

KANSAS CORPORATION COMMISSION OIL & GAS CONSERVATION DIVISION

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)

| OPERAT | OR: License # | API No. 15 | | | | |
|-------------------------------------|---|--|-----------------------------------|---------------------------------------|--|--|
| Name:_ | | Spot Description: | | | | |
| Address | 1: | | _ Sec Twp | S. R East West | | |
| Address | 2: | | Feet from Nor | th / South Line of Section | | |
| City: | | | Feet from Eas | t / West Line of Section | | |
| Contact F | Person: | County: | | | | |
| Phone: | () | Lease Name: | Well | #: | | |
| | | | | | | |
| 1. | Name and upper and lower limit of each production interval to | be commingled: | | | | |
| | Formation: | (Perfs): | | | | |
| | Formation: | (Perfs): | | | | |
| | Formation: | (Perfs): | | | | |
| | Formation: | (Perfs): | | | | |
| | Formation: | (Perfs): | | | | |
| | | | | | | |
| <u> </u> | Estimated amount of fluid production to be commingled from e | | | | | |
| | Formation: | | | BWPD: | | |
| | Formation: | BOPD: | MCFPD: | 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 ope | erator. | es within a 1/2 mile radius of | | |
| For Com | 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 | _ | | | | |
| □ 0. | Complete Form Accord (well completion form) for the subject | won. | | | | |
| For Com | mingling 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 comi | mingled. | | | |
| | | | | | | |
| current in mingling i | IT: I am the affiant and hereby certify that to the best of my formation, knowledge and personal belief, this request for comistrue and proper and I have no information or knowledge, which stent with the information supplied in this application. | Sı | ubmitted Electroni | cally | | |
| KCC | Office Use Only | Protests may be filed by any | y party having a valid interest i | in the application. Protests must be | | |
| | nied Approved | in writing and comply with k the notice of application. | K.A.R. 82-3-135b and must be | filed wihin 15 days of publication of | | |

Date: _

Approved By:

15-Day Periods Ends: __

POSTROCK



Current Completion

WELL : Hines Farms 14-2

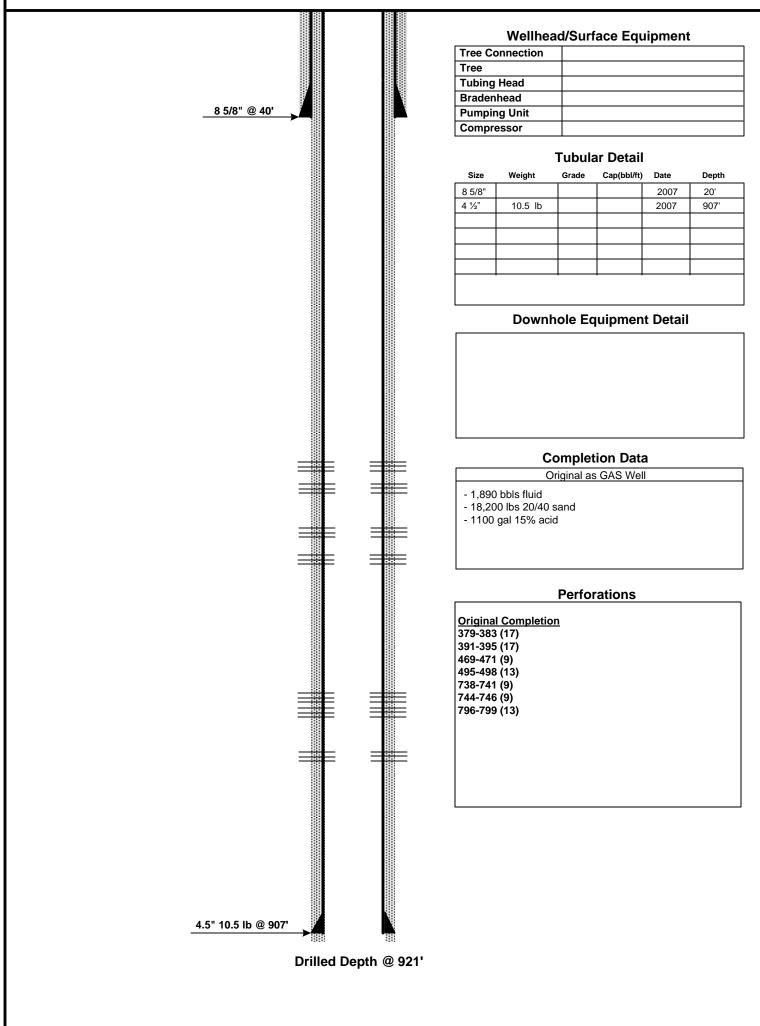
FIELD : Cherokee Basin CBM

STATE: Kansas
COUNTY: Neosho

SPUD DATE: 8/27/2007 COMP. Date: 12/3/2007 API: 15-133-27090-00-00

LOCATION: 14-28S-19E (SW, SE)

ELEVATION: GL - 892'



PREPARED BY: POSTROCK

APPROVED BY:

DATE: June, 2012

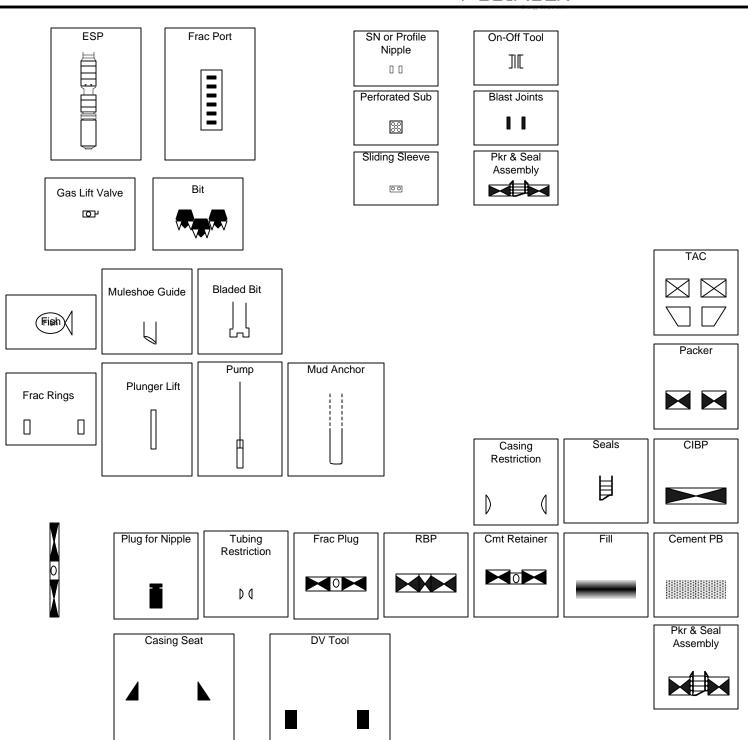
DATE:__

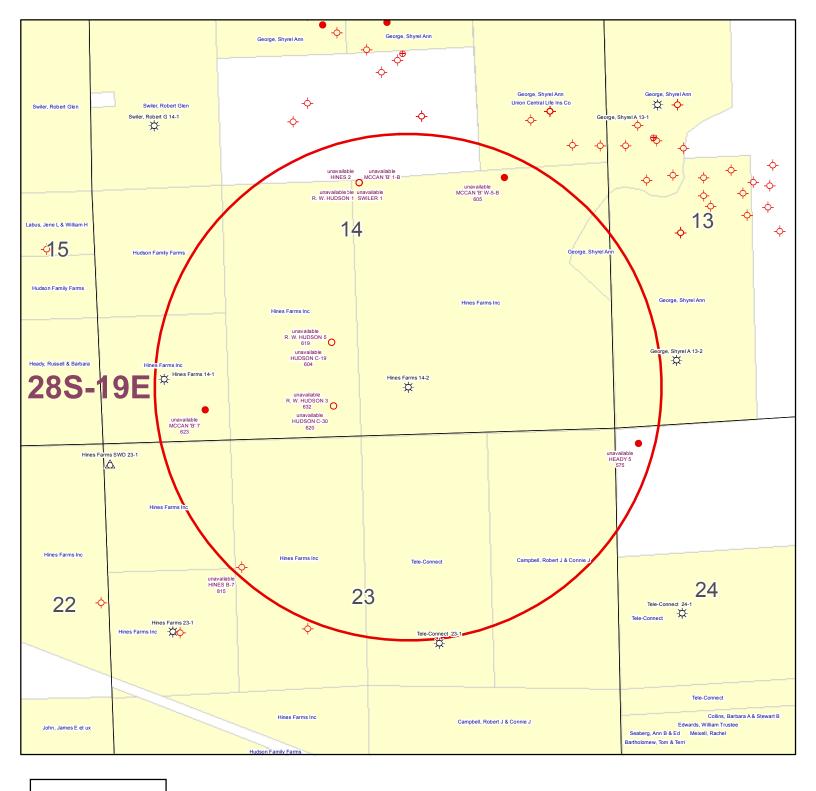
POSTROCK



LEGEND

PostRock[®]





KGS STATUS

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

Hines Farms 14-2 14-28S-19E 1" = 1,000'

CONFIDENTIA MANSAS CORPORATION COMMISSION WELL CORPORATION DIVISION

ORIGINAL Form Must Be Typed

WELL HISTORY - DESCRIPTION OF WELL & LEASE

| Operator: License # 33344 | API No. 15 - 133-27090-0000 |
|---|--|
| Name: Quest Cherokee, LLC | County: Neosho |
| 211 W 14th Street | |
| Chanute KS 66720 | 500 feet from N (circle one) Line of Section |
| Purchaser: Bluestem Pipeline, LLC Operator Contact Person: Jennifer R. Ammann Phone: (620) 431-9500 | 2140 feet from (E) W (circle one) Line of Section |
| Operator Contact Person: Jennifer R. Ammann | Footages Calculated from Nearest Outside Section Corner: |
| Phone: (620) 431-9500 | (circle one) NE (SE) NW SW |
| Contractor: Name: TXD Drilling | Lease Name: Hines Farms Well #: 14-2 |
| License: 33837 | Field Name: Cherokee Basin CBM |
| Wellsite Geologist: Ken Recoy | Producing Formation: multiple |
| Designate Type of Completion: | Elevation: Ground: 892 Kelly Bushing: 11/a |
| New Well Re-Entry Workover | Total Depth: 921 Plug Back Total Depth: 906.78 |
| OilSWDSIOWTemp. Abd. | Amount of Surface Pipe Set and Cemented at 40 Feet |
| | Multiple Stage Cementing Collar Used? ☐ Yes ✓ No |
| Dry Other (Core, WSW, Expl., Cathodic, etc) | If yes, show depth setFeet |
| If Workover/Re-entry: Old Well Info as follows: | If Alternate II completion, cement circulated from 906.78 |
| Operator: | feet depth to Surface W/ 120 sx cmt. |
| Well Name: | M. F. 1/1/1/ 10 20 |
| Original Comp. Date:Original Total Depth: | Drilling Fluid Management Plan AHT NJ 4-10-05 (Data must be collected from the Reserve Pit) |
| Deepening Re-perf Conv. to Enhr./SWD | Chloride content ppm Fluid volume bbls |
| Plug Back Plug Back Total Depth | Dewatering method used |
| Commingled Docket No | |
| Dual Completion Docket No | Location of fluid disposal if hauled offsite: |
| Other (SWD or Enhr.?) Docket No | Operator Name: |
| Other (SWD of Entities) | Lease Name: License No.: |
| 8/27/07 8/30/07 8/31/07 Spud Date or Date Reached TD Completion Date or | Quarter SecTwpS. R East West |
| Spud Date or Date Reached TD Completion Date or Recompletion Date | County: Docket No.: |
| Kansas 67202, within 120 days of the spud date, recompletion, worker | h the Kansas Corporation Commission, 130 S. Market - Room 2078, Wichita, ver or conversion of a well. Rule 82-3-130, 82-3-106 and 82-3-107 apply. 12 months if requested in writing and submitted with the form (see rule 82-3-s and geologist well report shall be attached with this form. ALL CEMENTING s. Submit CP-111 form with all temporarily abandoned wells. |
| All requirements of the statutes, rules and regulations promulgated to regulate are complete and correct to the best of my knowledge. | late the oil and gas industry have been fully complied with and the statements |
| Signature: Annifer R. ammann | KCC Office Use ONLY |
| Title: New Well Development Coordinator Date: 12/20/07 | Letter of Confidentiality Received |
| Subscribed and sworn to before me this DOT day of | If Denied, Yes Date: RECEIVED |
| | Wireline Log Receive ANSAS CORPORATION COMMISSION |
| 20 07 | Geologist Report Received UIC Distribution DEC 2 6 2007 |
| Notary Public: Serva Plauman | |
| Date Commission Expires. | RRA KLAUMAN Public - State of Kansas CONSERVATION DIVISION WICHITA, KS |

My Appt. Expires 8-4-2010

| | | | | Sid | ie Two | | | | | de. |
|--|---|---------------------------------|-------------------------------------|------------------------|------------------------------|---------------------------------------|------------------------------|-------------------------------|---------------------------------------|----------------|
| Operator Name: Que | est Cherokee, L'U | iso | | Lease | Name: H | lines Farms | | Well #:14-2 | 7 | |
| Sec Twp28 | | | West | Count | y: Neosh | <u> </u> | | | | |
| INSTRUCTIONS: Sh tested, time tool oper temperature, fluid red Electric Wireline Logs | and closed, flowin overy, and flow rate | g and shut-in pes if gas to sur | pressures, v face test, al | whether s long with | hüt-in pre | ssure reached | static level, hyd | rostatic pressure | es, bottor | m hole |
| Drill Stem Tests Taken (Attach Additional Sheets) | | | Yes No | | | ZLog Formation (Top), Depth and Datum | | | | Sample |
| Samples Sent to Geological Survey | | | □No | | Nam See | e attached | | Тор | L | Datum |
| Cores Taken Electric Log Run (Submit Copy) | | ☐ Yes ☐ Yes | □ No □ No | | | | | | | |
| List All E. Logs Run: | | | | | | | | | | |
| Compensated I Dual Induction Gamma Ray N | Log | n Log | 1.000 | | | | | | | |
| | | Report al | CASING | | No. | ew Used ermediate, produ | ction etc. | | | |
| Purpose of String | Size Hole | Size C | asing | We | eight | Setting | Type of | # Sacks | | and Percent |
| Surface | 12-1/4 | Set (In 8-5/8" | O.D.) | 22 22 | . / Ft. | Depth 40 | "A" | Used 5 | , , , , , , , , , , , , , , , , , , , | danives |
| Production | 6-3/4 | 4-1/2 | | 10.5 | | 906.78 | "A" | 120 | | |
| , | | | | | | | | | | |
| | | | DDITIONAL | CEMENT | ING / SOI | JEEZE RECOE | RD. | | 1 | |
| Purpose: | Depth Top Bottom | Type of (| ment #Sacks Used Type and Percent A | | | | d Percent Additives | | | |
| Protect Casing Plug Back TD Plug Off Zone | | | | | | | | | | |
| Shots Per Foot | PERFORAT Specify | TION RECORD | - Bridge Plug | gs Set/Type | 9 | Acid, F | racture, Shot, Cem | ent Squeeze Reco | rd | Depth |
| 4 | 796-799/744-746/ | | | | | 500gai 15%HCLw/ 41 | bbls 2%kcl water, 646bbls wa | ater w/ 2% KCL, Blocide, 6700 |)# 20/40 sand | 796-799/744-74 |
| - | 730-133/144-140/ | 700 741 | | MANUAL TO A | | | | | | 738-741 |
| 4 | 495-498/469-471 | | | | | 300gal 15%HCLw/ 43 | bbis 2%kcl water, 598bbis w | ater w/ 2% KCL, Blocke, 590 | 0# 20/40 sand | 495-498/469-47 |
| 4 | 391-395/379-383 | | <u> </u> | | | 300gal 15%HCLw/ 41 | bbis 2%kcl v/ater, 646bbis w | ater w/ 2% KCL, Biocide, 560 | 0# 20/40 sand | 391-395/379-39 |
| TUBING RECORD | Size 3/8" | Set At 840 | | Packer n/a | At | Liner Run | Yes _✓ | No | | <u> </u> |
| Date of First, Resumer | d Production, SWD or | Enhr. P | Producing Met | hod | Flowin | ig 📝 Pum | pìng Gas | Lift Oth | er (Explain | n) |
| Estimated Production Per 24 Hours | Oil n/a | Bbls. | Gas)mcf | Mcf | Wat Obbls | | Bbls. | Gas-Oil Ratio | | Gravity |
| *Disposition of Gas | METHOD OF | COMPLETION | i | | | Production In | erval | | | |
| (If vented, S | Used on Lease ubmit ACO-18.) | | Open Hole | Pe | rf. 🗌 | Dually Comp. | Commingled | d | | |
| 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | e. ¹⁹¹ 10 _{2.94} | | o' Kanaaa | A KLAL | TERR lotary Put Expens | A CARD | | | | |

| | Α | В | С | D | Е | F | G | Н | 1 | | K |
|--|--|---|---|--|---|--|--|--|---|---|-----------------|
| 1 | Produced Fluids # | Б | 1 | 2 | 3 | 4 | 5 | 11 | • | <u> </u> | |
| | Parameters | Units | Input | Input | Input | Input | Input | | Click he | re | Click |
| 3 | Select the brines | Select fluid | | Ī | V | | Ī | Mixed brine: | to run SS | - | |
| 4 | Sample ID | by checking | | | | | | Cell H28 is | to ruii oc | | Click |
| 5 | 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 |
| 7 | 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 |
| 9 | 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) |
| | Mg ²⁺ | (mg/l) | 1,096.00 | 872.00 | 1,200.00 | 953.00 | 858.00 | 995.91 | | lcite | |
| | 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⁺ | | 1,050.00 | 2,432.00 | 2,044.00 | 1720.00 | 1740.00 | | | | 0.13 |
| | Ba ²⁺ | (mg/l) | | | | | | 0.00 | Da | rite | |
| ., | | (mg/l) | | | | | | 0.00 | | | |
| | Fe ²⁺ | (mg/l) | 40.00 | 21.00 | 18.00 | 82.00 | 90.00 | 50.21 | | lite | |
| | Zn ²⁺ | (mg/l) | | | | | | 0.00 | -1.77 | -1.80 | -0.03 |
| 18 | Pb ²⁺ | (mg/l) | | | | | | 0.00 | Gyp | sum | |
| 19 | Cl | (mg/l) | 36,299.00 | 48,965.00 | 47,874.00 | 45632.00 | 43147.00 | 44388.44 | -3.19 | -3.18 | 0.00 |
| 20 | SO ₄ ² · | (mg/l) | 1.00 | 1.00 | 8.00 | 1.00 | 1.00 | 2.40 | Hemil | ydrate | |
| | F. | (mg/l) | | | | | | 0.00 | -3.96 | -3.90 | 0.06 |
| | Br ⁻ | (mg/l) | | | | | | 0.00 | | ydrite | 3.00 |
| | SiO2 | (mg/l) SiO2 | | | | | | 0.00 | -3.47 | -3.36 | 0.12 |
| _ | | | 100.00 | 224.00 | 250.00 | 200 00 | 254.00 | | | | 0.12 |
| | HCO3 Alkalinity** | (mg/l as HCO3) | 190.00 | 234.00 | 259.00 | 268.00 | 254.00 | 241.03 | Cele | estite | |
| | CO3 Alkalinity | (mg/l as CO3) | | | | | | _ | | | |
| | Carboxylic acids** | (mg/l) | | | | | | 0.00 | | Sulfide | |
| 27 | Ammonia | (mg/L) NH3 | | | | | | 0.00 | -0.16 | -0.22 | -0.06 |
| 28 | Borate | (mg/L) H3BO3 | | | | | | 0.00 | Zinc | Sulfide | |
| 29 | TDS (Measured) | (mg/l) | | | | | | 72781 | | | |
| 30 | Calc. Density (STP) | (g/ml) | 1.038 | 1.051 | 1.050 | 1.048 | 1.045 | 1.047 | Calcium | fluoride | |
| 31 | CO ₂ Gas Analysis | (%) | 19.97 | 18.76 | 22.41 | 35.53 | 33.79 | 26.16 | | | |
| | H ₂ S Gas Analysis*** | (%) | 0.0289 | 0.0292 | 0.0296 | 0.0306 | 0.0151 | 0.0269 | | rbonate | |
| 33 | Total H2Saq | (mgH2S/l) | 1.00 | 1.00 | 1.00 | 1.00 | 0.50 | 0.90 | -0.74 | -0.51 | 0.23 |
| 34 | pH, measured (STP) | pН | 5.67 | 5.76 | 5.72 | 5.54 | 5.55 | 5.63 | Inhibitor ne | eded (mg/L) | |
| | Chassa and antion | 0-CO2%+Alk, | | | | | | | Calcite | NTMP | |
| 35 | Choose one option to calculate SI? | | 0 | 0 | 0 | 0 | | | | | |
| | Gas/day(thousand cf/day) | (Mcf/D) | | | | | U | 0 | 0.00 | 0.00 | |
| | Oil/Day | (B/D) | 0 | 0 | 1 | 1 | 1 | 4 | Barite | BHPMP | - |
| | Water/Day | (B/D) | 100 | 100 | 100 | 100 | 100 | 500 | 0.00 | 0.00 | |
| 39 | For mixed brines, enter val | | | | | | | | | | |
| - | | lues for tempera | tures and pressi | <u>ires in Cells</u> (H | (40-H43) | | | (Enter H40-H43) | p | Н | |
| 41 | Initial T | (F) | 66.0 | 71.0 | 70.0 | 41.0 | 49.0 | 60.0 | 5.69 | 5.60 | |
| | Final T | | 66.0 66.0 | 71.0 71.0 | 70.0 70.0 | 41.0 | 49.0 | 60.0 89.0 | 5.69 Viscosity (| 5.60 CentiPoise) | |
| | | (F) | 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 | 5.69 Viscosity (1.196 | 5.60 CentiPoise) 0.826 | |
| 42 43 | Final T Initial P Final P | (F) (F) (psia) (psia) | 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 ty (cal/ml/ ⁰ C) | |
| 42 43 44 | 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/ ⁰ C) 0.959 | |
| 42 43 44 45 | Final T Initial P Final P Use TP on Calcite sheet? API Oil Grav. | (F) (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) | |
| 42 43 44 45 46 | Final T Initial P Final P Use TP on Calcite sheet? API Oil Grav. Gas Sp.Grav. | (F) (psia) (psia) 1-Yes;0-No API grav. Sp.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 30.00 0.60 | 5.69 Viscosity (1.196 Heat Capaci 0.955 Inhibitor ne | 5.60 CentiPoise) 0.826 ty (cal/ml/ ⁰ C) 0.959 seded (mg/L) HDTMP | |
| 42 43 44 45 46 47 | Final T Initial P Final P Use TP on Calcite sheet? API Oil Grav. Gas Sp.Grav. McOH/Day | (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 30.00 0.60 | 5.69 Viscosity (1.196 Heat Capaci 0.955 Inhibitor ne Gypsum 0.00 | 5.60 CentiPoise) 0.826 ty (cal/ml/°C) 0.959 ceded (mg/L) HDTMP 0.00 | |
| 42 43 44 45 46 47 48 | Final T Initial P Final P Use TP on Calcite sheet? API Oil Grav. Gas Sp.Grav. MeOH/Day MEG/Day | (F) (psia) (psia) 1-Yes;0-No API grav. Sp.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 30.00 0.60 | 5.69 Viscosity (1.196 Heat Capaci 0.955 Inhibitor ne | 5.60 CentiPoise) 0.826 ty (cal/ml/ ⁰ C) 0.959 seded (mg/L) HDTMP | |
| 42 43 44 45 46 47 48 49 | Final T Initial P Final P Use TP on Calcite sheet? API Oil Grav. Gas Sp.Grav. MeOH/Day MEG/Day Conc. Multiplier | (F) (F) (psia) (psia) 1-Yes;0-No API grav. Sp.Grav. (B/D) (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 30.00 0.60 | 5.69 Viscosity (1.196 Heat Capaci 0.955 Inhibitor ne Gypsum 0.00 Anhydrite | 5.60 CentiPoise) 0.826 ty (cal/ml/°C) 0.959 ceded (mg/L) HDTMP 0.00 HDTMP | |
| 42 43 44 45 46 47 48 49 50 | 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) † | (F) (F) (psia) (psia) 1-Yes;0-No API grav. Sp.Grav. (B/D) (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 30.00 0.60 | 5.69 Viscosity (1.196 Heat Capaci 0.955 Inhibitor ne Gypsum 0.00 Anhydrite | 5.60 CentiPoise) 0.826 ty (cal/ml/°C) 0.959 ceded (mg/L) HDTMP 0.00 HDTMP | |
| 42 43 44 45 46 47 48 49 50 51 | 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) † | (F) (F) (psia) (psia) 1-Yes;0-No API grav. Sp.Grav. (B/D) (B/D) (N) | 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 30.00 0.60 | 5.69 Viscosity (1.196 Heat Capaci 0.955 Inhibitor ne Gypsum 0.00 Anhydrite | 5.60 CentiPoise) 0.826 ty (cal/ml/°C) 0.959 ceded (mg/L) HDTMP 0.00 HDTMP | |
| 42 43 44 45 46 47 48 49 50 51 | 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 | (F) (F) (psia) (psia) 1-Yes;0-No API grav. Sp.Grav. (B/D) (B/D) (N) (N) STP: | 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 30.00 0.60 | 5.69 Viscosity (1.196 Heat Capaci 0.955 Inhibitor ne Gypsum 0.00 Anhydrite | 5.60 CentiPoise) 0.826 ty (cal/ml/°C) 0.959 ceded (mg/L) HDTMP 0.00 HDTMP | |
| 42 43 44 45 46 47 48 49 50 51 52 53 | 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 | (F) (F) (psia) (psia) 1-Yes;0-No API grav. Sp.Grav. (B/D) (B/D) (N) | 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 30.00 0.60 | 5.69 Viscosity (1.196 Heat Capaci 0.955 Inhibitor ne Gypsum 0.00 Anhydrite | 5.60 CentiPoise) 0.826 ty (cal/ml/°C) 0.959 ceded (mg/L) HDTMP 0.00 HDTMP | |
| 42 43 44 45 46 47 48 49 50 51 52 53 54 55 | 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 | (F) (F) (psia) (psia) 1-Yes;0-No API grav. Sp.Grav. (B/D) (B/D) (N) (N) STP: (%) (mgH2S/l) (pH) | 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 30.00 0.60 | 5.69 Viscosity (1.196 Heat Capaci 0.955 Inhibitor ne Gypsum 0.00 Anhydrite | 5.60 CentiPoise) 0.826 ty (cal/ml/°C) 0.959 ceded (mg/L) HDTMP 0.00 HDTMP | |
| 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 | 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) (N) STP: (%) (mgH2S/I) (pH) (%) | 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 30.00 0.60 | 5.69 Viscosity (1.196 Heat Capaci 0.955 Inhibitor ne Gypsum 0.00 Anhydrite | 5.60 CentiPoise) 0.826 ty (cal/ml/°C) 0.959 ceded (mg/L) HDTMP 0.00 HDTMP | |
| 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 | 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 | (F) (F) (psia) (psia) (1-Yes;0-No API grav. Sp.Grav. (B/D) (B/D) (N) (N) STP: (%) (mgH2S/I) (pH) (%) (mg/I) as HCO3 | 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 30.00 0.60 | 5.69 Viscosity (1.196 Heat Capaci 0.955 Inhibitor ne Gypsum 0.00 Anhydrite | 5.60 CentiPoise) 0.826 ty (cal/ml/°C) 0.959 ceded (mg/L) HDTMP 0.00 HDTMP | |
| 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 | 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 \$\textstyle{\textstyle{\textstyle{2}}}\$ | (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) | 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 30.00 0.60 | 5.69 Viscosity (1.196 Heat Capaci 0.955 Inhibitor ne Gypsum 0.00 Anhydrite | 5.60 CentiPoise) 0.826 ty (cal/ml/°C) 0.959 ceded (mg/L) HDTMP 0.00 HDTMP | |
| 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 | 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 | (F) (F) (psia) (psia) (1-Yes;0-No API grav. Sp.Grav. (B/D) (B/D) (N) (N) STP: (%) (mgH2S/I) (pH) (%) (mg/I) as HCO3 | 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 30.00 0.60 | 5.69 Viscosity (1.196 Heat Capaci 0.955 Inhibitor ne Gypsum 0.00 Anhydrite | 5.60 CentiPoise) 0.826 ty (cal/ml/°C) 0.959 ceded (mg/L) HDTMP 0.00 HDTMP | |
| 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 | 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= \$\times\$ | (F) (F) (psia) (psia) 1-Yes;0-No API grav. Sp.Grav. (B/D) (B/D) (N) (N) STP: (%) (mgH2S/I) (pH) (%) (mg/l) as HCO3 (equiv./l) (equiv./l) | 66.0 66.0 25.0 | 71.0 71.0 25.0 | 70.0 70.0 25.0 | 41.0 25.0 25.0 | 49.0 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 ne Gypsum 0.00 Anhydrite | 5.60 CentiPoise) 0.826 ty (cal/ml/°C) 0.959 ceded (mg/L) HDTMP 0.00 HDTMP | |
| 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 | 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 ECations= ECations= CAlci TDS= | (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) (mg/I) | 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 ne Gypsum 0.00 Anhydrite 0.00 | 5.60 CentiPoise) 0.826 ty (cal/ml/°C) 0.959 ceded (mg/L) HDTMP 0.00 HDTMP | |
| 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 | 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 \$\text{\$\cupe{C}\$}\te | (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 | 66.0 66.0 25.0 25.0 0 0 | 71.0 71.0 25.0 25.0 | 70.0 70.0 25.0 25.0 | 41.0 25.0 25.0 Unit Converter From Unit | 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 ne Gypsum 0.00 Anhydrite 0.00 | 5.60 CentiPoise) 0.826 ty (cal/ml/°C) 0.959 ceded (mg/L) HDTMP 0.00 HDTMP | |
| 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 | 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 ECations= EAnions= Calc TDS= Inhibitor Selection Protection Time | (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 | 66.0 66.0 25.0 25.0 0 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 ne Gypsum 0.00 Anhydrite 0.00 | 5.60 CentiPoise) 0.826 ty (cal/ml/°C) 0.959 ceded (mg/L) HDTMP 0.00 HDTMP | |
| 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 60 61 62 63 | 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{Lactions}\$ EAnions= Calc TDS= Inhibitor Selection Protection Time Have ScaleSoftPitzer | (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) (equiv./I) Input 120 | 66.0 66.0 25.0 25.0 0 0 | 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 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 ne Gypsum 0.00 Anhydrite 0.00 | 5.60 CentiPoise) 0.826 ty (cal/ml/°C) 0.959 ceded (mg/L) HDTMP 0.00 HDTMP | |
| 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 | 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= \$\times\$ \text{Lanions}\$ Lanions= Calc TDS= Inhibitor Selection Protection Time Have ScaleSoftPitzer pick inhibitor for you? | (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) (equiv./I) (mg/I) Input 120 | 66.0 66.0 25.0 25.0 0 0 0 | # 1 2 3 | 70.0 70.0 25.0 25.0 25.0 Inhibitor NTMP BHPMP PAA | 41.0 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 | 5.69 Viscosity (1.196 Heat Capaci 0.955 Inhibitor ne 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 | |
| 42 43 44 45 46 47 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 | 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: | (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) (equiv./I) (mg/I) Input 120 | 66.0 66.0 25.0 25.0 0 0 0 | 71.0 71.0 25.0 25.0 1 1 1 2 3 4 | 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 | 5.69 Viscosity (1.196 Heat Capaci 0.955 Inhibitor ne 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 | |
| 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 60 61 62 63 64 65 66 | 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 Alkalinity Caclulated Alkalinity Caclulated PCO2 Calculated Alkalinity Caclulated FOCO Calculated FOCO Calculated FOCO Calculated Alkalinity Caclulated FOCO Calculated FOCO Calculate | (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) (mg/I) Input 120 1 4 | 0 0 0 Unit min 1-Yes;0-No # | ## 1 2 3 4 5 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 To Unit °F ft³ bbl(42 US gal) psia | 5.69 Viscosity (1.196 Heat Capaci 0.955 Inhibitor ne Gypsum 0.00 Anhydrite 0.00 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 | |
| 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 | 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= ZAnions= 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) (mg/I) Input 120 1 4 | 0 0 0 Unit min 1-Yes;0-No # | ## 1 2 3 4 5 6 | Inhibitor NTMP BHPMP PAA DTPMP PPCA SPA | Unit Converter From Unit C | 49.0 25.0 25.0 25.0 (From metric Value 80 100 1,000 496 | 60.0 89.0 25.0 120.0 30.00 0.60 0 0 To Unit "F ft ³ bbl(42 US gal) psia | 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 | 5.60 CentiPoise) 0.826 ty (cal/ml/°C) 0.959 ceded (mg/L) HDTMP 0.00 HDTMP | |
| 42 44 45 46 47 48 49 50 51 52 53 54 55 56 60 61 62 63 64 65 66 67 68 69 | 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 ECations= EAnions= Calc TDS= Inhibitor Selection Protection Time Have ScaleSoftPitzer pick inhibitor for you? If No, inhibitor # is: If you select Mixed, 1st inhibitor # is: % of 1st inhibitor is: | (F) (F) (psia) (psia) 1-Yes;0-No API grav. Sp.Grav. (B/D) (N) (N) STP: (%) (mgH2S/I) (pH) (%) (mg/l) as HCO3 (equiv./l) (equiv./l) (mg/l) Input 120 1 4 1 50 | 0 0 0 0 Unit min 1-Yes;0-No # # % | ## 1 2 3 4 4 5 6 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 Value 80 100 1,000 496 10,000 | 60.0 89.0 25.0 120.0 30.00 0.60 0 0 To Unit °F ft³ bbl(42 US gal) psia psia psia | 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 | 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 |

| DRMATION: | MULKY | (PERFS): | 391 - | 395 | | | |
|--|---------------------------|---|-----------------|--|---------------|---|--------------|
| ORMATION: | SUMMIT | (PERFS): | 379 - | 383 | | | |
| ORMATION: | CATTLEMAN | (PERFS): | 566 - | 571 | | | |
| ORMATION: | | (PERFS): | - | | | | |
| ORMATION: | | (PERFS): | - | | | | |
| ORMATION: | | (PERFS): | | · | | | |
| ORMATION: | | (PERFS): | - | · | | | |
| ORMATION: | | (PERFS): | | | | | |
| ORMATION: | | (PERFS): | | | | | |
| ORMATION: | | (PERFS): | | | | | |
| ORMATION: | | (PERFS): | | | | | |
| | | | | | | | |
| FORMATION: ESTIMATED AI | MOUNT OF FLUID PRODUCTION | | EACH INT | ERVAL | | | |
| | MOUNT OF FLUID PRODUCTION | <u> </u> | 1 EACH INT 0 | MCFPD: | 8 | BWPD: | 5.71 |
| ESTIMATED AI | MULKY | N TO BE COMMINGLED FROM | | | <u>8</u> 8 | BWPD: | 5.71 5.71 |
| ESTIMATED AIFORMATION: | MULKY | N TO BE COMMINGLED FROM BOPD: | 0 | MCFPD: | | | |
| ESTIMATED AIFORMATION: | MULKY SUMMIT | N TO BE COMMINGLED FROM BOPD: BOPD: | 0 | MCFPD: | 8 | BWPD: | 5.71 |
| ESTIMATED AIFORMATION: FORMATION: FORMATION: | MULKY SUMMIT | N TO BE COMMINGLED FROM BOPD: BOPD: BOPD: | 0 | MCFPD: MCFPD: | 8 | BWPD: BWPD: | 5.71 |
| ESTIMATED AIFORMATION: FORMATION: FORMATION: FORMATION: | MULKY SUMMIT | N TO BE COMMINGLED FROM BOPD: BOPD: BOPD: BOPD: BOPD: | 0 | MCFPD: MCFPD: MCFPD: MCFPD: | 8 | BWPD: BWPD: BWPD: | 5.71 |
| ESTIMATED AIFORMATION: FORMATION: FORMATION: FORMATION: FORMATION: | MULKY SUMMIT | N TO BE COMMINGLED FROM BOPD: BOPD: BOPD: BOPD: BOPD: BOPD: | 0 | MCFPD: MCFPD: MCFPD: MCFPD: MCFPD: | 8 | BWPD: BWPD: BWPD: | 5.71 |
| ESTIMATED AIFORMATION: FORMATION: FORMATION: FORMATION: FORMATION: FORMATION: | MULKY SUMMIT | N TO BE COMMINGLED FROM BOPD: BOPD: BOPD: BOPD: BOPD: BOPD: BOPD: | 0 | MCFPD: MCFPD: MCFPD: MCFPD: MCFPD: MCFPD: | 8 | BWPD: BWPD: BWPD: BWPD: | 5.71 |
| ESTIMATED AIFORMATION: FORMATION: FORMATION: FORMATION: FORMATION: FORMATION: FORMATION: | MULKY SUMMIT | N TO BE COMMINGLED FROM BOPD: BOPD: BOPD: BOPD: BOPD: BOPD: BOPD: BOPD: BOPD: | 0 | MCFPD: MCFPD: MCFPD: MCFPD: MCFPD: MCFPD: MCFPD: | 8 | BWPD: BWPD: BWPD: BWPD: BWPD: | 5.71 |
| ESTIMATED AIFORMATION: FORMATION: FORMATION: FORMATION: FORMATION: FORMATION: FORMATION: FORMATION: | MULKY SUMMIT | N TO BE COMMINGLED FROM BOPD: | 0 | MCFPD: MCFPD: MCFPD: MCFPD: MCFPD: MCFPD: MCFPD: MCFPD: MCFPD: | 8 | BWPD: BWPD: BWPD: BWPD: BWPD: BWPD: | 5.71 |
| ESTIMATED AIFORMATION: FORMATION: FORMATION: FORMATION: FORMATION: FORMATION: FORMATION: FORMATION: FORMATION: | MULKY SUMMIT | N TO BE COMMINGLED FROM BOPD: | 0 | MCFPD: | 8 | BWPD: BWPD: BWPD: BWPD: BWPD: BWPD: BWPD: | 5.71 |

| Attidav | it of Notice Served | |
|---|---|--|
| Re: | • | GLING OF PRODUCTION OR FLUIDS - ACO-4 |
| | Well Name: HINES FARMS 14-2 | Legal Location: NESWSWSE S14-T28S-R19E |
| The unde | ersigned hereby certificates that he / she is a duly authorized | agent for the applicant, and that on the day 29TH of JUNE |
| 2012 | • | enced above was delivered or mailed to the following parties: |
| | | |
| Note: A | copy of this affidavit must be served as a part of the applicati | on. |
| | Name | Address (Attach additional sheets if necessary) |
| HUDS | ON FAMILY FARMS LLC % TARA HUDSC | 509 N FOREST, CHANUTE, KS 66720 |
| THIE | SING, HELEN LOUISE | 618 APACHE DR, ALVA, OK 73717 |
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| I further a | ttest that notice of the filing of this application was published | in the CHANUTE TRIBUNE , the official county publication |
| of NEO | DSHO | county. A copy of the affidavit of this publication is attached. |
| | | 00.40 |
| Signed thi | s 29TH day of JUNE | _, 2012 |
| | | Aunter BA Beal |
| | | Applicant or Duly Authorized Agent |
| _ | <u>Subscri</u> bed and swo | orn to before me this 29TH day of JUNE , 2012 |
| | DENISE V. VENNEMAN | Daniel St. The according |
| | SEAL July 1, 2012 | Notary Public WARMENT |
| 1 | July 1, 2012 | |
| | | My Commission Expires: |
| 7 .01.0000000000000000000000000000000000 | | |
| | | |
| | | |
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HINES FARMS 14-2 - APPLICATION FOR COMMINGLING OF PRODUCTION OR FLUIDS Offset Operators, Unleased Mineral Owners and Landowners acreage (Attach additional sheets if necessary) Legal Description of Leasehold: Name: SEE ATTACHED I hereby certify that the statements made herein are true and correct to the best of my knowledge and belief. Applicant of Duly Authorized Agent _{day of} JUNE 2012 29TH Subscribed and sworn before me this DENISE V. VENNEMAN MY COMMISSION EXPIRES Notary Public July 1, 2012 My Commission Expires:

HINES FARMS 14-2

SE SW & SW SE OF 14 1/2 uc?

HUDSON FAMILY FARMS LLC %HUDSON TARA 509 N FOREST CHANUTE, KS 66720

N2 NW4 of 24

THIESING, HELEN LOUISE 618 APACHE DR ALVA OK 73717

BEFORE THE STATE CORPORA-TION 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 Hines Farms 14-2 located in Neosho 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, Neutral, Rowe, Cattleman, Croweburg, Bevier, Mulky and Summit producing formations at the Hines Farms 14-2, located in the NE SW SW SE, S14-T28S-R19E, Approximately 493 FSL & 2141 FEL, Neosho 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 politute the natural resources of the State of Kansas.

All persons interested or concerned shall take notice of the foregoing and shall govern themseives 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, Sulte 2750 Oklahoma City, Oklahoma 73102 (405) 660-7704

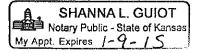
Affidavit of Publication 🗀

STATE OF KANSAS, NEOSHO COUNTY, ss: Rhonda Howerter, being first duly sworn, deposes and says: That she is Classified Manager of THE CHANUTE TRIBUNE, a daily newspaper printed in the State of Kansas, and published in and of general circulation in Neosho County, Kansas, with a general paid circulation on a daily basis in Neosho 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 Chanute, 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 ___ consecution time___, the first publication thereof being made as aforesaid on the olo day of Mau 2012, With subsequent publications being made on the following dates: 2012 2012 2012 Subscribed and sworn to and before me this day of _(Notary Public My commission expires: January 9, 2015 Printer's Fee\$ 63.30 Affidavit, Notary's Fee\$ 3.00 Additional Copies\$_ Total Publication Fees\$ 66.30



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 1st of

June 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

1st day of June, 2012

PENNY L. CASE Notary Public -My Appt. Expires

Notary Public Seddwick County, Kansas

Printer's Fee: \$132.40

LEGAL PUBLICATION

PUBLISHED IN THE WICHITA EAGLE

PUBLISHED IN THE WICHTA EAGLE
JUNE 1, 2012 (3187792)
BEFORE THE STATE CORPORATION
COMMISSION OF THE STATE OF KANSAS
NOTICE OF FILING APPLICATION
RE: In the Matter of Postrack Midcontinent
Production, LLC Application for Commingling
of Production in the Hines Farms 14-2 located
in Months County, Kansas in Neosho County, Kansas.

TO: All Oil & Gas Producers, Unleased Mineral Interest Owners, Landowners, and all persons whomever concerned.

whomever concerned.
You, and each of you, are hereby notified
hat Postrock Midcontinent Production,
LLC has filed an application to commingle
the Riverton, Neutral, Rowe, Cattleman,
Croweburg, Bevier, Mulky and Summit
producino formations at the Hines Farms 14-2,
located in the NE SW SW SE, S14-T28S-R19E,
Approximately 493 FSL & 2141 FEL, Neosho
County, Kansas.
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Postrock Midcontinent Production, LLC 210 Park Avenue, Suite 2750 Oklahoma City, Oklahoma 73102

(405) 660-7704

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/

Mark Sievers, Chairman Thomas E. Wright, Commissioner Sam Brownback, Governor

July 16, 2012

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

RE: Approved Commingling CO071207

Hines Farms 14-2, Sec.14-T28S-R19E, Neosho County

API No. 15-133-27090-00-01

Dear Mr. Edwards:

Your Application for Commingling (ACO-4) for the above described well, received by the KCC on July 2, 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).

Commingling ID number CO071207 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