

KANSAS CORPORATION COMMISSION OIL & GAS CONSERVATION DIVISION

1086598

Form ACO-4 Form must be typed March 2009

APPLICATION FOR COMMINGLING OF Commingling ID # _ PRODUCTION (K.A.R. 82-3-123) OR FLUIDS (K.A.R. 82-3-123a)

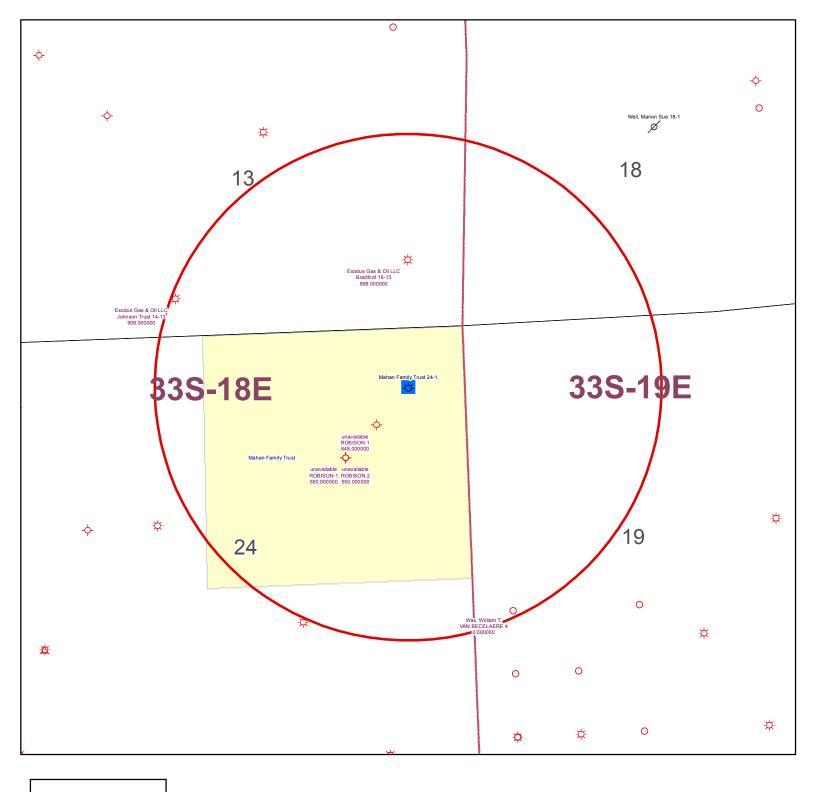
| OPERATOR: License # | | API No. 15 | | | |
|-------------------------------------|---|---------------------------------|-------------------|---|--|
| Name:_ | | Spot Description: | | | |
| Address | 1: | | Sec Twp | _S. R | |
| Address 2: | | | Feet from No | orth / South Line of Section | |
| City: | | | Feet from Ea | ast / West Line of Section | |
| Contact | Person: | County: | | | |
| Phone: | () | Lease Name: | Wel | II #: | |
| | | | | | |
| 1. | Name and upper and lower limit of each production interval to | be commingled: | | | |
| | Formation: | (Perfs): | | | |
| | Formation: | (Perfs): | | | |
| | Formation: | (Perfs): | | | |
| | Formation: | (Perfs): | | | |
| | Formation: | (Perfs): | | | |
| | | | | | |
| 2. | Estimated amount of fluid production to be commingled from e | | | | |
| | Formation: | | | BWPD: | |
| | Formation: | | | BWPD: | |
| | Formation: | | | BWPD: | |
| | Formation: | BOPD: | MCFPD: | BWPD: | |
| | Formation: | BOPD: | MCFPD: | BWPD: | |
| □ 3.□ 4. | Plat map showing the location of the subject well, all other well the subject well, and for each well the names and addresses of Signed certificate showing service of the application and affida | of the lessee of record or op | erator. | ses within a 1/2 mile radius of | |
| For Con | nmingling of PRODUCTION ONLY, include the following: | | | | |
| ☐ 5. | Wireline log of subject well. Previously Filed with ACO-1: | Yes No | | | |
| 6. | Complete Form ACO-1 (Well Completion form) for the subject | _ | | | |
| | | | | | |
| For Con | nmingling of FLUIDS ONLY, include the following: | | | | |
| 7. | Well construction diagram of subject well. | | | | |
| 8. | Any available water chemistry data demonstrating the compati | ibility of the fluids to be com | mingled. | | |
| current ir mingling | /IT: I am the affiant and hereby certify that to the best of my nformation, knowledge and personal belief, this request for comis true and proper and I have no information or knowledge, which istent with the information supplied in this application. | S | ubmitted Electron | nically | |
| l — | C Office Use Only nied ☐ Approved | | | t in the application. Protests must be e filed wihin 15 days of publication of | |

Date: _

Denied Approved

15-Day Periods Ends:

Approved By:



KGS STATUS

- ◆ DA/PA
- EOR
- **⇔** GAS
- △ INJ/SWD
- OIL
- OIL/GAS
- OTHER

Mahan Family Trust 24-1 24-33S-18E 1" = 1,000'

KANSAS CORPORATION COMMISSION OIL & GAS CONSERVATION DIVISION

WELL COMPLETION FORM WEL

Form ACO-1 September 1999 Form Must Be Typed

| WELL COMPLETION FORM | | |
|--|-------|---------------|
| LL HISTORY - DESCRIPTION OF WELL & LEASE | ORICI | ACCUMANTED IN |
| | | 3 12 |

| 33344 | 000 23500 00 00 |
|--|---|
| Operator: License # 33344 Name: Quest Cherokee Oilfield Service, LLC | API No. 15 - 099-23509-00-00 |
| Address: 211 W. 14th Street | County: Labette |
| City/State/Zip: Chanute, KS 66720 | ne _ ne _ sec. ²⁴ Twp. ³³ .S. R. ¹⁸ [7] East [] West |
| | 660 feet from S / N (circle one) Line of Section |
| Purchaser: Bluestem Pipeline, LLC | 510 feet from (E)/ W (circle one) Line of Section |
| Operator Contact Person: Richard Marlin | Footages Calculated from Nearest Outside Section Corner: |
| Phone: (<u>620</u>) <u>431-9500</u> | (circle one) (NE) SE NW SW |
| Contractor: Name: Well Refined Drilling Company Tre. | Lease Name: Mahan Family Trust Well #: 24-1 |
| License: 33072 | Field Name: Cherokee Basin CBM |
| Wellsite Geologist: Michael Ebers | Producing Formation: Not yet complete |
| Designate Type of Completion: | Elevation: Ground: 852' Kelly Bushing: |
| New Well Re-Entry Workover | Total Depth: 835' Plug Back Total Depth: 824.59' |
| Oil SWD SIOW Temp. Abd. | Amount of Surface Pipe Set and Cemented at 20' Feet |
| GasENHR SIGW | Multiple Stage Cementing Collar Used? |
| Dry Other (Core, WSW, Expl., Cathodic, etc) | If yes, show depth set Feet |
| If Workover/Re-entry: Old Well Info as follows: | If Alternate II completion, cement circulated from 824.59' |
| Operator: | feet depth to_surfacew/_ 106sx cmt. |
| Well Name: | 2 111 - 112 At 7 1/00 6/01 |
| Original Comp. Date: Original Total Depth: | Drilling Fluid Management Plan ALT#2 KGR 5/9/07 (Data must be collected from the Reserve Pit) |
| Deepening Re-perf Conv. to Enhr./SWD | Chloride content ppm Fluid volume bbls |
| Plug BackPlug Back Total Depth | Dewatering method used |
| Commingled Docket No | KECEIVED |
| Dual Completion Docket No | Location of fluid disposal if hauled offsite: KANSAS CORPORATION COMMISSIO |
| Other (SWD or Enhr.?) Docket No | Operator Name: |
| 05/26/04 05/27/04 06/04/04 | Lease Name: License No.: |
| Spud Date or Date Reached TD Completion Date or | Quarter Sec TwpS. R WICHTERS West |
| Recompletion Date Recompletion Date | County: Docket No.: |
| | |
| Kansas 67202, within 120 days of the spud date, recompletion, workov Information of side two of this form will be held confidential for a period of 107 for confidentiality in excess of 12 months). One copy of all wireline logs TICKETS MUST BE ATTACHED. Submit CP-4 form with all plugged wells | |
| All requirements of the statutes, rules and regulations promulgated to regul. herein are emplete and correct to the best of my knowledge. | ate the oil and gas industry have been fully complied with and the statements |
| Signature: J. Mary VV/arlar Title Chief Openatory Officerate: 4705 | KCC Office Use ONLY |
| L. Lamin | , |
| Subscribed and sworn to before me thisday of | If Denied, Yes Date: |
| 20.05. | Wireline Log Received |
| Notary Public: Land K. Houston | Geologist Report Received |
| () S/ / A JENNIFER R | HOUSTON UIC Distribution |
| Date Commission Expires: 1/30/05 Notary Public - Sta | ete of Kansas |
| My Appt. Expires 7/3 | 0105 |

Side Two

| Operator Name: Qu | uest Cherokee Oi | field Servi | ce, LLC | | | Mahan Fami | ly Trust | Well #: _24-1 | | |
|---|---|--------------------------------|--------------------------------|---|---|----------------------------|---------------------|--------------------------|--|--|
| Sec. 24 Twp | 33 S. R. 18 | ✓ East | West | Cou | inty: Labe | tte | | | *************************************** | |
| tested, time tool ope temperature, fluid re | Show important tops en and closed, flowir ecovery, and flow rate gs surveyed. Attach | g and shut-i es if gas to s | n pressures, urface test, a | whether along wit | r shut-in pr | essure reached | l static level, hyd | rostatic pressure | es, bottom | hole |
| Drill Stem Tests Tak | | Yes | s 🗸 No | *************************************** | ✓ L | .og Forma | tion (Top), Depth | and Datum | ☐ Sa | ample |
| Samples Sent to Ge | , | [] Yes | s VNo | | Nam | _{le} apah Lime | | Тор Absent | | atum osent |
| Cores Taken | , | Yes | parameter . | | | mont Lime | | Absent | | osent |
| Electric Log Run (Submit Copy) | | ✓ Yes | s No | | | nee Lime | | 173' | | 376' |
| | | | | | Osw | rego Lime | | 251' | +5 | 98' |
| List All E. Logs Run | • | | | | Verd | digris Lime | i | 407' | +4 | 42' |
| Comp Densit Dual Inductio | • | | | | Miss | sissippi Lime | e | 790' | +5 | 9' |
| | | Report | | RECORI | | w [] Used | ction, etc. | | Andrews of P. S. Children and | : SEPREMENTAL CAPACITIES AND A STATE OF THE TOTAL CAPACITIES AND A STATE OF T |
| Purpose of String | Size Hole Drilled | | Casing In O.D.) | | Veight os. / Ft. | Setting Depth | Type of Cement | # Sacks Used | Type an | d Percent litives |
| Surface | 12 1/4" | 8-5/8" | | 24.75 | | 20' | "A" | 4sxs | Add | 10.463 |
| Production | 6 3/4" | 4 1/2" | | 10.5# | , r. w. r | 824.59' | "A" | 106sx | | THE RESIDENCE OF THE PARTY OF T |
| | | | | | | | | | and the same of the same of | and decomposition of the same |
| gram teamsumananananananananananananananananananan | | | ADDITIONAL | CEMEN | TING / SQL | JEEZE RECOR | D | | - the enterestanteurs management | Maked one title making for open-controllershaped |
| Purpose: Perforate Protect Casing Plug Back TD Plug Off Zone | Depth Top Bottom | Туре о | f Cement | #Sac | cks Used | | Type and | Percent Additives | | |
| Shots Per Foot | | | - Bridge Plug | | pe | | acture, Shot, Ceme | nt Squeeze Record | | Depth |
| None Waiting On Pipeline Specify Footage of Each Interval Perforated None Waiting On Pipeline | | | | | RECEIVED KANSAS CORPORATION COMMISSION APR 1 1 2005 | | | | | |
| | | | | | ************************************** | | CONSERVA WICH | TION DIVISION ITA, KS | | T AND THE PARTY OF |
| TUBING RECORD | Size | Set At | | Packer | r At | Liner Run | | | | |
| Date of First, Resume | rd Production, SWD or E | Enhr. | Producing Met | nod | Flowing | y Pump | ing Gas L | | (Explain) | Marie |
| Estimated Production Per 24 Hours | Oil | Bbls. | Gas | Mcf | Wate | or E | Bbls. | Gas-Oil Ratio | | Gravity |
| Disposition of Gas | METHOD OF (| COMPLETION | | | | Production Inte | rval | | | forth manners and manners and the same of |
| Vented Sold (If vented, So | Used on Lease ubmit ACO-18.) | | Open Hole Other (Specia | Pe | erf. D | ually Comp. | Commingled | | MASSAGE MASSAG | |

| | A | В | С | D | Е | F | C | П | ı | ı | К |
|--|---|--|--|--|--|--|---|---|---|---|-----------------|
| 1 | Produced Fluids # | O | 1 | 2 | 3 | 4 | G 5 | Н | <u> </u> | J | 1 N |
| | Parameters | Units | Input | Input | Input | Input | Input | | Click he | ro | Click |
| 3 | Select the brines | Select fluid | 7 | | 7 | | 7 | Mixed brine: | to run S | | |
| 4 | Sample ID | by checking | | | | | · · | Cell H28 is | to run St | | Click |
| | Date | the box(es), | 3/19/2012 | 3/4/2012 | 3/14/2012 | 1/20/2012 | 1/20/2012 | STP calc. pH. | > | | |
| 6 | Operator | Row 3 | PostRock | PostRock | PostRock | PostRock | PostRock | Cells H35-38 | | | Click |
| | Well Name | | Ward Feed | Ward Feed | Clinesmith | Clinesmith | Clinesmith | are used in | Goal Seek | SSP | |
| 8 | Location | | #34-1 | #4-1 | #5-4 | #1 | #2 | mixed brines | | | Click |
| _ | Field | | CBM | CBM | Bartles | Bartles | Bartles | calculations. | | | |
| 10 | Na ⁺ | (mg/l)* | 19,433.00 | 27,381.00 | 26,534.00 | 25689.00 | 24220.00 | 24654.20 | Initial(BH) | Final(WH) | SI/SR |
| 11 | K ⁺ (if not known =0) | (mg/l) | | | | | | 0.00 | Saturation Index | values | (Final-Initial) |
| 12 | Mg ²⁺ | (mg/l) | 1,096.00 | 872.00 | 1,200.00 | 953.00 | 858.00 | 995.91 | Ca | lcite | |
| 13 | Ca ²⁺ | (mg/l) | 1,836.00 | 2,452.00 | 2,044.00 | 1920.00 | 1948.00 | 2040.23 | -0.73 | -0.60 | 0.13 |
| | Sr ²⁺ | (mg/l) | | · | | | | 0.00 | Ba | rite | |
| 15 | Ba ²⁺ | (mg/l) | | | | | | 0.00 | | | |
| | Fe ²⁺ | (mg/l) | 40.00 | 21.00 | 18.00 | 82.00 | 90.00 | 50.21 | н | alite | |
| | Zn ²⁺ | | 40.00 | 21.00 | 10.00 | 02.00 | 70.00 | 0.00 | -1.77 | -1.80 | -0.03 |
| | | (mg/l) | | | | | | | | | -0.03 |
| | Pb ²⁺ | (mg/l) | 2 < 200 00 | 40.045.00 | 47.074.00 | 45.22.00 | 424 47 00 | 0.00 | | osum | 0.00 |
| | Cl' | (mg/l) | 36,299.00 | 48,965.00 | 47,874.00 | 45632.00 | 43147.00 | 44388.44 | -3.19 | -3.18 | 0.00 |
| - | SO ₄ ² · | (mg/l) | 1.00 | 1.00 | 8.00 | 1.00 | 1.00 | 2.40 | | nydrate | |
| 21 | F | (mg/l) | | | | | | 0.00 | -3.96 | -3.90 | 0.06 |
| | Br [*] | (mg/l) | | | | | | 0.00 | Anh | ydrite | |
| 23 | SiO2 | (mg/l) SiO2 | | | | | | 0.00 | -3.47 | -3.36 | 0.12 |
| 24 | HCO3 Alkalinity** | (mg/l as HCO3) | 190.00 | 234.00 | 259.00 | 268.00 | 254.00 | 241.03 | Cele | estite | |
| 25 | CO3 Alkalinity | (mg/l as CO3) | | | | | | | | | |
| 26 | Carboxylic acids** | (mg/l) | | | | | | 0.00 | Iron S | Sulfide | |
| 27 | Ammonia | (mg/L) NH3 | | | | | | 0.00 | -0.16 | -0.22 | -0.06 |
| 28 | Borate | (mg/L) H3BO3 | | | | | | 0.00 | Zinc | Sulfide | |
| | TDS (Measured) | (mg/l) | | | | | | 72781 | | | |
| | Calc. Density (STP) | (g/ml) | 1.038 | 1.051 | 1.050 | 1.048 | 1.045 | 1.047 | Calcium | ı fluoride | |
| | CO ₂ Gas Analysis | (%) | 19.97 | 18.76 | 22.41 | 35.53 | 33.79 | 26.16 | Curezun | | |
| | H ₂ S Gas Analysis*** | (%) | 0.0289 | 0.0292 | 0.0296 | 0.0306 | 0.0151 | 0.0269 | Iron Ca | arbonate | |
| _ | Total H2Saq | (mgH2S/l) | 1.00 | 1.00 | 1.00 | 1.00 | 0.50 | 0.90 | -0.74 | -0.51 | 0.23 |
| - | pH, measured (STP) | pН | 5.67 | 5.76 | 5.72 | 5.54 | 5.55 | 5.63 | Inhibitor ne | eeded (mg/L) | |
| | | 0-CO2%+Alk, | | | | | | | Calcite | NTMP | |
| | Choose one option | | | | _ | | | | | | |
| 35 | to calculate SI? | • | 0 | 0 | 0 | 0 | 0 | | 0.00 | 0.00 | |
| | Gas/day(thousand cf/day) | (Mcf/D) | | 0 | | 4. | 4 | 0 | 0.00 Rorito | 0.00 | |
| | Oil/Day Water/Day | (B/D) (B/D) | 100 | 100 | 100 | 100 | 100 | 500 | Barite 0.00 | 0.00 | |
| | J | | | 100 | 100 | 100 | 100 | 200 | | о.00 оН | |
| | For mixed brines, enter val | . , | | ures in Cells (H | (40-H43) | | | (Enter H40-H43) | n | | |
| 40 | For mixed brines, enter val Initial T | . , | | ures in Cells (H 71.0 | (40-H43) 70.0 | 41.0 | 49.0 | (Enter H40-H43) 60.0 | 5.69 | 5.60 | |
| | | lues for tempera | tures and press 66.0 66.0 | | | 41.0 | 49.0 | 60.0 89.0 | 5.69 | | |
| 41 | Initial T | lues for temperator (F) | tures and press 66.0 | 71.0 | 70.0 | | | 60.0 89.0 | 5.69 | 5.60 | |
| 41 42 43 | Initial T Final T Initial P Final P | (F) (F) (psia) (psia) | tures and press 66.0 66.0 | 71.0 71.0 | 70.0 70.0 | 41.0 | 49.0 | 60.0 89.0 | 5.69 Viscosity (1.196 Heat Capaci | 5.60 CentiPoise) 0.826 ity (cal/ml/ ⁰ C) | |
| 41 42 43 44 | Initial T Final T Initial P Final P Use TP on Calcite sheet? | (F) (F) (psia) (psia) 1-Yes;0-No | 66.0 66.0 25.0 | 71.0 71.0 25.0 | 70.0 70.0 25.0 | 41.0 25.0 | 49.0 25.0 | 60.0 89.0 25.0 120.0 | 5.69 Viscosity (1.196 Heat Capaci 0.955 | 5.60 CentiPoise) 0.826 ty (cal/ml/°C) 0.959 | |
| 41 42 43 44 45 | Initial T Final T Initial P Final P Use TP on Calcite sheet? API Oil Grav. | ues for temperat (F) (F) (psia) (psia) (psia) 1-Yes;0-No API grav. | 66.0 66.0 25.0 | 71.0 71.0 25.0 | 70.0 70.0 25.0 | 41.0 25.0 | 49.0 25.0 | 60.0 89.0 25.0 120.0 | 5.69 Viscosity (1.196 Heat Capaci 0.955 Inhibitor no | 5.60 CentiPoise) 0.826 ty (cal/ml/ ⁰ C) 0.959 eeded (mg/L) | |
| 41 42 43 44 45 46 | Initial T Final T Initial P Final P Use TP on Calcite sheet? API Oil Grav. Gas Sp.Grav. | ues for tempera (F) (F) (psia) (psia) 1-Yes;0-No API grav. Sp.Grav. | 66.0 66.0 66.0 25.0 25.0 | 71.0 71.0 25.0 | 70.0 70.0 25.0 | 41.0 25.0 | 49.0 25.0 | 60.0 89.0 25.0 120.0 | 5.69 Viscosity (1.196 Heat Capaci 0.955 Inhibitor no | 5.60 CentiPoise) 0.826 ty (cal/ml/°C) 0.959 eded (mg/L) HDTMP | |
| 41 42 43 44 45 46 47 | Initial T Final T Initial P Final P Use TP on Calcite sheet? API Oil Grav. Gas Sp.Grav. MeOH/Day | ues for tempera (F) (F) (psia) (psia) 1-Yes;0-No API grav. Sp.Grav. (B/D) | 66.0 66.0 25.0 | 71.0 71.0 25.0 | 70.0 70.0 25.0 | 41.0 25.0 | 49.0 25.0 | 60.0 89.0 25.0 120.0 | 5.69 Viscosity (1.196 Heat Capaci 0.955 Inhibitor no Gypsum 0.00 | 5.60 CentiPoise) 0.826 ty (cal/ml/°C) 0.959 eded (mg/L) HDTMP 0.00 | |
| 41 42 43 44 45 46 47 48 | Initial T Final T Initial P Final P Use TP on Calcite sheet? API Oil Grav. Gas Sp.Grav. | ues for tempera (F) (F) (psia) (psia) 1-Yes;0-No API grav. Sp.Grav. | tures and presss 66.0 66.0 25.0 25.0 | 71.0 71.0 25.0 | 70.0 70.0 25.0 | 41.0 25.0 | 49.0 25.0 | 60.0 89.0 25.0 120.0 | 5.69 Viscosity (1.196 Heat Capaci 0.955 Inhibitor no | 5.60 CentiPoise) 0.826 ty (cal/ml/°C) 0.959 eded (mg/L) HDTMP | |
| 41 42 43 44 45 46 47 48 49 | Initial T Final T Initial P Final P Use TP on Calcite sheet? API Oil Grav. Gas Sp.Grav. MeOH/Day MEG/Day Conc. Multiplier | ues for tempera (F) (F) (psia) (psia) (1-Yes;0-No API grav. Sp.Grav. (B/D) (B/D) | tures and presss 66.0 66.0 25.0 25.0 | 71.0 71.0 25.0 | 70.0 70.0 25.0 | 41.0 25.0 | 49.0 25.0 | 60.0 89.0 25.0 120.0 | 5.69 Viscosity (1.196 Heat Capaci 0.955 Inhibitor no Gypsum 0.00 Anhydrite | 5.60 CentiPoise) 0.826 ty (cal/ml/°C) 0.959 ceded (mg/L) HDTMP 0.00 HDTMP | |
| 41 42 43 44 45 46 47 48 49 50 | Initial T Final T Initial P Final P Use TP on Calcite sheet? API Oil Grav. Gas Sp.Grav. MeOH/Day MEG/Day Conc. Multiplier H* (Strong acid) * | ues for tempera (F) (F) (psia) (psia) 1-Yes;0-No API grav. Sp.Grav. (B/D) (B/D) | tures and presss 66.0 66.0 25.0 25.0 | 71.0 71.0 25.0 | 70.0 70.0 25.0 | 41.0 25.0 | 49.0 25.0 | 60.0 89.0 25.0 120.0 | 5.69 Viscosity (1.196 Heat Capaci 0.955 Inhibitor no Gypsum 0.00 Anhydrite | 5.60 CentiPoise) 0.826 ty (cal/ml/°C) 0.959 ceded (mg/L) HDTMP 0.00 HDTMP | |
| 41 42 43 44 45 46 47 48 49 50 | Initial T Final T Initial P Final P Use TP on Calcite sheet? API Oil Grav. Gas Sp.Grav. MeOH/Day MEG/Day Conc. Multiplier | ues for tempera (F) (F) (psia) (psia) 1-Yes;0-No API grav. Sp.Grav. (B/D) (B/D) (N) | tures and presss 66.0 66.0 25.0 25.0 | 71.0 71.0 25.0 | 70.0 70.0 25.0 | 41.0 25.0 | 49.0 25.0 | 60.0 89.0 25.0 120.0 | 5.69 Viscosity (1.196 Heat Capaci 0.955 Inhibitor no Gypsum 0.00 Anhydrite | 5.60 CentiPoise) 0.826 ty (cal/ml/°C) 0.959 ceded (mg/L) HDTMP 0.00 HDTMP | |
| 41 42 43 44 45 46 47 48 49 50 51 | Initial T Final T Initial P Final P Use TP on Calcite sheet? API Oil Grav. Gas Sp.Grav. MeOH/Day MEG/Day Conc. Multiplier H* (Strong acid) † OH (Strong base) † | ues for tempera (F) (F) (psia) (psia) 1-Yes;0-No API grav. Sp.Grav. (B/D) (B/D) (N) | tures and presss 66.0 66.0 25.0 25.0 | 71.0 71.0 25.0 | 70.0 70.0 25.0 | 41.0 25.0 | 49.0 25.0 | 60.0 89.0 25.0 120.0 | 5.69 Viscosity (1.196 Heat Capaci 0.955 Inhibitor no Gypsum 0.00 Anhydrite | 5.60 CentiPoise) 0.826 ty (cal/ml/°C) 0.959 ceded (mg/L) HDTMP 0.00 HDTMP | |
| 41 42 43 44 45 46 47 48 49 50 51 52 53 54 | Initial T Final T Initial P Final P Use TP on Calcite sheet? API Oil Grav. Gas Sp.Grav. McOH/Day MEG/Day Conc. Multiplier H* (Strong acid) † OH* (Strong base) † Quality Control Checks at H ₂ S Gas Total H2Saq (STP) | ues for tempera (F) (F) (psia) (psia) 1-Yes;0-No API grav. Sp.Grav. (B/D) (N) (N) STP: | tures and presss 66.0 66.0 25.0 25.0 | 71.0 71.0 25.0 | 70.0 70.0 25.0 | 41.0 25.0 | 49.0 25.0 | 60.0 89.0 25.0 120.0 | 5.69 Viscosity (1.196 Heat Capaci 0.955 Inhibitor no Gypsum 0.00 Anhydrite | 5.60 CentiPoise) 0.826 ty (cal/ml/°C) 0.959 ceded (mg/L) HDTMP 0.00 HDTMP | |
| 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 | Initial T Final T Initial P Final P Use TP on Calcite sheet? API Oil Grav. Gas Sp.Grav. MeOH/Day MEG/Day Conc. Multiplier H* (Strong acid) † OH' (Strong base) † Quality Control Checks at H ₂ S Gas Total H2Saq (STP) PH Calculated | ues for tempera (F) (F) (psia) (psia) 1-Yes;0-No API grav. Sp.Grav. (B/D) (N) (N) STP: (%) (mgH2S/I) (pH) | tures and presss 66.0 66.0 25.0 25.0 | 71.0 71.0 25.0 | 70.0 70.0 25.0 | 41.0 25.0 | 49.0 25.0 | 60.0 89.0 25.0 120.0 | 5.69 Viscosity (1.196 Heat Capaci 0.955 Inhibitor no Gypsum 0.00 Anhydrite | 5.60 CentiPoise) 0.826 ty (cal/ml/°C) 0.959 ceded (mg/L) HDTMP 0.00 HDTMP | |
| 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 | Initial T Final T Initial P Final P Use TP on Calcite sheet? API Oil Grav. Gas Sp.Grav. MeOH/Day MEG/Day Conc. Multiplier H* (Strong acid) * OH* (Strong base) * Quality Control Checks at H ₂ S Gas Total H2Saq (STP) pH Calculated PCO2 Calculated | (F) (F) (psia) (psia) (1-Yes;0-No API grav. Sp.Grav. (B/D) (N) (N) STP: (%) (mgH2S/I) (PH) (%) | tures and presss 66.0 66.0 25.0 25.0 | 71.0 71.0 25.0 | 70.0 70.0 25.0 | 41.0 25.0 | 49.0 25.0 | 60.0 89.0 25.0 120.0 | 5.69 Viscosity (1.196 Heat Capaci 0.955 Inhibitor no Gypsum 0.00 Anhydrite | 5.60 CentiPoise) 0.826 ty (cal/ml/°C) 0.959 ceded (mg/L) HDTMP 0.00 HDTMP | |
| 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 | Initial T Final T Initial P Final P Use TP on Calcite sheet? API Oil Grav. Gas Sp.Grav. MeOH/Day MEG/Day Conc. Multiplier H* (Strong acid) † OH (Strong base) † Quality Control Checks at H ₂ S Gas Total H2Saq (STP) pH Calculated PCO2 Calculated Alkalinity Caclulated | (F) (F) (psia) (psia) (1-Yes;0-No API grav. Sp.Grav. (B/D) (N) (N) STP: (%) (mgH2S/I) (pH) (%) (mg/I) as HCO3 | tures and presss 66.0 66.0 25.0 25.0 | 71.0 71.0 25.0 | 70.0 70.0 25.0 | 41.0 25.0 | 49.0 25.0 | 60.0 89.0 25.0 120.0 | 5.69 Viscosity (1.196 Heat Capaci 0.955 Inhibitor no Gypsum 0.00 Anhydrite | 5.60 CentiPoise) 0.826 ty (cal/ml/°C) 0.959 ceded (mg/L) HDTMP 0.00 HDTMP | |
| 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 | Initial T Final T Initial P Final P Use TP on Calcite sheet? API Oil Grav. Gas Sp.Grav. MeOH/Day MEG/Day Conc. Multiplier H* (Strong acid) * OH* (Strong base) * Quality Control Checks at H ₂ S Gas Total H2Saq (STP) pH Calculated PCO2 Calculated | (F) (F) (psia) (psia) (1-Yes;0-No API grav. Sp.Grav. (B/D) (N) (N) STP: (%) (mgH2S/I) (PH) (%) | tures and presss 66.0 66.0 25.0 25.0 | 71.0 71.0 25.0 | 70.0 70.0 25.0 | 41.0 25.0 | 49.0 25.0 | 60.0 89.0 25.0 120.0 | 5.69 Viscosity (1.196 Heat Capaci 0.955 Inhibitor no Gypsum 0.00 Anhydrite | 5.60 CentiPoise) 0.826 ty (cal/ml/°C) 0.959 ceded (mg/L) HDTMP 0.00 HDTMP | |
| 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 | Initial T Final T Initial P Final P Use TP on Calcite sheet? API Oil Grav. Gas Sp.Grav. MeOH/Day MEG/Day Conc. Multiplier H* (Strong acid) * OH (Strong base) * Quality Control Checks at H ₂ S Gas Total H2Saq (STP) pH Calculated PCO2 Calculated Alkalinity Caclulated EXAnions= EXAnions= Calc TDS= | (F) (F) (psia) (psia) 1-Yes;0-No API grav. Sp.Grav. (B/D) (N) (N) STP: (%) (mgH2S/I) (pH) (%) (mg/I) as HCO3 (equiv./I) | tures and presss 66.0 66.0 25.0 25.0 | 71.0 71.0 25.0 | 70.0 70.0 25.0 | 41.0 25.0 | 49.0 25.0 | 60.0 89.0 25.0 120.0 | 5.69 Viscosity (1.196 Heat Capaci 0.955 Inhibitor no Gypsum 0.00 Anhydrite | 5.60 CentiPoise) 0.826 ty (cal/ml/°C) 0.959 ceded (mg/L) HDTMP 0.00 HDTMP | |
| 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 | Initial T Final T Initial P Final P Use TP on Calcite sheet? API Oil Grav. Gas Sp.Grav. MeOH/Day MEG/Day Conc. Multiplier H* (Strong acid) * OH* (Strong base) * Quality Control Checks at H ₂ S Gas Total H2Saq (STP) pH Calculated PCO2 Calculated Alkalinity Caclulated 2Cations= 2Anions= Calc TDS= Inhibitor Selection | ues for tempera (F) (F) (psia) (psia) 1-Yes;0-No API grav. Sp.Grav. (B/D) (N) (N) STP: (%) (mgH2S/I) (pH) (%) (mg/I) as HCO3 (equiv./I) (equiv./I) (mg/I) Input | tures and pressures 66.0 66.0 25.0 25.0 0 0 0 Unit | 71.0 71.0 25.0 25.0 | 70.0 70.0 25.0 25.0 | 41.0 25.0 25.0 Unit Converter | 49.0 25.0 25.0 | 60.0 89.0 25.0 120.0 30.00 0.60 0 | 5.69 Viscosity (1.196 Heat Capaci 0.955 Inhibitor nc Gypsum 0.00 Anhydrite 0.00 | 5.60 CentiPoise) 0.826 ty (cal/ml/°C) 0.959 ceded (mg/L) HDTMP 0.00 HDTMP | |
| 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 60 61 62 | Initial T Final T Initial P Final P Use TP on Calcite sheet? API Oil Grav. Gas Sp.Grav. MeOH/Day MEG/Day Conc. Multiplier H* (Strong acid) † OH (Strong base) † Quality Control Checks at H ₂ S Gas Total H2Saq (STP) pH Calculated PCO2 Calculated Alkalinity Caclulated \$\textit{Z}\text{calculated}\$ Alkalinity Caclulated \$\text{Z}\text{calculated}\$ Calc TDS= Inhibitor Selection Protection Time | (F) (F) (psia) (psia) (psia) 1-Yes;0-No API grav. Sp.Grav. (B/D) (N) (N) STP: (%) (mgH2S/I) (pH) (%) (mg/I) as HCO3 (equiv./I) (equiv./I) (mg/I) | tures and press 66.0 66.0 25.0 25.0 | 71.0 71.0 25.0 25.0 | 70.0 70.0 25.0 25.0 Inhibitor NTMP | 41.0 25.0 25.0 Unit Converter | 49.0 25.0 25.0 25.0 | 60.0 89.0 25.0 120.0 30.00 0.60 0 | 5.69 Viscosity (1.196 Heat Capaci 0.955 Inhibitor no Gypsum 0.00 Anhydrite 0.00 | 5.60 CentiPoise) 0.826 ty (cal/ml/°C) 0.959 ceded (mg/L) HDTMP 0.00 HDTMP | |
| 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 | Initial T Final T Initial P Final P Use TP on Calcite sheet? API Oil Grav. Gas Sp.Grav. MeOH/Day MEG/Day Conc. Multiplier H* (Strong acid) * OH (Strong base) * Quality Control Checks at H ₂ S Gas Total H2Saq (STP) pH Calculated PCO2 Calculated Alkalinity Caclulated 2Cations= 2Anions= Calc TDS= Inhibitor Selection Protection Time Have ScaleSoftPitzer | (F) (F) (psia) (psia) (psia) (1-Yes;0-No API grav. Sp.Grav. (B/D) (B/D) (N) (N) STP: (%) (mgH2S/I) (pH) (%) (mg/I) as HCO3 (equiv./I) (equiv./I) (equiv./I) (mg/I) Input 120 | tures and pressures 66.0 66.0 25.0 25.0 0 0 0 Unit min | 71.0 71.0 25.0 25.0 4 1 1 2 | 70.0 70.0 25.0 25.0 25.0 Inhibitor NTMP BHPMP | 41.0 25.0 25.0 25.0 Unit Converter From Unit | 49.0 25.0 25.0 25.0 (From metric Value 80 | 60.0 89.0 25.0 120.0 30.00 0.60 0 | 5.69 Viscosity (1.196 Heat Capaci 0.955 Inhibitor no Gypsum 0.00 Anhydrite 0.00 | 5.60 CentiPoise) 0.826 ty (cal/ml/°C) 0.959 ceded (mg/L) HDTMP 0.00 HDTMP | |
| 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 | Initial T Final T Initial P Final P Use TP on Calcite sheet? API Oil Grav. Gas Sp.Grav. McOH/Day MEG/Day Conc. Multiplier H* (Strong acid) † OH (Strong base) † Quality Control Checks at H ₂ S Gas Total H2Saq (STP) pH Calculated PCO2 Calculated Alkalinity Caclulated 2Cations= EAnions= Calc TDS= Inhibitor Selection Protection Time Have ScaleSoftPitzer pick inhibitor for you? | (F) (F) (psia) (psia) (1-Yes;0-No API grav. Sp.Grav. (B/D) (N) (N) STP: (%) (mgH2S/I) (pH) (%) (mg/I) as HCO3 (equiv./I) (equiv./I) (mg/I) Input 120 | tures and pressures 66.0 66.0 25.0 25.0 0 0 0 0 Unit min | 71.0 71.0 25.0 25.0 4 1 1 2 3 | Inhibitor NTMP BHPMP PAA | 41.0 25.0 25.0 25.0 Unit Converter From Unit °C m³ | 49.0 25.0 25.0 25.0 (From metric Value 80 100 | 60.0 89.0 25.0 120.0 30.00 0.60 0 0 To Unit | 5.69 Viscosity (1.196 Heat Capaci 0.955 Inhibitor no Gypsum 0.00 Anhydrite 0.00 Value 176 3,531 | 5.60 CentiPoise) 0.826 ty (cal/ml/°C) 0.959 ceded (mg/L) HDTMP 0.00 HDTMP | |
| 41 42 43 44 45 46 47 48 49 50 51 52 53 53 54 55 56 67 75 88 89 60 61 62 63 64 65 | Initial T Final T Initial P Final P Use TP on Calcite sheet? API Oil Grav. Gas Sp.Grav. MeOH/Day MEG/Day Conc. Multiplier H† (Strong acid) † OH' (Strong base) † Quality Control Checks at H ₂ S Gas Total H2Saq (STP) pH Calculated PCO2 Calculated Alkalinity Caclulated 2Cations= EAnions= Calc TDS= Inhibitor Selection Protection Time Have ScaleSoftPitzer pick inhibitor for you? If No, inhibitor # is: | (F) (F) (psia) (psia) (psia) (1-Yes;0-No API grav. Sp.Grav. (B/D) (B/D) (N) (N) STP: (%) (mgH2S/I) (pH) (%) (mg/I) as HCO3 (equiv./I) (equiv./I) (equiv./I) (mg/I) Input 120 | tures and pressures 66.0 66.0 25.0 25.0 0 0 0 Unit min | 71.0 71.0 25.0 25.0 4 # 1 2 3 | Inhibitor NTMP BHPMP PAA DTPMP | Unit Converter From Unit °C m³ m³ | 49.0 25.0 25.0 25.0 (From metric Value 80 100 100 | 60.0 89.0 25.0 120.0 30.00 0.60 0 0 To Unit "F ft"3 bbl(42 US gal) | 5.69 Viscosity (1.196 Heat Capaci 0.955 Inhibitor no Gypsum 0.00 Anhydrite 0.00 Value 176 3,531 629 | 5.60 CentiPoise) 0.826 ty (cal/ml/°C) 0.959 ceded (mg/L) HDTMP 0.00 HDTMP | |
| 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 67 78 88 60 61 62 63 64 65 66 | Initial T Final T Initial P Final P Use TP on Calcite sheet? API Oil Grav. Gas Sp.Grav. MeOH/Day MEG/Day Conc. Multiplier H* (Strong acid) * OH* (Strong acid) * OH* (Strong base) * Quality Control Checks at H ₂ S Gas Total H2Saq (STP) pH Calculated PCO2 Calculated Alkalinity Caclulated Alkalinity Caclulated ECations= EAnions= Calc TDS= Inhibitor Selection Protection Time Have ScaleSoftPitzer pick inhibitor for you? If No, inhibitor # is: If you select Mixed, | (F) (F) (psia) (psia) 1-Yes;0-No API grav. Sp.Grav. (B/D) (N) (N) (N) STP: (%) (mgH2S/I) (pH) (mg/I) as HCO3 (equiv./I) (mg/I) Input 120 1 4 | tures and press 66.0 66.0 25.0 25.0 0 0 0 1-Yes;0-No # | 71.0 71.0 25.0 25.0 4 1 2 3 4 5 | Inhibitor NTMP BHPMP PAA DTPMP PPCA | Unit Converter From Unit °C m³ m³ MPa | 49.0 25.0 25.0 25.0 (From metric Value 80 100 1,000 | 60.0 89.0 25.0 120.0 30.00 0.60 0 0 10 10 10 10 10 10 10 10 10 10 10 1 | Value 176 3,531 629 145,074 | 5.60 CentiPoise) 0.826 ty (cal/ml/°C) 0.959 ceded (mg/L) HDTMP 0.00 HDTMP | |
| 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 67 60 61 62 63 64 65 66 66 | Initial T Final T Initial P Final P Use TP on Calcite sheet? API Oil Grav. Gas Sp.Grav. MeOH/Day MEG/Day Conc. Multiplier H* (Strong acid) * OH' (Strong base) * Quality Control Checks at H ₂ S Gas Total H2Saq (STP) pH Calculated PCO2 Calculated Alkalinity Caclulated Alkalinity Caclulated EXATIONS= Calc TDS= Inhibitor Selection Protection Time Have ScaleSoftPitzer pick inhibitor for you? If No, inhibitor # is: If you select Mixed, 1st inhibitor # is: | (F) (F) (psia) (1-Yes;0-No API grav. Sp.Grav. (B/D) (N) (N) STP: (%) (mgH2S/I) (pH) (%) (mg/l) as HCO3 (equiv./I) (mg/l) Input 120 1 4 | Unit min 1-Yes;0-No # | ## 1 2 3 4 4 5 6 | Inhibitor NTMP BHPMP PAA DTPMP PPCA SPA | Unit Converter From Unit °C m³ m³ MPa Bar | 49.0 25.0 25.0 25.0 | 60.0 89.0 25.0 120.0 30.00 0.60 0 0 0 To Unit "F ft ³ bbl(42 US gal) psia | 5.69 Viscosity (1.196 Heat Capaci 0.955 Inhibitor no Gypsum 0.00 Anhydrite 0.00 Value 176 3,531 629 145,074 7,194 | 5.60 CentiPoise) 0.826 ty (cal/ml/°C) 0.959 ceded (mg/L) HDTMP 0.00 HDTMP | |
| 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 67 63 64 65 66 67 68 | Initial T Final T Initial P Final P Use TP on Calcite sheet? API Oil Grav. Gas Sp.Grav. MeOH/Day MEG/Day Conc. Multiplier H* (Strong acid) † OH (Strong base) † Quality Control Checks at H ₂ S Gas Total H2Saq (STP) pH Calculated PCO2 Calculated Alkalinity Caclulated SCations= EAnions= Calc TDS= Inhibitor Selection Protection Time Have ScaleSoftPitzer pick inhibitor for you? If No, inhibitor # is: If you select Mixed, 1st inhibitor is: | (F) (F) (psia) (psia) 1-Yes;0-No API grav. Sp.Grav. (B/D) (N) (N) STP: (%) (mgH2S/I) (pH) (%) (mg/I) as HCO3 (equiv./I) (equiv./I) (mg/I) Input 120 1 4 1 50 | Unit min 1-Yes;0-No # # % | # # 1 2 3 3 4 5 5 6 7 | Inhibitor NTMP BHPMP PAA DTPMP PPCA SPA HEDP | Unit Converter From Unit °C m³ m³ MPa Bar Torr | 49.0 25.0 25.0 25.0 25.0 | 60.0 89.0 25.0 120.0 30.00 0.60 0 0 0 To Unit "F ft ³ bbl(42 US gal) psia psia | 5.69 Viscosity (1.196 Heat Capaci 0.955 Inhibitor no Gypsum 0.00 Anhydrite 0.00 Value 176 3,531 629 145,074 7,194 193 | 5.60 CentiPoise) 0.826 ty (cal/ml/°C) 0.959 ceded (mg/L) HDTMP 0.00 HDTMP | |
| 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 67 62 63 64 65 66 67 68 69 | Initial T Final T Initial P Final P Use TP on Calcite sheet? API Oil Grav. Gas Sp.Grav. MeOH/Day MEG/Day Conc. Multiplier H* (Strong acid) † OH (Strong base) † Quality Control Checks at H ₂ S Gas Total H2Saq (STP) pH Calculated Alkalinity Caclulated PCO2 Calculated Alkalinity Caclulated EXAnions= Calc TDS= Inhibitor Selection Protection Time Have ScaleSoftPitzer pick inhibitor for you? If No, inhibitor for you? If you select Mixed, 1st inhibitor # is: % of 1st inhibitor is: % of 1st inhibitor is: 2nd inhibitor # is: | (F) (F) (psia) (psia) (1-Yes;0-No API grav. Sp.Grav. (B/D) (N) (N) STP: (%) (mgH2S/I) (pH) (%) (mg/I) as HCO3 (equiv./I) (equiv./I) (mg/I) 1 120 1 4 1 50 2 | Unit min 1-Yes;0-No # # % # | ## 1 2 3 4 4 5 6 6 7 8 | Inhibitor NTMP BHPMP PAA DTPMP PPCA SPA HEDP HDTMP | Unit Converter From Unit °C m³ MPa Bar Torr Gal | 49.0 25.0 25.0 25.0 25.0 25.0 25.0 25.0 25 | 60.0 89.0 25.0 120.0 30.00 0.60 0 0 10 10 10 10 10 10 10 10 10 10 10 1 | 5.69 Viscosity (1.196 Heat Capaci 0.955 Inhibitor ne Gypsum 0.00 Anhydrite 0.00 Value 176 3,531 629 145,074 7,194 193 238 | 5.60 CentiPoise) 0.826 ty (cal/ml/°C) 0.959 ceded (mg/L) HDTMP 0.00 HDTMP | |
| 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 67 62 63 64 65 66 67 68 69 | Initial T Final T Initial P Final P Use TP on Calcite sheet? API Oil Grav. Gas Sp.Grav. MeOH/Day MEG/Day Conc. Multiplier H* (Strong acid) † OH (Strong base) † Quality Control Checks at H ₂ S Gas Total H2Saq (STP) pH Calculated PCO2 Calculated Alkalinity Caclulated SCations= EAnions= Calc TDS= Inhibitor Selection Protection Time Have ScaleSoftPitzer pick inhibitor for you? If No, inhibitor # is: If you select Mixed, 1st inhibitor is: | (F) (F) (psia) (psia) 1-Yes;0-No API grav. Sp.Grav. (B/D) (N) (N) STP: (%) (mgH2S/I) (pH) (%) (mg/I) as HCO3 (equiv./I) (equiv./I) (mg/I) Input 120 1 4 1 50 | Unit min 1-Yes;0-No # # % | # # 1 2 3 3 4 5 5 6 7 | Inhibitor NTMP BHPMP PAA DTPMP PPCA SPA HEDP | Unit Converter From Unit °C m³ m³ MPa Bar Torr | 49.0 25.0 25.0 25.0 25.0 | 60.0 89.0 25.0 120.0 30.00 0.60 0 0 0 To Unit "F ft ³ bbl(42 US gal) psia psia | 5.69 Viscosity (1.196 Heat Capaci 0.955 Inhibitor no Gypsum 0.00 Anhydrite 0.00 Value 176 3,531 629 145,074 7,194 193 | 5.60 CentiPoise) 0.826 ty (cal/ml/°C) 0.959 ceded (mg/L) HDTMP 0.00 HDTMP | |

Saturation Index Calculations

Champion Technologies, Inc. (Based on the Tomson-Oddo Model)

Brine 1: Ward Feed Yard 34-1 Brine 2: Ward Feed Yard 4-1 Brine 3: Clinesmith 5-4 Brine 4: Clinesmith 1 Brine 5: Clinesmith 2

| | | | Ratio | | | |
|--------------------------|---------|---------|---------|---------|---------|-------------|
| | 20% | 20% | 20% | 20% | 20 | |
| Component (mg/L) | Brine 1 | Brine 2 | Brine 3 | Brine 4 | Brine 5 | Mixed Brine |
| Calcium | 1836 | 2452 | 2044 | 1920 | 1948 | 1952 |
| Magnesium | 1096 | 872 | 1200 | 953 | 858 | 865 |
| Barium | 0 | 0 | 0 | 0 | 0 | 0 |
| Strontium | 0 | 0 | 0 | 0 | 0 | 0 |
| Bicarbonate | 190 | 234 | 259 | 268 | 254 | 253 |
| Sulfate | 1 | 1 | 8 | 1 | 1 | 1 |
| Chloride | 36299 | 48965 | 47874 | 45632 | 43147 | 43206 |
| CO ₂ in Brine | 246 | 220 | 264 | 422 | 405 | 401 |
| Ionic Strength | 1.12 | 1.48 | 1.46 | 1.38 | 1.31 | 1.31 |
| Temperature (°F) | 89 | 89 | 89 | 89 | 89 | 89 |
| Pressure (psia) | 50 | 50 | 120 | 120 | 120 | 119 |

Saturation Index

| Calcite | -1.71 | -1.41 | -1.48 | -1.68 | -1.69 | -1.69 |
|-------------|-------|-------|-------|-------|-------|-------|
| Gypsum | -3.71 | -3.64 | -2.82 | -3.73 | -3.72 | -3.69 |
| Hemihydrate | -3.70 | -3.65 | -2.83 | -3.74 | -3.71 | -3.69 |
| Anhydrite | -3.89 | -3.79 | -2.97 | -3.89 | -3.88 | -3.85 |
| Barite | N/A | N/A | N/A | N/A | N/A | N/A |
| Celestite | N/A | N/A | N/A | N/A | N/A | N/A |

PTB

| Calcite | N/A | N/A | N/A | N/A | N/A | N/A |
|-------------|-----|-----|-----|-----|-----|-----|
| Gypsum | N/A | N/A | N/A | N/A | N/A | N/A |
| Hemihydrate | N/A | N/A | N/A | N/A | N/A | N/A |
| Anhydrite | N/A | N/A | N/A | N/A | N/A | N/A |
| Barite | N/A | N/A | N/A | N/A | N/A | N/A |
| Celestite | N/A | N/A | N/A | N/A | N/A | N/A |



Wellbore Schematic

TOC - Surface

WELL: Mahan Family Trust 24-1

SSI: 603690

API: 15-099-23509-00-00 **LOCATION:** NE NE Sec. 24-33S-18E

COUNTY: Labette

| | STATE: Kansas | 4 | | |
|--------------|--|---|-----------|-------------------------------------|
| Casing | 8.625" @ 20' 4.5'' 10.5# J-55, 4.05'' ID w/ 0.0159 bbl/ft capacity @ 824' | | | |
| Perforations | Original Perfs: 11/4/2005 - Riverton 778-781 (13) | | | 8.625" @ 20' |
| Completions | Spud Date: 5/25/2004 -No completion Data found. - Comp Rec states this was drilled as a development well | | TD - 835' | 4.5" 10.5# @ 824' 106 sks cement |

| Affidavit of Notice Served | |
|---|---|
| Re: Application for: APPLICATION FOR CO | MMINGLING OF PRODUCTION OR FLUIDS ACO-4 |
| Well Name: MAHAN FAMILY TRUST 24 | -1 Legal Location: W2E2NENE S24-T33S-R18E |
| The undersigned hereby certificates that he / she is a duly au | ithorized agent for the applicant, and that on the day $\frac{18^+}{}$ of $\frac{18^+}{}$ of $\frac{18^+}{}$ of $\frac{18^+}{}$ of $\frac{18^+}{}$ of $\frac{18^+}{}$ |
| 2012 , a true and correct copy of the applicati | on referenced above was delivered or mailed to the following parties: |
| Note: A copy of this affidavit must be served as a part of the | application |
| Name | Address (Attach additional sheets if necessary) |
| EXODUS GAS & OIL LLC | 1701 WALNUT ST, 4TH FL, KANSAS CITY, MO 64108 |
| EXODOG GAO & GIE EEG | 1101 William 61, 1111 E, 10116 6111, 176 6116 |
| WILLIAM T WAX | PO BOX 276, MCCUNE, KS 66753 |
| SEE ATTACHED | |
| | |
| | |
| | |
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| | |
| | |
| | |
| | |
| | |
| | |
| I further attest that notice of the filing of this application was pu | ublished in the PARSONS SUN , the official county publication |
| of _LABETTE | county. A copy of the affidavit of this publication is attached. |
| Signed this 1st day of OCTOVER | 2012 |
| adj of | - I do a series |
| | Applicant or Duly Authorized Agent |
| | and sworn to before methis 18th day of OCHOLOL , 2018 |
| JENNIFER R. BEAL OFFICIAL MY COMMISSION EXPIRES | Quanity R Boats |
| 7-20-2016 | Notary Public Communication (Communication) |
| | My Commission Expires: Chuly 30, 2014 |
| | V V |
| | |
| | |
| | · · |

MAHAN FAMILY TRUST 24-1

18-33S-19E

per Cursory OR dtd 6.2.04

SW4

Brian Tucker, Keith Tucker, and Gail Tucker as JT

13002 Irving Road

Mound Valley, KS 67354

13-33S-18E

per OR dtd 11.11.01

E2SE4 & E 60 acres of W2SE4

(140 net acres)

Barry D. Bradford 1205 Pratt Road

Altamont, KS 67330

Rest of the SE4 & E2 SW4

Lloyd M. Schlatter 1311 Chisholm Ln

Oswego, KS 67356

24-33S-18E

NW4

Duane L. & Nancy F. Johnson

(portion)

606 Park St

Cherryvale, KS 67335

SE4

1/2) William L. Beneke and Shirley A.

(portion)

Beneke, Trustees under Trust

1855 24000 Rd Parsons, KS 67357

1/2) Rodney J. Beneke Revocable Living

1855 24000 Rd Parsons, KS 67357

19-33S-19E

NW4

Larry D. Goldsmith

929 12000 Rd

Altamont, KS 67330

SW4

Fred & Treva Vanbecelaere

(portion)

2513 E 4th

Pittsburg, KS 66762

MAHAN FAMILY TRUST 24-1-APPLICATION FOR COMMINGLING OF PRODUCTION OR FLUIDS

| Name: Legal Description of Leasahold: EATTACHED Dy contry that the statements made herein are true and correct to the beat of my knowledge and belief. Applicant or Duly Anticked Agent Applicant or Duly Anticked Agent Subscribed and source before me this Subscribed Agent Subscribed and source before me this Subscribed Agent Applicant or Duly Fight Agent Subscribed Agent | | wners and Landowners | acreage | | |
|--|--|--|--------------------------------|---------------------------------|----------|
| by certify that the statements made herein are true and correct to the best of my knowledge and belief. Applicant or buy spin-based Agent Subacticed and execut beliefs for this 1st day of CC+ON-CCT 2012 ACMY Fight AND COMMISSIONE PRINTES 7-20-3011 My Commission Expres: July 20, 2019 | | | | Legal Description of Leasehold: | |
| Applicant or Duty Altholized Agent Subscribed and sworn before me this 1st day of Charles Agent Notary Philips T-30-30(1) My Commission Expires: Quilty 2012 | E ATTACHED | | | | |
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| Applicant or July Authorized Agent Subscribed and sworn before me this | | | | | |
| Appleant or Duty Autobaced Agent Subscribed and sworn before me this 1st day of OCTOBER 2012 JENNIFER R. BEAL MY COMMISSION EXPIRES T-20-20110 My Commission Expires: Quilly 30, 20110 | | | | | |
| JENNIFER R. BEAL Notary Public My COMMISSION EXPIRES My Commission Expires: Quilly 20, 2014 | y certify that the statements made h | erein are true and correct to | the best of my knowledge and b | pelief. | |
| JENNIFER R. BEAL MY COMMISSION EXPIRES 7-20-2011 My Commission Expires: Quity April 10 August | | | | marra | |
| JENNIFER R. BEAL Notary Public My Commission Expires: Quilly 20, 2014 | | | Applicant or Duly Authorize | ed Agent | |
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MAHAN FAMILY TRUST 24-1

| LEGAL LOCATION | SPOT | CURR_OPERA |
|----------------|----------|---------------------------------|
| S13-T33S-R18E | NE SE SE | Exodus Gas & Oil LLC |
| S13-T33S-R18E | SE SE SW | Exodus Gas & Oil LLC |
| S19-T33S-R19E | NW NW SW | Wax, William T. |

MAHAN FAMILY TRUST 24-1

18-33S-19E

per Cursory OR dtd 6.2.04

SW4

Brian Tucker, Keith Tucker, and Gail Tucker as JT

13002 Irving Road

Mound Valley, KS 67354

13-33S-18E

per OR dtd 11.11.01

E2SE4 & E 60 acres of W2SE4

(140 net acres)

Barry D. Bradford

1205 Pratt Road Altamont, KS 67330

Rest of the SE4 & E2 SW4

Lloyd M. Schlatter

1311 Chisholm Ln Oswego, KS 67356

24-33S-18E

NW4

Duane L. & Nancy F. Johnson

(portion)

606 Park St

Cherryvale, KS 67335

SE4

1/2) William L. Beneke and Shirley A.

(portion)

Beneke, Trustees under Trust

1855 24000 Rd Parsons, KS 67357

1/2) Rodney J. Beneke Revocable Living

1855 24000 Rd Parsons, KS 67357

19-33S-19E

NW4

Larry D. Goldsmith

929 12000 Rd

Altamont, KS 67330

SW4

Fred & Treva Vanbecelaere

(portion)

2513 E 4th

Pittsburg, KS 66762

Affidavit of Publication

STATE OF KANSAS, LABETTE COUNTY, ss: Kim Root, being first duly sworn, deposes and says: That she is Classified Manager of PARSONS SUN, a daily newspaper printed in the State of Kansas, and published in and of general circulation in Labette County, Kansas, with a general paid circulation on a daily basis in Labette County, Kansas, and that said newspaper is not a trade, religious or fraternal publication.

Said newspaper is a daily published at least weekly 50 times a year: has been so published continuously and uninterruptedly in said county and state for a period of more than five years prior to the first publication of said notice; and has been admitted at the post office of Parsons, in said county as second class matter.

That the attached notice is a true copy thereof and was published in the regular and entire issue of said newspaper for _____ consecutive ______, the first publication thereof being made as aforesaid on the ______ day of _______ 2012, with subsequent publications being made on the following dates:

My commission expires: January 9, 2015

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LEGAL

(Published in the Parsons Sun July 17, 2012)
BEFORE THE STATE
CORPORATION COMMISSION
OF THE STATE OF KANSAS
NOTICE OF FILING APPLICATION
RE: In the Matter of Postrock Midcontinent Production, LLC Application for Commingling of Production
in the Mahan Family Trust 24-1 located in Labette County, Kansas.
TO: All Oil & Gas Producers, Unleased Mineral Interest Owners,
Landowners, and all persons
whomever concerned.

You, and each of you, are hereby notified that Postrock Midcontinent Production, LLC has filed an application to commingle the Riverton and Bartlesville producing forma-

tions at the Mahan Family Trust 24-1, located in the W2 E2 NE NE, S24-T33S-R18E, Approximately 60 FNL & 510 FEL, Labette County, Kansas

660 FNL & 510 FEL, Labette County, Kansas.
Any persons who object to or protest this application shall be required to file their objections or protest with the Conservation Division of the State Corporation Commission of the State of Kansas within fifteen (15) days from the date of this publication. These protests shall be filed pursuant to Commission regulations and must state specific reasons why granting the application may cause waste, violate correlative rights or pollute the natural resources of the State of Kansas.

Kansas.

All persons interested or concerned shall take notice of the foregoing and shall govern themselves accordingly. All person and/or companies wishing to protest this application are required to file a written protest with the Conservation Division of the Kansas Oil and Gas Commission.

Upon the receipt of any protest.

Upon the receipt of any protest, the Commission will convene a hearing and protestants will be expected to enter an appearance el-ther through proper legal counsel or as individuals, appearing on their own behalf.

Postrock Midcontinent Production, LLC 210 Park Avenue, Suite 2750 Oklahoma City, Oklahoma 73102 (405) 660-7704.

SHANNA L. GUIOT
Notary Public - State of Kansas
My Appt. Expires

AFFIDAVIT

STATE OF KANSAS

- SS.

County of Sedgwick

Mark Fletchall, of lawful age, being first duly sworn, deposeth and saith: That he is Record Clerk of The Wichita Eagle, a daily newspaper published in the City of Wichita, County of Sedgwick, State of Kansas, and having a general paid circulation on a daily basis in said County, which said newspaper has been continuously and uninterruptedly published in said County for more than one year prior to the first publication of the notice hereinafter mentioned, and which said newspaper has been entered as second class mail matter at the United States Post Office in Wichita, Kansas, and which said newspaper is not a trade, religious or fraternal publication and that a notice of a true copy is hereto attached was published in the regular and entire Morning issue of said The Wichita Eagle for 1 issues, that the first publication of said notice was

made as aforesaid on the 19th of

July A.D. 2012, with

subsequent publications being made on the following dates:

And affiant further says that he has personal knowledge of the statements above set forth and that they are true.

Subscribed and sworn to before me this

19th day of July, 2012

PENNY L. CASE

Notary Public - State of Kansas My Appt. Expires

Notary Public Sedgwick County, Kansas

Printer's Fee: \$132.40

LEGAL PUBLICATION

PUBLISHED IN THE WICHITA EAGLE
JULY 19, 2012 (3195742)
BEFORE THE STATE CORPORATION
COMMISSION OF THE STATE OF KANSAS
NOTICE OF FILING APPLICATION
RE: In the Matter of Postrock Midcontinent
Production, LLC Application for
Commingling of Production in the
Mahan Family Trust 24-1 located in
Labette County, Kansas.
TO: All Oil & Gas Producers, Unleased Mineral
Interest Owners, Landowners, and all
persons whomever concerned.
You, and each of you, are hereby notified
that Postrock Midcontinent Production,
LLC has illed an application to commingle
the Riverton and Bartiesville producting
formations at the Mattan Family Trust 24-1,
located in the WZ EZ NE NE, S24-T335-R18E,
Approximately 660 FNL & 510 FEL, Labette
County, Kansas.
Any persons who object to or protest
this application shall be required to file their

Approximately 660 FNL & 510 FEL, Labette County, Kansas.

Any persons who object to or protest this application shall be required to file their objections or protest with the Conservation Division of the State Corporation Commission of the State of Kansas within fifteen (15) days from the date of this publication. These protests shall be filed pursuant to Commission regulations and must state specific reasons why granting the application may cause waste, violate correlative rights or pollute the natural resources of the State of Kansas.

All persons interested or concerned shall take notice of the foregoing and shall govern themselves accordingly. All person and/or companies wishing to protest this application are required to file a written protest, with the Conservation Division of the Kansas. Oil and Gas Commission.

Upon the receipt of any protest, the Commission will convene a hearing and protestants will be expected to enter an appearance either through proper legal counsel or as individuals, appearing on their own behalf.

Postrock Midcontinent Production, LLC 210 Park Avenue, Suite 2750.

Oklahoma 73102

Postrock Midconnient Production, 2EC 210 Park Avenue, Suife 2750
Oklahoma City, Oklahoma 73192
(405) 660-7704
A COPY OF THE AFFIDAVIT OF PUBLICATION MUST ACCOMPANY ALL APPLICATIONS

Conservation Division Finney State Office Building 130 S. Market, Rm. 2078 Wichita, KS 67202-3802



Phone: 316-337-6200 Fax: 316-337-6211 http://kcc.ks.gov/

Sam Brownback, Governor

Mark Sievers, Chairman Thomas E. Wright, Commissioner Shari Feist Albrecht, Commissioner

October 16, 2012

Clark Edwards
PostRock Midcontinent Production LLC
Oklahoma Tower
210 Park Ave, Ste 2750
Oklahoma City, OK 73102

RE: Approved Commingling CO101202

Mahan Family Trust 24-1, Sec. 24-T33S-R18E, Labette County

API No. 15-099-23509-00-00

Dear Mr. Edwards:

Your Application for Commingling (ACO-4) for the above described well, received by the KCC on October 11, 2012, has been reviewed and approved by the Kansas Corporation Commission (KCC) per K.A.R. 82-3-123. Notice was examined and found to be proper per K.A.R. 82-3-135a. No protest had been filed within the 15-day protest period.

Based upon the depth of the Riverton formation perforations, total oil production shall not exceed 100 BOPD and total gas production shall not exceed 50% of the absolute open flow (AOF).

File form ACO-1 upon re-completion of the well to commingle.

Commingling ID number CO101202 has been assigned to this approved application. Use this number for well completion reports (ACO-1) and other correspondence that may concern this approved commingling.

Sincerely,

Rick Hestermann Production Department