

#### KANSAS CORPORATION COMMISSION OIL & GAS CONSERVATION DIVISION

1086600

Form ACO-4 Form must be typed March 2009

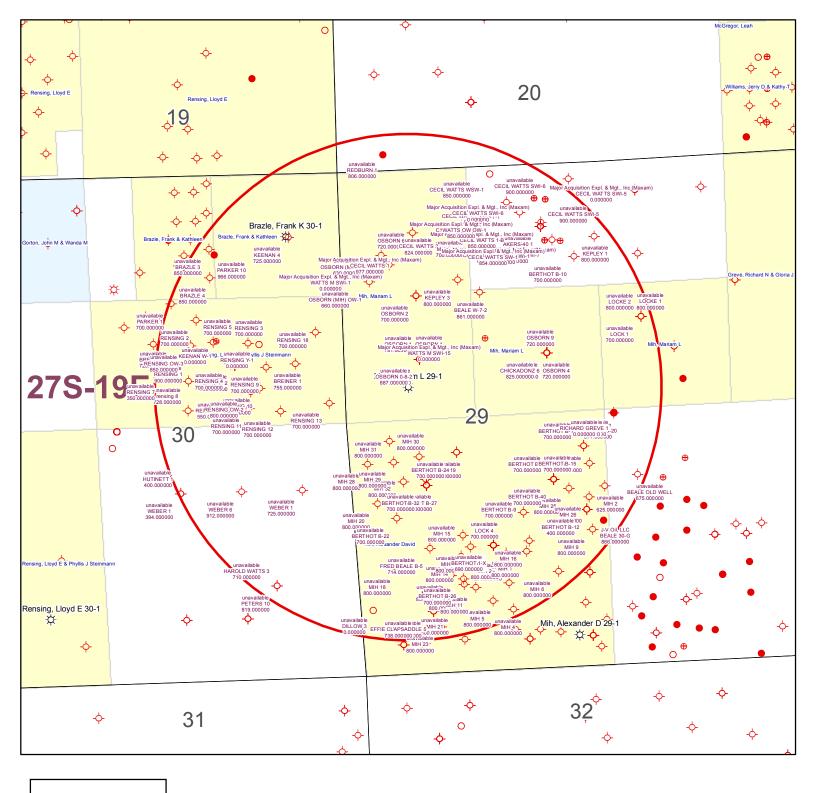
## APPLICATION FOR COMMINGLING OF Commingling ID # \_ PRODUCTION (K.A.R. 82-3-123) OR FLUIDS (K.A.R. 82-3-123a)

| OPERATOR: License #                 |   | API No. 15 -                     |                            |   |  |
|-------------------------------------|---|----------------------------------|----------------------------|---|--|
|                                     |   | Spot Description:                |                            |   |  |
| Address                             | 1:  |                                  | _ Sec Twp                  | S. R East West  |  |
| Address                             | 2:  |                                  | Feet from Nor              | rth / South Line of Section   |  |
| City:                               | State: Zip:+  |                                  | Feet from Eas              | st / West Line of Section   |  |
| Contact                             | 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):                         |                            |   |  |
|                                     |   |                                  |                            |   |  |
| 2.                                  | Estimated amount of fluid production to be commingled from e  |                                  |                            |   |  |
|                                     | Formation:  | BOPD:                            | MCFPD:                     | BWPD:   |  |
|                                     | Formation:  | BOPD:                            | MCFPD:                     | BWPD:   |  |
|                                     | Formation:  | BOPD:                            | MCFPD:                     | BWPD:   |  |
|                                     | Formation:  | BOPD:                            | MCFPD:                     | BWPD:   |  |
|                                     | Formation:  | BOPD:                            | MCFPD:                     | BWPD:   |  |
| <ul><li>□ 3.</li><li>□ 4.</li></ul> | 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 affidation   | of the lessee of record or ope   | erator.                    | es 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  | _                                |                            |   |  |
|                                     | Complete Form ACC-1 (Well Completion form) for the subject  | wen.                             |                            |   |  |
| 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 in mingling                 | VIT: I am the affiant and hereby certify that to the best of my nformation, knowledge and personal belief, this request for comistrue and proper and I have no information or knowledge, which sistent with the information supplied in this application. | Sı                               | ubmitted Electroni         | ically  |  |
| KCC                                 | C Office Use Only   | Protosto man ha filad b          | y porty boying a vall-ti-t | in the application Draft-to word  |  |
|                                     | enied Approved  |                                  |                            | in the application. Protests must be<br>filed wihin 15 days of publication of |  |

Date: \_

15-Day Periods Ends: \_\_

Approved By: \_



#### **KGS STATUS**

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

Mih, Mariam L 29-1 29-27S-19E 1" = 1,000'

# CONFIDENTIAL

#### KANSAS CORPORATION COMMISSION OIL & GAS CONSERVATION DIVISION

# ORIGINAL Blide

Form ACO-1 September 1999 Form Must Be Typed

#### **WELL COMPLETION FORM**

**WELL HISTORY - DESCRIPTION OF WELL & LEASE** 

| Operator: License # 33344   | API No. 15 - 15-133-27197-0000   |
|---|--|
| Name: Quest Cherokee, LLC   | County: Neosho   |
| Address: 211 W. 14th Street   |  |
| Address: 211 W. 14th Street  City/State/Zip: Chanute, KS 66720  Chanute, KS 66720  Chanute, KS 66720  ConFIDENTIAL  | 2265 feet from S / (N)(circle one) Line of Section   |
| Purchaser: Bluestem Pipeline, LLC  Operator Contact Person: Jennifer R. Ammann  | 660 feet from E / (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 WW SW   |
| Contractor: Name: TXD   | Lease Name: Mih, Mariam L. Well #: 29-1  |
| License: 33837  | Field Name: Cherokee Basin CBM   |
| Wellsite Geologist: Ken Recoy   | Producing Formation: Multiple  |
| Designate Type of Completion:   | Elevation: Ground: 953 Kelly Bushing: n/a  |
| New Well Re-Entry Workover  | Total Depth: 1066 Plug Back Total Depth: 1055  |
| Oil SWD SIOW Temp. Abd.   | Amount of Surface Pipe Set and Cemented at 21 Feet   |
| ✓ Gas ENHR SIGW   | Multiple Stage Cementing Collar Used?  |
| 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 1055  |
| Operator:   | feet depth to surface w/ 165 sx cmt.   |
| Well Name:  | ·  |
| Original Comp. Date: Original Total Depth:  | Drilling Fluid Management Plan AH ANJ4-2809 (Data must be collected from the Reserve Pit)  |
| Deepening Re-perf Conv. to Enhr./SWD  |  |
| Plug Back Plug Back Total Depth   | Chloride content ppm Fluid volume bbls   |
| Commingled Docket No.   | Dewatering method used   |
| Dual Completion Docket No   | Location of fluid disposal if hauled offsite:  |
| Other (SWD or Enhr.?) Docket No   | Operator Name:   |
| Other (SWD of Ellin.?) Docker No  | Lease Name: License No.:   |
| 11-27-07 12-01-07 12-03-07  | Quarter Sec Twp S. R   |
| Spud Date or Date Reached TD Completion Date or Recompletion Date   | County: Docket No.:  |
|   |  |
| Kansas 67202, within 120 days of the spud date, recompletion, workove Information of side two of this form will be held confidential for a period of                | the Kansas Corporation Commission, 130 S. Market - Room 2078, Wichita, er or conversion of a well. Rule 82-3-130, 82-3-106 and 82-3-107 apply. It months if requested in writing and submitted with the form (see rule 82-3-104 and geologist well report shall be attached with this form. ALL CEMENTING Submit CP-111 form with all temporarily abandoned wells. |
| All requirements of the statutes, rules and regulations promulgated to regulations promulgated to regulations are complete and correct to the best of my knowledge. | ate the oil and gas industry have been fully complied with and the statements  |
| $Q \cdot Q Q$   | KOO O#ioo Hoo ONIV   |
| Signature: Annyly & Common  | KCC Office Use ONLY  |
| Fitle: New Well Development Coordinator Date: 3/20/08   | Letter of Confidentiality Received   |
| Subscribed and sworn to before me this Dhag day of March  | If Denied, Yes Date:   |
| 20 🖔 .  | Wireline Log Received KANSAS CORPORATION COMMISS   |
| · ·   | Geologist Report Received  |
| Notary Public: Serra Klauman  | UIC Distribution MAR 2 4 2008  |
| Date Commission Expires: 8-4-2010 A TERRAK  | LAHMAN   |
| Notary Public - S   | State of Kansas I WICHITA, KS  |
| My Appt. Expires & U  | <u>-2010</u>   |

JAMIDIRO

| Operator Name: Qu                              | est Cherokee, LL                                | Ć   |   | Mih, Mariam I          |                                 | _ Well #: 29-1               | / *'<br>     |                         |
|--|---|---|---|------------------------|---------------------------------|------------------------------|--------------|-------------------------|
| Sec. 29 Twp. 27 S. R. 19                       |   |   | County: Neosh                               | 0                      |                                 |                              |              |                         |
| tested, time tool ope<br>temperature, fluid re | en and closed, flowing<br>covery, and flow rate | and base of formations pe<br>g and shut-in pressures,<br>s if gas to surface test, a<br>inal geological well site r | whether shut-in pre<br>long with final char | essure reached         | static level, hydro             | static pressure              | es, botto    | m hole                  |
| Drill Stem Tests Take                          | en  | ` Yes No  | VL  |                        | on (Top), Depth a               | and Datum                    |              | Sample                  |
| (Attach Additional                             | l Sheets)                                       |   | Nam   |                        |                                 | Тор                          | Γ            | Datum                   |
| Samples Sent to Ge                             | ological Survey                                 | Yes No  |   | attached               |                                 | 100                          | •            | , and in                |
| Cores Taken Electric Log Run (Submit Copy)     |   | ☐ Yes ☐ No<br>☐ Yes ☐ No  |   | •                      | ·                               |                              |              |                         |
| List All E. Logs Run:                          |   |   |   |                        |                                 |                              |              |                         |
| Compensated Dual Induction                     | d Density Neut<br>n Log                         | ron Log   |   |                        |                                 |                              |              |                         |
|  |   | CASING Report all strings set-c   | RECORD No                                   | سبسا                   | ion, etc.                       |                              |              |                         |
| Purpose of String                              | Size Hole<br>Drilled                            | Size Casing<br>Set (In O.D.)  | Weight<br>Lbs. / Ft.                        | Setting<br>Depth       | Type of<br>Cement               | # Sacks<br>Used              |              | and Percent<br>dditives |
| Surface  | 12-1/4  | 8-5/8"  | 22  | 21                     | "A"                             | 5                            |              |                         |
| Production                                     | 6-3/4   | 4-1/2   | 10.5  | 1055                   | "A"                             | 165                          |              |                         |
|  |   |   |   | 15535 DECODE           |                                 | -                            |              |                         |
| Purpose:                                       | Depth   | Type of Cement  | #Sacks Used                                 | JEEZE RECORD           |                                 | Percent Additives            |              |                         |
| Perforate Protect Casing                       | Top Bottom                                      | ,   |   |                        |                                 |                              |              |                         |
| Plug Back TD Plug Off Zone                     |   |   |   |                        |                                 |                              |              |                         |
| Shots Per Foot                                 |   | ON RECORD - Bridge Plug   |   |                        | cture, Shot, Cemen              |                              | d .          |                         |
|  |   | Footage of Each Interval Per  | forated                                     |                        |                                 |                              | Depth        |                         |
| 4  | 941-945   |   |   | 400gs: 15%HCLW/ 56bbb  | , ∠76KCI Water, 5460bis water i | #/ ∠76 NULL, ISIOCIDE, 5/700 | # ZUMU SANO  | 941-945                 |
| 4  | 781-783/769-77                                  | 1/678-680/643-646/6   | 21-623                                      | 400gal 15%HCLw/ 52bbb  | s 2%kol water, 546bbls water    | w/ 2% KCL, Biocide, 2800     | # 20/40 sand | 781-783/769-771         |
| -  |   |   |   |                        |                                 | 678-680/64                   | 3-646        | 621-623                 |
| 4  | 540-544/528-53                                  | 2   |   | 300gal 15%HCLw/ 43bbls | : 2%kcl water, 646bbts water    | w/ 2% KCL, Blookle, 5600     | # 20/40 sand | 540-544/528-532         |
| TUBING RECORD 2-                               | Size<br>3/8"                                    | Set At 981 r  | Packer At<br>n/a                            | Liner Run              | Yes                             |                              |              |                         |
| Date of First, Resume<br>1-28-08               | rd Production, SWD or E                         | Enhr. Producing Met   | hod Flowin                                  | g 🖌 Pumpii             | ng Gas Li                       | ft Oth                       | er (Explain  | )                       |
| Estimated Production<br>Per 24 Hours           | Oil<br>n/a                                      | Bbls. Gas 0.0 mcf   | Mcf Wat                                     |                        | bls. (                          | Gas-Oil Ratio                |              | Gravity                 |
| Disposition of Gas                             | METHOD OF C                                     | <del></del>   | 0.4.0                                       | Production Inter       | val                             |                              | <del> </del> |                         |
| Vented ✓ Sold (If vented, S                    | Used on Lease                                   | Open Hole Other (Spec   |   | Dually Comp.           | Commingled                      |                              |              |                         |

|  | A   | В  | С  | D  | Е  | F  | C   | П   | ı   | ı   | К               |
|--|---|--|--|--|--|--|---|---|---|---|-----------------|
| 1  | Produced Fluids #   | O  | 1  | 2  | 3  | 4  | G<br>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.   | <b>&gt;</b>   |   |                 |
| 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 <sup>+</sup>   | (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 <sup>+</sup> (if not known =0)  | (mg/l)   |  |  |  |  |   | 0.00  | Saturation Index  | values  | (Final-Initial) |
| 12   | Mg <sup>2+</sup>  | (mg/l)   | 1,096.00   | 872.00   | 1,200.00   | 953.00   | 858.00  | 995.91  | Ca  | lcite   |                 |
| 13   | Ca <sup>2+</sup>  | (mg/l)   | 1,836.00   | 2,452.00   | 2,044.00   | 1920.00  | 1948.00   | 2040.23   | -0.73   | -0.60   | 0.13            |
|  | Sr <sup>2+</sup>  | (mg/l)   |  |  |  |  |   | 0.00  | Ba  | rite  |                 |
| 15   | Ba <sup>2+</sup>  | (mg/l)   |  |  |  |  |   | 0.00  |   |   |                 |
|  | Fe <sup>2+</sup>  | (mg/l)   | 40.00  | 21.00  | 18.00  | 82.00  | 90.00   | 50.21   | н   | alite   |                 |
|  | Zn <sup>2+</sup>  |  | 40.00  | 21.00  | 10.00  | 02.00  | 70.00   | 0.00  | -1.77   | -1.80   | -0.03           |
|  |   | (mg/l)   |  |  |  |  |   |   |   |   | -0.03           |
|  | Pb <sup>2+</sup>  | (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 <sub>4</sub> <sup>2</sup> ·  | (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 <sup>*</sup>   | (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 <sub>2</sub> Gas Analysis  | (%)  | 19.97  | 18.76  | 22.41  | 35.53  | 33.79   | 26.16   | Curezun   |   |                 |
|  | H <sub>2</sub> 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  |  | 1  | 4   | 0   | 0.00  | 0.00  |                 |
|  | Oil/Day<br>Water/Day  | (B/D)<br>(B/D)   | 100  | 100  | 100  | 100  | 100   | 500   | Barite<br>0.00  | 0.00  |                 |
|  | J   |  |  | 100  | 100  | 100  | 100   | 200   |   | о.00<br>оН  |                 |
|  | For mixed brines, enter val   | . ,  |  | ures in Cells (H   | (40-H43)   |  |   | (Enter H40-H43)   | n   |   |                 |
| 40   | For mixed brines, enter val<br>Initial T  | . ,  |  | ures in Cells (H<br>71.0                                   | (40-H43)<br>70.0   | 41.0   | 49.0  | (Enter H40-H43)<br>60.0   | 5.69  | 5.60  |                 |
|  |   | lues for tempera   | tures and press<br>66.0<br>66.0                          | `  |  | 41.0   | 49.0  | 60.0<br>89.0  | 5.69  |   |                 |
| 41   | Initial T   | lues for temperator (F)  | tures and press<br>66.0                                  | 71.0   | 70.0   |  |   | 60.0<br>89.0  | 5.69  | 5.60  |                 |
| 41<br>42<br>43   | Initial T Final T Initial P Final P   | (F) (F) (psia) (psia)  | tures and press<br>66.0<br>66.0                          | 71.0<br>71.0   | 70.0<br>70.0   | 41.0   | 49.0  | 60.0<br>89.0  | 5.69<br>Viscosity (<br>1.196<br>Heat Capaci   | 5.60<br>CentiPoise)<br>0.826<br>ity (cal/ml/ <sup>0</sup> C)                                      |                 |
| 41<br>42<br>43<br>44   | Initial T Final T Initial P Final P Use TP on Calcite sheet?  | (F) (F) (psia) (psia) 1-Yes;0-No   | 66.0<br>66.0<br>25.0                                     | 71.0<br>71.0<br>25.0                                       | 70.0<br>70.0<br>25.0   | 41.0<br>25.0                                       | 49.0<br>25.0  | 60.0<br>89.0<br>25.0<br>120.0   | 5.69<br>Viscosity (<br>1.196<br>Heat Capaci<br>0.955  | 5.60<br>CentiPoise)<br>0.826<br>ty (cal/ml/ <sup>0</sup> C)<br>0.959                              |                 |
| 41<br>42<br>43<br>44<br>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<br>66.0<br>25.0                                     | 71.0<br>71.0<br>25.0                                       | 70.0<br>70.0<br>25.0   | 41.0<br>25.0                                       | 49.0<br>25.0  | 60.0<br>89.0<br>25.0<br>120.0   | 5.69 Viscosity ( 1.196 Heat Capaci 0.955 Inhibitor no   | 5.60<br>CentiPoise)<br>0.826<br>ty (cal/ml/ <sup>0</sup> C)<br>0.959<br>eeded (mg/L)              |                 |
| 41<br>42<br>43<br>44<br>45<br>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<br>66.0<br>66.0<br>25.0                             | 71.0<br>71.0<br>25.0                                       | 70.0<br>70.0<br>25.0   | 41.0<br>25.0                                       | 49.0<br>25.0  | 60.0<br>89.0<br>25.0<br>120.0   | 5.69 Viscosity ( 1.196 Heat Capaci 0.955 Inhibitor no   | 5.60<br>CentiPoise)<br>0.826<br>ty (cal/ml/°C)<br>0.959<br>eded (mg/L)<br>HDTMP                   |                 |
| 41<br>42<br>43<br>44<br>45<br>46<br>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<br>66.0<br>25.0                                     | 71.0<br>71.0<br>25.0                                       | 70.0<br>70.0<br>25.0   | 41.0<br>25.0                                       | 49.0<br>25.0  | 60.0<br>89.0<br>25.0<br>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<br>42<br>43<br>44<br>45<br>46<br>47<br>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<br>66.0<br>66.0<br>25.0<br>25.0         | 71.0<br>71.0<br>25.0                                       | 70.0<br>70.0<br>25.0   | 41.0<br>25.0                                       | 49.0<br>25.0  | 60.0<br>89.0<br>25.0<br>120.0   | 5.69 Viscosity ( 1.196 Heat Capaci 0.955 Inhibitor no   | 5.60<br>CentiPoise)<br>0.826<br>ty (cal/ml/°C)<br>0.959<br>eded (mg/L)<br>HDTMP                   |                 |
| 41<br>42<br>43<br>44<br>45<br>46<br>47<br>48<br>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<br>66.0<br>66.0<br>25.0<br>25.0         | 71.0<br>71.0<br>25.0                                       | 70.0<br>70.0<br>25.0   | 41.0<br>25.0                                       | 49.0<br>25.0  | 60.0<br>89.0<br>25.0<br>120.0   | 5.69 Viscosity ( 1.196 Heat Capaci 0.955 Inhibitor no Gypsum 0.00 Anhydrite   | 5.60<br>CentiPoise)<br>0.826<br>ty (cal/ml/°C)<br>0.959<br>ceded (mg/L)<br>HDTMP<br>0.00<br>HDTMP |                 |
| 41<br>42<br>43<br>44<br>45<br>46<br>47<br>48<br>49<br>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<br>66.0<br>66.0<br>25.0<br>25.0         | 71.0<br>71.0<br>25.0                                       | 70.0<br>70.0<br>25.0   | 41.0<br>25.0                                       | 49.0<br>25.0  | 60.0<br>89.0<br>25.0<br>120.0   | 5.69 Viscosity ( 1.196 Heat Capaci 0.955 Inhibitor no Gypsum 0.00 Anhydrite   | 5.60<br>CentiPoise)<br>0.826<br>ty (cal/ml/°C)<br>0.959<br>ceded (mg/L)<br>HDTMP<br>0.00<br>HDTMP |                 |
| 41<br>42<br>43<br>44<br>45<br>46<br>47<br>48<br>49<br>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<br>66.0<br>66.0<br>25.0<br>25.0         | 71.0<br>71.0<br>25.0                                       | 70.0<br>70.0<br>25.0   | 41.0<br>25.0                                       | 49.0<br>25.0  | 60.0<br>89.0<br>25.0<br>120.0   | 5.69 Viscosity ( 1.196 Heat Capaci 0.955 Inhibitor no Gypsum 0.00 Anhydrite   | 5.60<br>CentiPoise)<br>0.826<br>ty (cal/ml/°C)<br>0.959<br>ceded (mg/L)<br>HDTMP<br>0.00<br>HDTMP |                 |
| 41<br>42<br>43<br>44<br>45<br>46<br>47<br>48<br>49<br>50<br>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<br>66.0<br>66.0<br>25.0<br>25.0         | 71.0<br>71.0<br>25.0                                       | 70.0<br>70.0<br>25.0   | 41.0<br>25.0                                       | 49.0<br>25.0  | 60.0<br>89.0<br>25.0<br>120.0   | 5.69 Viscosity ( 1.196 Heat Capaci 0.955 Inhibitor no Gypsum 0.00 Anhydrite   | 5.60<br>CentiPoise)<br>0.826<br>ty (cal/ml/°C)<br>0.959<br>ceded (mg/L)<br>HDTMP<br>0.00<br>HDTMP |                 |
| 41<br>42<br>43<br>44<br>45<br>46<br>47<br>48<br>49<br>50<br>51<br>52<br>53<br>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 <sub>2</sub> S Gas Total H2Saq (STP)   | ues for tempera<br>(F)<br>(F)<br>(psia)<br>(psia)<br>1-Yes;0-No<br>API grav.<br>Sp.Grav.<br>(B/D)<br>(N)<br>(N)<br>STP:  | tures and presss<br>66.0<br>66.0<br>25.0<br>25.0         | 71.0<br>71.0<br>25.0                                       | 70.0<br>70.0<br>25.0   | 41.0<br>25.0                                       | 49.0<br>25.0  | 60.0<br>89.0<br>25.0<br>120.0   | 5.69 Viscosity ( 1.196 Heat Capaci 0.955 Inhibitor no Gypsum 0.00 Anhydrite   | 5.60<br>CentiPoise)<br>0.826<br>ty (cal/ml/°C)<br>0.959<br>ceded (mg/L)<br>HDTMP<br>0.00<br>HDTMP |                 |
| 41<br>42<br>43<br>44<br>45<br>46<br>47<br>48<br>49<br>50<br>51<br>52<br>53<br>54<br>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 <sub>2</sub> S Gas Total H2Saq (STP) PH Calculated   | ues for tempera  (F) (F) (psia) (psia) 1-Yes;0-No API grav. Sp.Grav. (B/D) (B/D) (N) (N) STP: (%) (mgH2S/I) (pH)   | tures and presss<br>66.0<br>66.0<br>25.0<br>25.0         | 71.0<br>71.0<br>25.0                                       | 70.0<br>70.0<br>25.0   | 41.0<br>25.0                                       | 49.0<br>25.0  | 60.0<br>89.0<br>25.0<br>120.0   | 5.69 Viscosity ( 1.196 Heat Capaci 0.955 Inhibitor no Gypsum 0.00 Anhydrite   | 5.60<br>CentiPoise)<br>0.826<br>ty (cal/ml/°C)<br>0.959<br>ceded (mg/L)<br>HDTMP<br>0.00<br>HDTMP |                 |
| 41<br>42<br>43<br>44<br>45<br>46<br>47<br>48<br>49<br>50<br>51<br>52<br>53<br>54<br>55<br>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 <sub>2</sub> 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<br>66.0<br>66.0<br>25.0<br>25.0         | 71.0<br>71.0<br>25.0                                       | 70.0<br>70.0<br>25.0   | 41.0<br>25.0                                       | 49.0<br>25.0  | 60.0<br>89.0<br>25.0<br>120.0   | 5.69 Viscosity ( 1.196 Heat Capaci 0.955 Inhibitor no Gypsum 0.00 Anhydrite   | 5.60<br>CentiPoise)<br>0.826<br>ty (cal/ml/°C)<br>0.959<br>ceded (mg/L)<br>HDTMP<br>0.00<br>HDTMP |                 |
| 41<br>42<br>43<br>44<br>45<br>46<br>47<br>48<br>49<br>50<br>51<br>52<br>53<br>54<br>55<br>56<br>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 <sub>2</sub> S Gas Total H2Saq (STP) pH Calculated PCO2 Calculated Alkalinity Caclulated  | (F) (F) (psia) (1-Yes;0-No API grav. Sp.Grav. (B/D) (N) (N) STP: (%) (mgH2S/I) (pH) (%) (mg/I) as HCO3   | tures and presss<br>66.0<br>66.0<br>25.0<br>25.0         | 71.0<br>71.0<br>25.0                                       | 70.0<br>70.0<br>25.0   | 41.0<br>25.0                                       | 49.0<br>25.0  | 60.0<br>89.0<br>25.0<br>120.0   | 5.69 Viscosity ( 1.196 Heat Capaci 0.955 Inhibitor no Gypsum 0.00 Anhydrite   | 5.60<br>CentiPoise)<br>0.826<br>ty (cal/ml/°C)<br>0.959<br>ceded (mg/L)<br>HDTMP<br>0.00<br>HDTMP |                 |
| 41<br>42<br>43<br>44<br>45<br>46<br>47<br>48<br>49<br>50<br>51<br>52<br>53<br>54<br>55<br>56<br>57<br>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 <sub>2</sub> 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<br>66.0<br>66.0<br>25.0<br>25.0         | 71.0<br>71.0<br>25.0                                       | 70.0<br>70.0<br>25.0   | 41.0<br>25.0                                       | 49.0<br>25.0  | 60.0<br>89.0<br>25.0<br>120.0   | 5.69 Viscosity ( 1.196 Heat Capaci 0.955 Inhibitor no Gypsum 0.00 Anhydrite   | 5.60<br>CentiPoise)<br>0.826<br>ty (cal/ml/°C)<br>0.959<br>ceded (mg/L)<br>HDTMP<br>0.00<br>HDTMP |                 |
| 41<br>42<br>43<br>44<br>45<br>46<br>47<br>48<br>49<br>50<br>51<br>52<br>53<br>54<br>55<br>56<br>57<br>58<br>59<br>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 <sub>2</sub> 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<br>66.0<br>66.0<br>25.0<br>25.0         | 71.0<br>71.0<br>25.0                                       | 70.0<br>70.0<br>25.0   | 41.0<br>25.0                                       | 49.0<br>25.0  | 60.0<br>89.0<br>25.0<br>120.0   | 5.69 Viscosity ( 1.196 Heat Capaci 0.955 Inhibitor no Gypsum 0.00 Anhydrite   | 5.60<br>CentiPoise)<br>0.826<br>ty (cal/ml/°C)<br>0.959<br>ceded (mg/L)<br>HDTMP<br>0.00<br>HDTMP |                 |
| 41<br>42<br>43<br>44<br>45<br>46<br>47<br>48<br>49<br>50<br>51<br>52<br>53<br>54<br>55<br>56<br>57<br>58<br>59<br>60<br>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 <sub>2</sub> 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<br>71.0<br>25.0<br>25.0                               | 70.0<br>70.0<br>25.0<br>25.0                                       | 41.0<br>25.0<br>25.0<br>Unit Converter             | 49.0<br>25.0<br>25.0  | 60.0<br>89.0<br>25.0<br>120.0<br>30.00<br>0.60<br>0   | 5.69 Viscosity ( 1.196 Heat Capaci 0.955 Inhibitor nc Gypsum 0.00 Anhydrite 0.00  | 5.60<br>CentiPoise)<br>0.826<br>ty (cal/ml/°C)<br>0.959<br>ceded (mg/L)<br>HDTMP<br>0.00<br>HDTMP |                 |
| 41<br>42<br>43<br>44<br>45<br>46<br>47<br>48<br>49<br>50<br>51<br>52<br>53<br>54<br>55<br>56<br>57<br>58<br>60<br>61<br>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 <sub>2</sub> 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<br>66.0<br>66.0<br>25.0<br>25.0          | 71.0<br>71.0<br>25.0<br>25.0                               | 70.0<br>70.0<br>25.0<br>25.0<br>Inhibitor<br>NTMP                  | 41.0 25.0 25.0 Unit Converter                      | 49.0<br>25.0<br>25.0<br>25.0  | 60.0<br>89.0<br>25.0<br>120.0<br>30.00<br>0.60<br>0   | 5.69 Viscosity ( 1.196 Heat Capaci 0.955 Inhibitor no Gypsum 0.00 Anhydrite 0.00  | 5.60<br>CentiPoise)<br>0.826<br>ty (cal/ml/°C)<br>0.959<br>ceded (mg/L)<br>HDTMP<br>0.00<br>HDTMP |                 |
| 41<br>42<br>43<br>44<br>45<br>46<br>47<br>48<br>49<br>50<br>51<br>52<br>53<br>54<br>55<br>56<br>57<br>58<br>59<br>60<br>61<br>62<br>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 <sub>2</sub> 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<br>71.0<br>25.0<br>25.0<br>4<br>1<br>1<br>2           | 70.0<br>70.0<br>25.0<br>25.0<br>25.0<br>Inhibitor<br>NTMP<br>BHPMP | 41.0 25.0 25.0 25.0 Unit Converter From Unit       | 49.0<br>25.0<br>25.0<br>25.0<br>(From metric Value 80                       | 60.0<br>89.0<br>25.0<br>120.0<br>30.00<br>0.60<br>0   | 5.69 Viscosity ( 1.196 Heat Capaci 0.955 Inhibitor no Gypsum 0.00 Anhydrite 0.00  | 5.60<br>CentiPoise)<br>0.826<br>ty (cal/ml/°C)<br>0.959<br>ceded (mg/L)<br>HDTMP<br>0.00<br>HDTMP |                 |
| 41<br>42<br>43<br>44<br>45<br>46<br>47<br>48<br>49<br>50<br>51<br>52<br>53<br>54<br>55<br>56<br>57<br>58<br>59<br>60<br>61<br>62<br>63<br>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 <sub>2</sub> 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<br>71.0<br>25.0<br>25.0<br>4<br>1<br>1<br>2<br>3      | Inhibitor NTMP BHPMP PAA   | 41.0 25.0 25.0 25.0 Unit Converter From Unit °C m³ | 49.0<br>25.0<br>25.0<br>25.0<br>(From metric<br>Value<br>80<br>100          | 60.0<br>89.0<br>25.0<br>120.0<br>30.00<br>0.60<br>0<br>0<br>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<br>CentiPoise)<br>0.826<br>ty (cal/ml/°C)<br>0.959<br>ceded (mg/L)<br>HDTMP<br>0.00<br>HDTMP |                 |
| 41<br>42<br>43<br>44<br>45<br>46<br>47<br>48<br>49<br>50<br>51<br>52<br>53<br>53<br>54<br>55<br>56<br>67<br>75<br>88<br>89<br>60<br>61<br>62<br>63<br>64<br>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 <sub>2</sub> 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<br>71.0<br>25.0<br>25.0<br>4<br># 1<br>2<br>3         | Inhibitor NTMP BHPMP PAA DTPMP                                     | Unit Converter From Unit °C m³ m³                  | 49.0<br>25.0<br>25.0<br>25.0<br>(From metric<br>Value<br>80<br>100<br>100   | 60.0<br>89.0<br>25.0<br>120.0<br>30.00<br>0.60<br>0<br>0<br>To Unit<br>"F<br>ft"3<br>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<br>CentiPoise)<br>0.826<br>ty (cal/ml/°C)<br>0.959<br>ceded (mg/L)<br>HDTMP<br>0.00<br>HDTMP |                 |
| 41<br>42<br>43<br>44<br>45<br>46<br>47<br>48<br>49<br>50<br>51<br>52<br>53<br>54<br>55<br>56<br>67<br>78<br>88<br>60<br>61<br>62<br>63<br>64<br>65<br>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 <sub>2</sub> 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,   | (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<br>71.0<br>25.0<br>25.0<br>4<br>1<br>2<br>3<br>4<br>5 | Inhibitor NTMP BHPMP PAA DTPMP PPCA                                | Unit Converter From Unit °C m³ m³ MPa              | 49.0<br>25.0<br>25.0<br>25.0<br>(From metric<br>Value<br>80<br>100<br>1,000 | 60.0<br>89.0<br>25.0<br>120.0<br>30.00<br>0.60<br>0<br>0<br>To Unit<br>"F<br>ft"3<br>bbl(42 US gal)                                 | Value 176 3,531 629 145,074   | 5.60<br>CentiPoise)<br>0.826<br>ty (cal/ml/°C)<br>0.959<br>ceded (mg/L)<br>HDTMP<br>0.00<br>HDTMP |                 |
| 41<br>42<br>43<br>44<br>45<br>46<br>47<br>48<br>49<br>50<br>51<br>52<br>53<br>54<br>55<br>56<br>67<br>60<br>61<br>62<br>63<br>64<br>65<br>66<br>66<br>67       | 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 <sub>2</sub> 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<br>25.0<br>25.0<br>25.0<br>  | 60.0<br>89.0<br>25.0<br>120.0<br>30.00<br>0.60<br>0<br>0<br>0<br>To Unit<br>"F<br>ft <sup>3</sup><br>bbl(42 US gal)<br>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<br>CentiPoise)<br>0.826<br>ty (cal/ml/°C)<br>0.959<br>ceded (mg/L)<br>HDTMP<br>0.00<br>HDTMP |                 |
| 41<br>42<br>43<br>44<br>45<br>46<br>47<br>48<br>49<br>50<br>51<br>52<br>53<br>54<br>55<br>56<br>67<br>63<br>64<br>65<br>66<br>67<br>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 <sub>2</sub> 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 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<br>25.0<br>25.0<br>25.0<br>25.0<br>                                    | 60.0<br>89.0<br>25.0<br>120.0<br>30.00<br>0.60<br>0<br>0<br>0<br>To Unit<br>"F<br>ft <sup>3</sup><br>bbl(42 US gal)<br>psia<br>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<br>CentiPoise)<br>0.826<br>ty (cal/ml/°C)<br>0.959<br>ceded (mg/L)<br>HDTMP<br>0.00<br>HDTMP |                 |
| 41<br>42<br>43<br>44<br>45<br>46<br>47<br>48<br>49<br>50<br>51<br>52<br>53<br>54<br>55<br>56<br>67<br>62<br>63<br>64<br>65<br>66<br>67<br>68<br>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 <sub>2</sub> 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) Input 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<br>25.0<br>25.0<br>25.0<br>25.0<br>25.0<br>25.0<br>25.0<br>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<br>CentiPoise)<br>0.826<br>ty (cal/ml/°C)<br>0.959<br>ceded (mg/L)<br>HDTMP<br>0.00<br>HDTMP |                 |
| 41<br>42<br>43<br>44<br>45<br>46<br>47<br>48<br>49<br>50<br>51<br>52<br>53<br>54<br>55<br>56<br>67<br>62<br>63<br>64<br>65<br>66<br>67<br>68<br>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 <sub>2</sub> 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<br>25.0<br>25.0<br>25.0<br>25.0<br>                                    | 60.0<br>89.0<br>25.0<br>120.0<br>30.00<br>0.60<br>0<br>0<br>0<br>To Unit<br>"F<br>ft <sup>3</sup><br>bbl(42 US gal)<br>psia<br>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<br>CentiPoise)<br>0.826<br>ty (cal/ml/°C)<br>0.959<br>ceded (mg/L)<br>HDTMP<br>0.00<br>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 <sub>2</sub> 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: Mih, Miriam L 29-1

**SSI:** 624240

**API:** 15-133-27197-00-00 LOCATION: SW NW Sec. 29-27S-19E

COUNTY: Neosho

|              | COUNTY: Neosho   |                                   |
|--------------|--|-----------------------------------|
|              | STATE: Kansas  |                                   |
| Casing       | 8.625" @ 21'<br>4.5'' 10.5# J-55, 4.05'' ID w/ 0.0159 bbl/ft<br>capacity @ 1055'   |                                   |
| Perforations | Original Perfs: 1/22/2008 - Riverton 941-945 (17) - Weir 781-783 (9) - Weir 769-771 (9) - Fleming 678-680 (9) - Croweburg 643-646 (13) - Bevier 621-623 (9) - Mulky 540-544 (17) - Summit 528-532 (17)   | 8.625" @ 21'                      |
| Completions  | Spud Date: 11/28/2007 Completion date: 1/22/2008 Riverton: - 5700# 20/40 - 400 gal 15% - 546 bbls - 10 bpm Weir/Flem/Crowe/Bevier: - 2800# 20/40 - 400 gal 15% - 546 bbls - 14 bpm Mulky/Summit: - 5600# 20/40 - 300 gal 15% - 646 bbls - 14 bpm | 4.5" 10.5# @ 1055' 165 sks cement |

#### MIH, MARIAM L 29-1

| 1 NAME & UPPE             | R & LOWER LIMIT OF EACH PROD | UCTION INTERVAL TO         | BE COMMING   | LED             |   |       |    |
|---------------------------|------------------------------|----------------------------|--------------|-----------------|---|-------|----|
| FORMATION:                | BEVIER                       | _ (PERFS):                 | 621          | - 623           |   |       |    |
| FORMATION:                | MULKY                        | _ (PERFS):                 | 540          | - 544           |   |       |    |
| FORMATION:                | SUMMIT                       | _ (PERFS):                 | 528          | - 532           |   |       |    |
| FORMATION:                | BARTLESVILLE                 | (PERFS):                   | 871          | - 878           |   |       |    |
| FORMATION:                |                              | (PERFS):                   |              | -               |   |       |    |
| FORMATION:                |                              | (PERFS):                   |              | -               |   |       |    |
| FORMATION:                |                              | (PERFS):                   |              | -               |   |       |    |
| FORMATION:                |                              | (PERFS):                   |              | -               |   |       |    |
| FORMATION:                |                              | (PERFS):                   |              | -               |   |       |    |
| FORMATION:                |                              | (PERFS):                   |              | -               |   |       |    |
| FORMATION:                |                              | (PERFS):                   |              | -               |   |       |    |
| FORMATION:                |                              | (PERFS):                   |              | -               |   |       |    |
| 2 ESTIMATED AN FORMATION: | MOUNT OF FLUID PRODUCTION TO | O BE COMMINGLED F<br>BOPD: | ROM EACH INT | ERVAL<br>MCFPD: | 0 | BWPD: | 0  |
| FORMATION:                | MULKY                        | BOPD:                      | 0            | MCFPD:          | 0 | BWPD: | 0  |
| FORMATION:                | SUMMIT                       | BOPD:                      | 0            | MCFPD:          | 0 | BWPD: | 0  |
| FORMATION:                | BARTLESVILLE                 | BOPD:                      | 3            | MCFPD:          | 0 | BWPD: | 20 |
| FORMATION:                |                              | BOPD:                      |              | MCFPD:          |   | BWPD: |    |
| FORMATION:                |                              | BOPD:                      |              | MCFPD:          |   | BWPD: |    |
| FORMATION:                |                              | BOPD:                      |              | MCFPD:          |   | BWPD: |    |
| FORMATION:                |                              | BOPD:                      |              | MCFPD:          |   | BWPD: |    |
| FORMATION:                |                              | BOPD:                      |              | MCFPD:          |   | BWPD: |    |
| FORMATION:                |                              | BOPD:                      |              | MCFPD:          |   | BWPD: |    |
| FORMATION:                |                              | BOPD:                      |              | MCFPD:          |   | BWPD: |    |
| FORMATION:                |                              | BOPD:                      |              | MCFPD:          |   | BWPD: |    |
|                           |                              | =                          |              | -               |   |       |    |

| Affidavit of Notice Served   |  |
|--|--|
| Re: Application for: APPLICATION FOR COMMINGLING   | G OF PRODUCTION OR FLUIDS ACO-4  |
| Well Name: MIH, MARIAM L 29-1  | Legal Location: SWNW S29-T27S-R19E   |
| The undersigned hereby certificates that he / she is a duly authorized agent fo                                  | is grown Early   |
|  |  |
| , a true and correct copy of the application fold chief  | to the lead of manage to the lenothing parties.  |
| Note: A copy of this affidavit must be served as a part of the application.                                      |  |
| Name   | Address (Attach additional sheets if necessary)  |
| J-V OIL, LLC   | PO BOX 151, CHANUTE, KS 66720  |
| MAJOR ACQUISITION EXPL. & MGT., INC (MAXAM)  | 908 BRIDGE STREET, HUMBOLDT, KS 66748  |
| SEE ATTACHED   |  |
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| I further attest that notice of the filing of this application was published in the $\underline{T\underline{h}}$ | HE CHANUTE TRIBUNE , the official county publication   |
| NEGRUO   | county. A copy of the affidavit of this publication is attached.   |
| Signed this 18 <sup>±</sup> day of SEPTEMBER , 201   | 40   |
| Signed this 10 day of SEPTEMBER 20   | 12   |
| _  | The state of the s |
|  | plicant or Dhly Authorized Agent fore me this 18th day of SEPTEMBER 2012   |
| Subscribed and sworn to be   | fore me this day of  |
| JENNIFER R. BEAL   | Gennifer of Beal   |
| OFFICIAL MY COMMISSION EXPIRES   | Commission Expires: Quelus 20, 2016  |
| 7-20-2016 My   | Commission Expires: (July 00) 00/0   |
|  |  |
|  |  |
|  |  |
|  |  |

#### MIH, MARIAM L 29-1

#### 20-27S-19E

SW4

David Orr

(portion)

10280 210th Rd

Chanute, KS 66720

#### 29-27S-19E

SE4

**Beale Family Living Trust** 

(portion)

2301 Tipps Rd

Crossroads, TX 76277

NE4NW4

Cecil E. Watts and Kathleen A. Watts

501 E 6th Street Chanute, KS 66720

NW4NE4

Paul D. M. Cadwallader and Linda M, Cadwallader

10625 210th Rd Chanute, KS 66720

#### 30-27S-19E

SE4 less

Cecil E. Watts and Kathleen A. Watts

501 E 6th Street Chanute, KS 66720

Tract in SE4

William Clyde Davis

20235 Jackson Rd Chanute, KS 66720

#### MIH, MARIAM L 29-1-APPLICATION FOR COMMINGLING OF PRODUCTION OR FLUIDS

| Offset Operators, Unleased Mineral Owners and Landowners ac                | reage  |              |
|--|--|--------------|
| (Attach additional sheets if necessary)                                    |  |              |
| Name:  | Legal Description of Leasehold:                      |              |
| SEE ATTACHED   |  |              |
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| hereby certify that the statements made herein are true and correct to the |  |              |
|  | Des & Morris   |              |
|  | Jest & Marris  |              |
|  | Applicant or Puly Authorized Agent                   |              |
| Out and and and  | orn before me this /8 <sup>th</sup> day of SEPTEMBER | 2012         |
| Subscribed and swo   | orn before the this day or                           |              |
| WALL TENNITOR D. DEAL  | Synnely R Real                                       |              |
| JENNIFER R. BEAL OFFICIAL MY COMMISSION EXPIRES                            | Notary Public (                                      |              |
|  | ( ) 1 - m 20.11.                                     | 9            |
| 1-20-2016  | My Commission Expires: July 00, 00/10                |              |
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#### MIH, MARIAM L 29-1

| LEGAL LOCATION | SPOT     | CURR_OPERA                                  |
|----------------|----------|---|
| S29-T27S-R19E  | SE NE SW | J-V Oil, LLC                                |
| S29-T27S-R19E  |          | Major Acquisition Expl. & Mgt., Inc (Maxam) |
| S29-T27S-R19E  | C NE NW  | Major Acquisition Expl. & Mgt., Inc (Maxam) |
| S29-T27S-R19E  |          | Major Acquisition Expl. & Mgt., Inc (Maxam) |
| S29-T27S-R19E  | SE NE NW | Major Acquisition Expl. & Mgt., Inc (Maxam) |
| S29-T27S-R19E  | SE NE NW | Major Acquisition Expl. & Mgt., Inc (Maxam) |
| S29-T27S-R19E  | NE NE NW | Major Acquisition Expl. & Mgt., Inc (Maxam) |
| S29-T27S-R19E  | N2 NE NW | Major Acquisition Expl. & Mgt., Inc (Maxam) |
| S29-T27S-R19E  | N2 NE NW | Major Acquisition Expl. & Mgt., Inc (Maxam) |
| S29-T27S-R19E  | SW NW NW | Major Acquisition Expl. & Mgt., Inc (Maxam) |
| S29-T27S-R19E  | N2 S2 NW | Major Acquisition Expl. & Mgt., Inc (Maxam) |

#### MIH, MARÌAM L 29-1

#### 20-27S-19E

SW4

David Orr

(portion)

10280 210th Rd

Chanute, KS 66720

#### <u>29-27S-19E</u>

SE4

Beale Family Living Trust

(portion)

2301 Tipps Rd

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#### 30-27S-19E

**SE4** less

Cecil E. Watts and Kathleen A. Watts

501 E 6th Street Chanute, KS 66720

Tract in SE4

William Clyde Davis

20235 Jackson Rd Chanute, KS 66720

#### BEFORE THE STATE CORPO-RATION 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 Mih, Mariam L 29-1 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, Weir, Fleming, Croweburg, Bevier, Mulky, Summit and Bartlesville producing formations at the Mih, Mariam L 29-1, located in the SW NW, S29-T27S-R19E, Approximately 2265 FNL & 660 FWL, 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 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 City, Oklahoma 73102 (405) 660-7704

A COPY OF THE AFFIDAVIT OF PUBLICATION MUST ACCOM-PANY ALL APPLICATIONS

### 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 consecutive, the first publication thereof being made as aforesaid on the day of  2012, with subsequent publications being made on the following dates: |
|---|
| , 2012, 2012  |
| , 2012, 2012  |
| Thorda Howerton   |
| Subscribed and sworn to and before me this  |
| My commission expires: January 9, 2015  Printer's Fee   |



#### 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 20th of

#### September 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

20th day of September, 2012

PENNY L. CASE Notary Public - State of Kansas My Appt. Expires

Notary Public Sedgwick County, Kansas

Printer's Fee: \$139.60

PUBLISHED IN THE WICHITA EAGLE SEPTEMBER 20, 2012 (3207643) BEFORE THE STATE CORPORATION COMMISSION OF THE STATE OF VANCAS

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 Milh, Mariam
L 29-1 located in Neosho County,
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TO: All Oil & Gas Producers, Unleased
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Postrock Midcontinent Production, LLC 210 Park Avenue, Suite 27

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 5, 2012

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

RE: Approved Commingling CO091211

Mih, Mariam L. 29-1, Sec. 29-T27S-R19E, Neosho County

API No. 15-133-27197-00-00

Dear Mr. Edwards:

Your Application for Commingling (ACO-4) for the above described well, received by the KCC on September 26, 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 CO091211 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