# Noble Petroleum, Inc.

## GEOLOGICAL REPORT
## DRILLING TIME & SAMPLE LOG

API #:15-115-21463

REPORT PREPARED BY FRANK S. MIZE/GEOLOGIST

COMPANY Noble Petroleum, Inc.
LEASE Tom Hansen #1
FIELD Nonken North
LOCATION C NW NW NE
SEC 29 TWSP 22S RGE 4E
COUNTY Marion STATE Kansas
CONTRACTOR C & G Drilling
SPUD 9-23-13 COMP 9-28-13
SAMPLES SAVED FROM 1600' TO RTD

ELEVATION
K.B. 1449
D.F.
G.L. 1443

DEPTH MEASURED FROM KB
Log ___ Drilling ✓

CASING
Surface 8 5/8" @ 210' w/125sx
Production NONE

Electric Logs
NONE

| FORMATION | SAMPLE | E LOG | DATUM | A. | B. | C. |
|---|---|---|---|---|---|---|
| Oread | 1593 | | -144 | -132 | | -162 |
| Heebner | 1631 | | -182 | -172 | | -200 |
| Douglas | 1657 | | -208 | -197 | | -227 |
| Brown Lime | 1814 | | -365 | -354 | -350 | -375 |
| Lansing | 1897 | | -448 | -435 | -432 | -467 |
| Stark | 2220 | | -771 | -756 | -756 | -790 |
| BKC | 2276 | | -827 | -812 | -810 | -849 |
| Marmaton | 2325 | | -876 | -862 | -860 | -887 |
| Mississippian | 2457 | | -1008 | -983 | -1008 | -1052 |
| Gilmore City | 2535 | | -1086 | -1071 | NDE | NDE |
| Kinderhook | 2545 | | -1096 | -1077 | | |
| Hunton | 2693 | | -1224 | -1207 | | |
| Viola | 2728 | | -1279 | -1262 | | |
| RTD/LTD | 2735 | | -1286 | -1301 | -1079 | -1127 |

REFERENCE WELLS
A. C NW SE SE 20-22S-4E: W B Osborn, Rush #1
B. C NE SE SE 20-22S-4E: Range Oil, Rush-Weakley #1
C. C NE NE NE 30-22S-4E: Range Oil, Preheim 'B' #1

- ▨ SHALE
- ▨ SANDSTONE
- ▨ LIMESTONE
- ▨ DOLOMITE
- ▨ HALITE
- ▨ ANHYDRITE/GYPSUM

Shale: gray to light green

**Oread 1593 -144**

Limestone: off white to gray, medium crystalline, poor intercrystalline porosity, no show

Limestone: off white to gray, medium crystalline, very poor to poor intercrystalline porosity, no show, trace gray chert

Limestone: off white to light gray, fine to medium crystalline, poor to fair intercrystalline porosity, no show

Limestone: off white to light gray, fine to medium crystalline, poor to fair intercrystalline porosity, no show

**Heebner 1631 -182**

Shale: black, carbonaceous
Limestone: dirty gray, medium crystsalline, no show
Shale: gray

Limestone: gray, coarsely crystalline, no visible porosity, no show

Limestone: off white to gray mudstone, no visible porosity, no show

**Douglas 1657 -208**

Sandstone: gray, fine rounded to subrounded grains, poor to fair silica cement, poor to fair intergranular porosity, no show, trace muscovite

Shale: gray with much sandstone as above, trace pyrite

Limestone: beige to light brown, medium to coarsely crystalline, dense, little visible porosity, no show

Shale: gray

Shale: gray

Shale: gray to light brown

Shale: gray, arranaceous, trace biotite

Shale: gray, arranaceous, trace biotite

Shale: gray, arranaceous, trace biotite

Shale: gray, arranaceous

Shale: gray, arranaceous

Shale: gray, arranaceous

Shale: gray, arranaceous

Shale: gray, arranaceous, trace biotite

Shale: gray

Shale: gray to dark gray

**Brown Lime 1814 -365**

Limestone: light brown, medium to coarsely crystalline, dense, no visible porosity, no show

Limestone: gray, fine crystalline, fair intercrystalline porosity, no show, argillaceous, trace gray shale

Limestone: gray, fine crystalline, fair intercrystalline porosity, no show, argillaceous, trace gray shale

Limestone: gray, fine crystalline, fair intercrystalline porosity, no show, argillaceous, trace gray shale

Limestone: off white to dirty light brown, medium to coarsely crystalline, pelletal, little visible porosity, no show

Shale: gray

Shale: gray

Shale: gray

Shale: gray

**Lansing 1897 -448**

Limestone: off white to light gray, fine to medium crystalline, slightly oolitic, poor to fair intercrystalline porosity, few pieces w/spotted residual stain, no show free oil, no odor, no fluorescence

Limestone: off white to light gray, coarsely crystalline dense, no visible porosity, no show

Limestone: off white to light gray, coarsely crystalline dense, no visible porosity, no show

Limestone: off white to light gray to light brown, coarsely crystalline, dense, no visible porosity, no show, trace gray shale

Limestone: off white to light gray to light brown, coarsely crystalline, dense, no visible porosity, no show, trace red to gray shale

Limestone: gray to light brown, coarse to medium crystalline, dense, trace poor intercrystalline porosity no show

Limestone:off white to light gray, coarse to medium crystalline, dense, trace poor intercrystalline porosity no show

Limestone: off white to gray, fossiliferous, w/little visible porosity, no show

Limestone: off white, medium crystalline, dense, slightly fossiliferous, trace free quartz crystals, no show
Shale: gray

Limestone: light gray, mudstone, no visible porosity, no show

Limestone: beige to gray to light brown, medium crystalline, dense, no visible porosity, no show

Limestone: light gray, medium crystalline, dense, no visible porosity, no show

Limestone: light gray, medium to coarsely crystalline, dense, trace fossil porosity, no show

Limestone: off white to beige, medium to coarsely crystalline, some slightly chalky, no show

Limestone: off white to beige, medium to coarsely crystalline, some slightly chalky, no show

Limestone: off white to light gray, medium to coarsely crystalline, poor intercrystalline porosity, no show

Limestone: off white to light gray, medium to coarsely crystalline, poor intercrystalline porosity, no show

Limestone: gray to tan, medium to coarsely crystalline, poor intercrystalline porosity, no show
Shale: gray

Limestone: light brown to light gray, coarse to medium crystalline, dense, little visible porosity, no show

Limestone: light brown to light gray, coarse to medium crystalline, dense, little visible porosity, no show

Limestone: off white to biege, medium to coarsely crystalline, no visible porosity, no show

Limestone: off white to biege to light gray, medium to coarsely crystalline, no visible porosity, no show
Shale: gray

Limestone: light gray to beige, medium to coarsely crystalline, no visible porosity, no show

Limestone: tan to gray to light brown, coarsely crystalline, dense, no porosity, no show

Limestone: tan to gray to light brown, coarsely crystalline, dense, no porosity, no show
Shale: gray to greenish gray

Limestone: off white, fine grained, slightly chalky, little visible porosity, no show, trace gray chert

Limestone: off white to gray, fine to medium crystalline, little visible porosity, no show, much off white opaque chert

Limestone: off white to light brown to dark gray, coarsely crystalline, dense, little visible porosity, no show, trace gray shale

Limestone: off white to light brown, coarsely crystalline, dense, little visible porosity, no show, trace gray shale

Shale: gray to greenish gray, much oolitic limestsone with little visible porosity, no show, argillaceous

Limestone: off white to beige, medium to coarsely crystalline, poor intercrystalline porosity, no show

Limestone: beige to gray to dark gray, medium crystalline, very poor intercrystalline porosity, no show

**Stark 2220 -771**

Shale: black, carbonaceous
Limestone: gray to dirty gray, coarsely crystalline, dense, no porosity, no show

Limestone: off white to gray, coarsely crystalline, no visible porosity, no show

**Hushpuckney 2244 -795**

Shale: dark gray
Shale: black, carbonaceous

Limestone: gray to light brown, coarsely crystalline, no porosity, no show
Shale: gray to greenish gray

Limestone: off white to light gray to beige, fine to medium crystalline, no visible porosity, no show
Shale: black, carbonaceous

Limestone: beige to light gray, coarsely crystalline, no porosity, no show

**BKC 2276 -827**

Shale: gray to dark gray, trace greenish gray

Shale: gray to dark gray, trace greenish gray

Shale: gray to grayish green, trace red

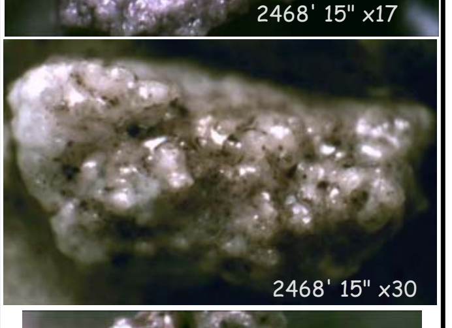
Shale: gray to grayish green, trace red
Limestone: light gray, fine to medium crystalline, poor intercrystalline porosity, no show

Shale: gray to grayish green, trace red

**Marmaton 2325 -876**

Limestone: light gray, fine to medium crystalline, poor intercrystalline porosity, no show
Limestone: beige to light brown, medium to coarsely crystalline, poor intercrystalline porosity, no show, much gray to green shale

Shale: gray to reddish brown

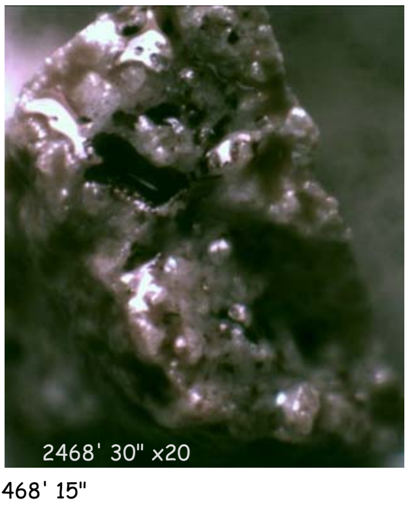


Limestone: off white to light brown, coarsely crystalline, no visible porosity, no show
Shale: black, carbonaceous

Limestone: gray, coarsely crystalline, no visible porosity, no show

Sandstone: light brown, fine to medium subrounded to subangular grains, well sorted, well cemented w/ calcareous cement, poor intergranular porosity, no show

Shale: light to dark gray



Limestone: beige to gray, medium to coarsely crystalline, no visible porosity, no show, much gray shale

Limestone: beige to gray, coarsely crystalline, dense, no visible porosity, no show

Limestone: beige to gray, coarsely crystalline, dense, no visible porosity, no show, trace black carbonaceous shale

Limestone: gray, medium to coarsely crystalline, dense, little visible porosity, no show

Limestone: beige to light brown to gray, coarsely crystalline, no visible porosity, no show, trace black carbonaceous shale

2468' 15"
Chert: off white to brown with oil stain, 80% tripolitic, w/good trip porosity, good show free oil, fair odor, good odor on break, some saturated stain, bright fluorescence in 60% of sample, trace gas bubbles

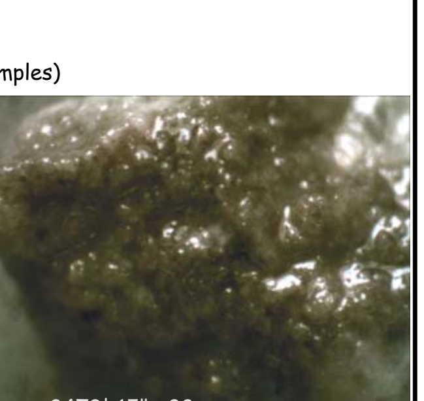
Limestone: off white to gray, coarsley crystalline, very dense, no porosity, no show, trace black shale
Limestone: off white to gray, coarsley crystalline, dense, no porosity, no show, trace gray to green shale, and chert

Shale: jade green, trace chert

**Mississippian 2457 -1008**

2468' 30"
Chert: off white to brown with oil stain, 70% tripolitic, w/good trip porosity, good show free oil, fair odor, good odor on break, some saturated stain, bright fluorescence in 60% of sample

Chert: white to off white, most tripolitic, with good tripolitic porosity, no show free oil, scattered spotted stain, no odor, bright fluorescence in 10% of 2468 ' 0" spl 2473' 15"
Chert: off white to off white, 70% fresh, 30% tripolitic, fair show free oil in tripolitic porosity, trace show free oil in pin point porosity, bright fluorescence in 35% of sample, faint odor
Chert: white, 65% tripolitic, 35% fresh, fair to good tripolitic porosity, scattered show free oil, 10% fluorescence in 15", and >5% in 30", no odor, some barren porosity (2483 samples)
Chert: white, 40% tripolitic, 60% fresh, fair to good tripolitic porosity, no show free oil, >1% fluorescence in 15", and in 30", no odor, some barren porosity



Chert: white to dull amber, fresh sharp, trace tripolitic, little visible porosity, no show

Chert: white to dull amber, fresh sharp, trace tripolitic, little visible porosity, no show

Chert: white to dull amber, fresh sharp, trace tripolitic, little visible porosity, no show

Chert: opaque off white to light gray, fresh, sharp, trace white tripolitic, fair tripolitic porosity, no show
Chert: opaque off white to light gray, trace orange, fresh, sharp, trace white tripolitic, fair tripolitic porosity, no show

**Miss Lime 2535 -1086**

Limestone: light brown to gray, coarsely crystalline, dense, no porosity, no show

**Kinderhook 2545 -1096**

Shale: gray to green

Shale: gray to green

Shale: gray to green

Shale: gray to green, trace dark red

Shale: gray to dark gray

Shale: gray to dark gray

Shale: gray to dark gray

Shale: gray to dark gray

Shale: gray to dark gray

Shale: gray to dark gray

Shale: gray to dark gray

Shale: gray to dark gray

**Hunton 2673 -1224**

Chert: off white, fresh, very hard, no visible porosity, trace off white to gray dolomite w/poor intercrystalline porosity, no show

Dolomite: beige, fine crystalline, poor to fair intercrystalline porosity, no show, much off white chert

Dolomite: beige, fine crystalline, poor to fair intercrystalline porosity, no show, fair amount off white chert

Dolomite: beige to light gray, fine crystalline, poor to fair intercrystalline porosity, no show, fair amount off white chert, trace pyrite

Dolomite: gray, fine crystalline, dense, little visible porosity, no show
Dolomite: gray, fine crystalline, dense, little visible porosity, no show

**Maquoketa 2724 -1275**

Shale: gray to green

**Viola 2728 -1279**

Dolomite: gray to brown, medium to coarsely crystalline, more recrystallized in 15" sample, poor to fair intercrystalline porosity, no show

DST Information provided by:

Noble Petroleum, Inc.
Tom Hansen #1
C NW NW NE
29-22S-4E
Marion Co., KS

1449 KB

SUPERIOR TESTERS ENTERPRISES LLC

## Comments:

09/23/13 Move in C&G Drilling Rig 1.

09/24/13 Drilling @ 560' @ 7 AM. Spudded @ 1:30 PM 9/23/13. Drilled 12.25" hole to 212'. Set 8.625" 23# casing @ 210'. Cemented with 125 sx of 60/40 Poz + 2% gel + 3% CaCl + .25# Flocele / sx. Plug down 1: 30 PM 9/23/13. Start under surface @ 4 AM 9/24/13.

09/25/13 Drilling @ 1765'. Bit trip to pull PDC @ 1600'. Deviation 1/4° @ 500', 1/4° @ 1086', 1/4° @ 1600'.

09/26/13 Drilling @ 2155'. Mud 39 vis 9.3#/gal, 2# LCM. Will take a deviation survey @ 2172'.

09/27/13 Running DST #1 2440'-2473'. Mud 39 vis. 9.0 #/gal. Deviation 1/2° @ 2172'.

09/28/13 Drilling @ 2659'@ 6:34 AM. Mud Vis 50 Wt. 9.4# LCM 2#. Mississippi DST #1 2440'-2473'. Times 45-45-30-30. Blow building to 1.5" on initial and no blow on final openings. Recovered 124' mud + 124' mud w/ oil spots IHP 1228 PSIG, IFP 179-186 PSIG ISIP 527 PSIG, FFP 188-189 PSIG, FSIP 505 PSIG, FHP 1274 PSIG BHT 104°.

09/29/13 RTD 2735' . No logs were run. Plugged and abandoned. Hole filled with drilling mud from 2735' to 250'. Spotted 35 sx plug. Drilling mud to 60'. Circulated 25 sx. cement from 60' to surface. Plugged rathole with 20 sx. All cement is 60/40 Pozmix + 4% gel. Plugging completed at 3:30 PM 9/28/13. Cementing done by Consolidated Oilwell Services. Ticket # 43578.

### GENERAL INFORMATION:

Formation: **Mississippian**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 10:42:00
Time Test Ended: 15:07:00

Test Type: Conventional Bottom Hole (Initial)
Tester: Dustin Ellis
Unit No: 3315-Great Bend-260

**Interval: 2440.00 ft (KB) To 2473.00 ft (KB) (TVD)**
Total Depth: 2473.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Fair
Time Tool Opened: 10:42:00
Time Test Ended: 15:07:00

Reference Elevations: 1447.00 ft (KB)
1443.00 ft (CF)
KB to GR/CF: 4.00 ft
Tester: Dustin Ellis
Unit No: 3315-Great Bend-260

**Interval: 2440.00 ft (KB) To 2473.00 ft (KB) (TVD)**
Total Depth: 2473.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 1447.00 ft (KB)
1443.00 ft (CF)
KB to GR/CF: 4.00 ft

**Serial #: 8524** Inside
Press@RunDepth: 188.86 psia @ 2469.00 ft (KB)
Start Date: 2013.09.27 End Date: 2013.09.27
Start Time: 08:49:00 End Time: 15:07:00
Capacity: 5000.00 psia
Last Calib.: 2013.09.27
Time On Btm: 2013.09.27 @ 10:41:30
Time Off Btm: 2013.09.27 @ 13:13:00

TEST COMMENT: 1st Open 45 minutes Fair blow built to 1.5 inches into a 5 gallon bucket of water.
1st Shut in 45 minutes No blow back
2nd Open 30 minutes Dead
2nd Shut in 30 minutes No blow back

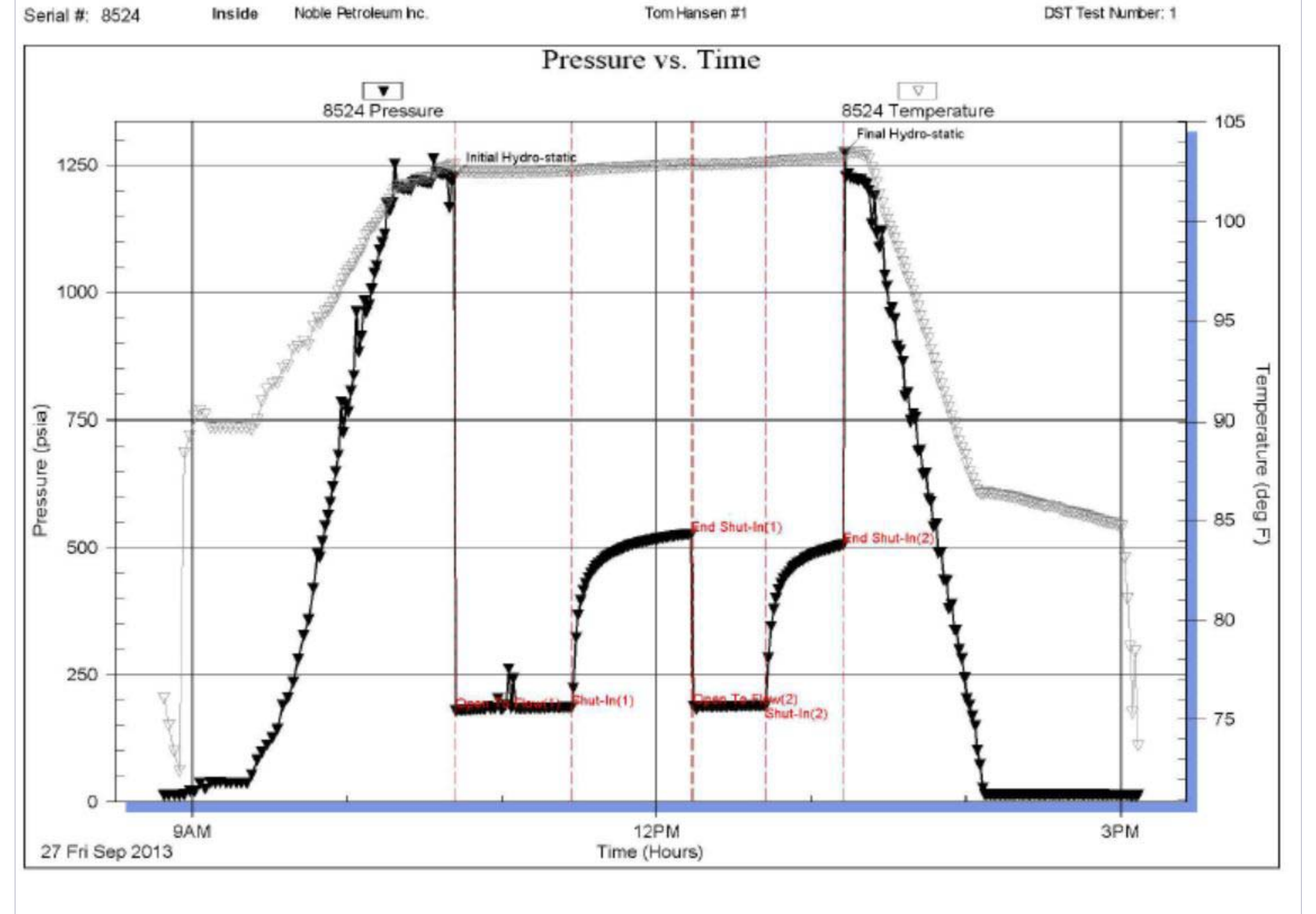
### PRESSURE SUMMARY

| Time (Min.) | Pressure (psia) | Temp (deg F) | Annotation |
|---|---|---|---|
| 0 | 1227.73 | 102.83 | Initial Hydro-static |
| 1 | 179.12 | 102.55 | Open To Flow (1) |
| 46 | 186.08 | 102.53 | Shut-In(1) |
| 92 | 526.52 | 102.89 | End Shut-In(1) |
| 93 | 188.21 | 102.85 | Open To Flow (2) |
| 121 | 188.86 | 102.96 | Shut-In(2) |
| 151 | 505.21 | 103.21 | End Shut-In(2) |
| 152 | 1274.06 | 103.50 | Final Hydro-static |

Recovery Table

| Length ft | Description | Volume bbl |
|---|---|---|
| 124.00 | Mud 100% | 0.610 |
| 124.00 | Very lightly oil spotted mud 100% Mud | 0.894 |

Total Length: 248.00 ft Total Volume: 1.504 bbl

Serial #: 8524 Inside Noble Petroleum Inc. Tom Hansen #1 DST Test Number: 1