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KANSAS CORPORATION COMMISSION
OIL & GAS CONSERVATION DIVISION

Form U3C
June 2015
**Form must be Typed**
**Form must be completed on a per well basis**

# ANNUAL REPORT OF PRESSURE MONITORING, FLUID INJECTION AND ENHANCED RECOVERY

***Complete all blanks - add pages if needed. Copy to be retained for five (5) years after filing date.***

OPERATOR: License # 3581
Name: Red Oak Energy, Inc.
Address 1: 7701 E KELLOGG DR STE 710
Address 2:
City: WICHITA State: KS Zip: 67207 + 1738
Contact Person: Ryan Davis
Phone: ( 316 ) 652-7373
Lease Name: SMITH-HF UNIT
Well Number: 1

API No.: 15-199-20422-00-00
Permit No: E32137.1
Reporting Year: 2018
*(January 1 to December 31)*

NE - NW - NE - NE Sec. 1 Twp. 15 S. R. 41 ☐ E ☑ W
(Q/Q/Q/Q)
150 feet from ☑ N / ☐ S Line of Section
761 feet from ☑ E / ☐ W Line of Section
County: Wallace

**I. Injection Fluid:**

Type *(Pick one)*: ☐ Fresh Water ☐ Treated Brine ☑ Untreated Brine ☐ Water/Brine
Source: ☑ Produced Water ☐ Other *(Attach list)*
Quality: Total Dissolved Solids: _____ mg/l Specific Gravity: _____ Additives: _____
*(Attach water analysis, if available)*

**II. Well Data:**

Maximum Authorized Injection Pressure: 1200 psi Injection Zone: MORROW
Maximum Authorized Injection Rate: 2000 barrels per day
Total Number of Enhanced Recovery Injection Wells Covered by this Permit: _____ *(Include TA's)*

| III. Month: | Total Fluid Injected BBL | Maximum Fluid Pressure | Total Gas Injected MCF | Maximum Gas Pressure | # Days of Injection |
|---|---|---|---|---|---|
| January | 12869 | | 0 | | 31 |
| February | 13983 | | 0 | | 28 |
| March | 16936 | | 0 | | 31 |
| April | 18452 | | 0 | | 30 |
| May | 17856 | | 0 | | 31 |
| June | 9790 | | 0 | | 30 |
| July | 9535 | | 0 | | 31 |
| August | 11867 | | 0 | | 31 |
| September | 12547 | | 0 | | 30 |
| October | 12472 | | 0 | | 31 |
| November | 32748 | | 0 | | 30 |
| December | 16110 | | 0 | | 31 |
| ***TOTAL*** | 185165 | | 0 | | |

Submitted Electronically

# DownHole SAT(tm)

## FORMATION WATER CHEMISTRY INPUT

Red Oak Energy
Smith HF 1 SWD
Wellhead

Pro-Stim Chemicals
Paul Dwyer & Ryan Uhland

Report Date: 06-06-2018
Sample #: 4196

Sampled: 05-25-2018 at 0823
Sample ID: WBaten

| CATIONS | | ANIONS | |
|---|---|---|---|
| Calcium (as Ca) | 1600 | Chloride (as Cl) | 40100 |
| Magnesium (as Mg) | 243.00 | Sulfate (as $SO_4$) | 4800 |
| Barium (as Ba) | 0.00 | Bromine (as Br) | 0.00 |
| Strontium (as Sr) | 0.00 | Dissolved $CO_2$ (as $CO_2$) | 125.00 |
| Sodium (as Na) | 25187 | Bicarbonate (as $HCO_3$) | 480.00 |
| Potassium (as K) | 0.00 | Carbonate (as $CO_3$) | 0.00 |
| Lithium (as Li) | 0.00 | Oxalic acid (as $C_2O_4$) | 0.00 |
| Ammonia (as $NH_3$) | 0.00 | Silica (as $SiO_2$) | 0.00 |
| Aluminum (as Al) | 0.00 | Phosphate(as $PO_4$) | 0.00 |
| Iron (as Fe) | 7.00 | $H_2S$ (as $H_2S$) | 25.00 |
| Manganese (as Mn) | 0.340 | Fluoride (as F) | 0.00 |
| Zinc (as Zn) | 0.00 | Nitrate (as $NO_3$) | 0.00 |
| Lead (as Pb) | 0.00 | Boron (as B) | 0.00 |

### PARAMETERS

| | |
|---|---|
| Calculated T.D.S. | 71642 |
| Molar Conductivity | 94339 |
| Resistivity | 10.60 |
| Sp.Gr.(g/mL) | 1.04 |
| Pressure(psia) | 14.70 |
| $pCO_2$(psia) | 0.00900 |
| $pH_2S$(atm) | 0.00435 |
| Temperature ($^oF$) | 70.00 |
| pH | 7.59 |

### CORROSION RATE PREDICTION

| | |
|---|---|
| $CO_2$ - $H_2S$ Rate(mpy) | 0.00268 |

**COMMENTS** All anions & cations are in mg/l

**FRENCH CREEK SOFTWARE, INC.**
**1220 VALLEY FORGE ROAD, SUITE 21, VALLEY FORGE, PA 19460**

# DownHole SAT(tm)

**FORMATION WATER**
**DEPOSITION POTENTIAL INDICATORS**

Red Oak Energy
Smith HF 1 SWD
Wellhead

Pro-Stim Chemicals
Paul Dwyer & Ryan Uhland

Report Date: 06-06-2018
Sample #: 4196

Sampled: 05-25-2018 at 0823
Sample ID: WBaten

| SATURATION LEVEL | |
|---|---|
| Calcite ($CaCO_3$) | 10.39 |
| Aragonite ($CaCO_3$) | 9.77 |
| Witherite ($BaCO_3$) | 0.00 |
| Strontianite ($SrCO_3$) | 0.00 |
| Calcium oxalate ($CaC_2O_4$) | 0.00 |
| Magnesite ($MgCO_3$) | 1.38 |
| Anhydrite ($CaSO_4$) | 0.858 |
| Gypsum ($CaSO_4*2H_2O$) | 1.35 |
| Barite ($BaSO_4$) | 0.00 |
| Celestite ($SrSO_4$) | 0.00 |
| Fluorite ($CaF_2$) | 0.00 |
| Calcium phosphate | 0.00 |
| Hydroxyapatite | 0.00 |
| Silica ($SiO_2$) | 0.00 |
| Brucite ($Mg(OH)_2$) | < 0.001 |
| Magnesium silicate | 0.00 |
| Iron hydroxide ($Fe(OH)_3$) | < 0.001 |
| Strengite ($FePO_4*2H_2O$) | 0.00 |
| Siderite ($FeCO_3$) | 60.39 |
| Halite (NaCl) | 0.0148 |
| Thenardite ($Na2SO_4$) | < 0.001 |
| Iron sulfide (FeS) | 172.44 |

| FREE ION MOMENTARY EXCESS (ppm) | |
|---|---|
| Calcite ($CaCO_3$) | 2.87 |
| Aragonite ($CaCO_3$) | 2.85 |
| Witherite ($BaCO_3$) | -57.30 |
| Strontianite ($SrCO_3$) | -17.54 |
| Calcium oxalate ($CaC_2O_4$) | -0.145 |
| Magnesite ($MgCO_3$) | 0.736 |
| Anhydrite ($CaSO_4$) | -346.83 |
| Gypsum ($CaSO_4*2H_2O$) | 689.36 |
| Barite ($BaSO_4$) | -0.0292 |
| Celestite ($SrSO_4$) | -55.83 |
| Fluorite ($CaF_2$) | -21.36 |
| Calcium phosphate | >-0.001 |
| Hydroxyapatite | -972.04 |
| Silica ($SiO_2$) | -97.29 |
| Brucite ($Mg(OH)_2$) | 0.0258 |
| Magnesium silicate | -290.49 |
| Iron hydroxide ($Fe(OH)_3$) | < 0.001 |
| Strengite ($FePO_4*2H_2O$) | >-0.001 |
| Siderite ($FeCO_3$) | 3.59 |
| Halite (NaCl) | -461803 |
| Thenardite ($Na2SO_4$) | -208214 |
| Iron sulfide (FeS) | 1.86 |

| SIMPLE INDICES | |
|---|---|
| Langelier | 1.32 |
| Ryznar | 4.95 |
| Puckorius | 4.21 |
| Larson-Skold Index | 153.87 |
| Stiff Davis Index | 0.592 |
| Oddo-Tomson | 0.397 |

| BOUND IONS | TOTAL | FREE |
|---|---|---|
| Calcium | 1600 | 1283 |
| Barium | 0.00 | 0.00 |
| Carbonate | 25.66 | 1.91 |
| Phosphate | 0.00 | 0.00 |
| Sulfate | 4800 | 3051 |

**OPERATING CONDITIONS**

| | |
|---|---|
| Temperature ($^oF$) | 70.00 |
| Time(mins) | 3.00 |

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