circulated every 2' through this interval)***

338-342' Peru Sandstone, light gray, very fine grained sandstone, well sorted sub-angular sand, silty, micaceous, 16-18% porosity, friable, soft sand, no petroliferous odor, no fluorescence

342-346' Peru Sandstone, light gray with minor pale brown oil staining, poor saturation, fine grained, poorly sorted sub-angular sand, silty, micaceous, 16-18% porosity, friable, 80-90% of cuttings have pale green mottled hydrocarbon fluorescence

346-353' Peru Sandstone, medium gray, very fine grained sandstone, calcite inclusions are not well cemented, locally medium crystalline, friable, 12+% intercrystalline and vuggy porosity, no petroliferous odor, no fluorescence

353-360' Peru Sandstone, light gray, minor pale brown oil staining, poorly sorted fine to medium grained sandstone, 18+% porosity, slight petroliferous odor, <5% mottled medium-bright greenish-yellow hydrocarbon fluorescence

360-371' Shale, medium gray

Top of the Oswego Limestone at 371' (+340')

371-380' Limestone

5/22/2014

380-458' Samples not examined

458-463' Shale, medium gray

463-465' Limestone

465-467' Ironpost Coal

467-470' Shale, light gray

Top of the Squirrel Sandstone at 470' (+241') (circulated every 2' through this interval)

470-474' Squirrel Sandstone, light gray, pale brown oil staining, very fine grained, silty, poor saturation, 14-16% porosity, friable, 80-90% uniform medium-bright greenish-yellow hydrocarbon fluorescence

474-479' Shale, medium gray, silty

479-480' Bevier Coal

480-484' Sandstone, medium gray, poor porosity, silty, no petroliferous odor/show, very shaley

484-492' Shale, light gray, silty, no petroliferous odor/show

Top of the Verdigris Limestone at 492' (+219')

492-494' Limestone

494-498.5' Croweburg Shale, black

498.5-499' Croweburg Coal

499-508' Shale, light gray, mucky

508-556' Shale, medium-light gray

556-557.5' Fleming Coal

557.5-572' Shale, medium-light gray, silty

572-593' Sandstone, medium gray, laminated with shale, no petroliferous odor/show (started circulating every 3' through this interval)

Top of the Red Fork Sandstone at 593' (+118') (circulated every 3' through this interval)

593-599' Red Fork Sandstone, pale brown oil staining, live oil bleed when drilled, sheen on cuttings and a minor oil show on pit, majority of chips display a light gray water washed appearance, very fine grained, very silty, sub-angular to sub-rounded grains, micaceous, well saturated, 18+% porosity, friable, 60-75% uniform bright greenish-yellow hydrocarbon fluorescence; minor shale laminations towards bottom few feet.

599-604' Red Fork Sandstone, pale brown oil staining, live oil bleed when drilled, high sheen, fair to good greenish-yellow lightweight oil show on pit, very fine grained, very little silt, well sorted, sub-rounded grains, well saturated, 18+% porosity, friable, 90-95% uniform bright yellow hydrocarbon fluorescence

Note:** **Calculated Sw = 34% at peak of resistivity, 604'

604-609' Red Fork Sandstone, pale brown oil staining, live oil bleed when drilled, fair oil show on pit, >40% of chips display a light gray water washed appearance, very fine grained, silty, sub-angular to sub-rounded grains, micaceous, fair saturation, 14-18% porosity, friable, 80-90% uniform bright greenish-yellow hydrocarbon fluorescence; shale cuttings seen from 606-608'.

***Note: Oil/water contact breaks over at 606' (at the top of the shale break); fair oil show seen in the bottom 4' of the sand body, however it is below the O/W contact and the resistivity log indicates water content. Calculated Sw = 84% from 609-613'**

609-613' Red Fork Sandstone, pale brown oil staining, live oil bleed when drilled, fair oil show on pit, minor chips display a light gray water washed appearance, very fine grained, silty, sub-angular to sub-rounded grains, micaceous, good saturation, 18+% porosity, friable, uniform bright yellow hydrocarbon fluorescence

613-616' Shale, black, trace of coal

616-648' Shale, light to medium-light gray

648-652' Sandstone, cuttings not seen

652-661' Shale, medium gray

661-666' Weir Coal

666-676' Shale, medium gray

676-682' Sandstone, light gray/white (NDL log shows cross-over indicative of a gas show)

682-716' Samples not examined

T.D. = 716'

Julie Shaffer
Geologist

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