Confidentiality Requested: Yes No

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

1210391

Form ACO-1 August 2013 Form must be Typed Form must be Signed All blanks must be Filled

## WELL COMPLETION FORM WELL HISTORY - DESCRIPTION OF WELL & LEASE

| OPERATOR: License #   | API No. 15   |
|---|--|
| Name:   | Spot Description:  |
| Address 1:  |  |
| Address 2:  | Feet from Dorth / South Line of Section                  |
| City: State: Zip:+  | Feet from East / West Line of Section                    |
| Contact Person:   | Footages Calculated from Nearest Outside Section Corner: |
| Phone: ()   |  |
| CONTRACTOR: License #   | GPS Location: Lat:, Long:                                |
| Name:   | (e.g. xx.xxxx) (e.gxxx.xxxx)                             |
| Wellsite Geologist:   | Datum: NAD27 NAD83 WGS84                                 |
| Purchaser:  | County:  |
| Designate Type of Completion:                                       | Lease Name: Well #:                                      |
| New Well Re-Entry Workover  | Field Name:  |
|   | Producing Formation:                                     |
| ☐ Oil ☐ WSW ☐ SWD ☐ SIOW<br>□ Gas □ D&A □ ENHR □ SIGW               | Elevation: Ground: Kelly Bushing:                        |
| OG GSW Temp. Abd.   | Total Vertical Depth: Plug Back Total Depth:             |
| CM (Coal Bed Methane)   | Amount of Surface Pipe Set and Cemented at: Feet         |
| Cathodic Other (Core, Expl., etc.):                                 | Multiple Stage Cementing Collar Used?                    |
| If Workover/Re-entry: Old Well Info as follows:                     | If yes, show depth set: Feet                             |
| Operator:   | If Alternate II completion, cement circulated from:      |
| Well Name:  | feet depth to:w/sx cmt.                                  |
| Original Comp. Date: Original Total Depth:                          |  |
| Deepening Re-perf. Conv. to ENHR Conv. to SWD                       | Drilling Fluid Management Plan                           |
| Plug Back       Conv. to GSW       Conv. to Producer                | (Data must be collected from the Reserve Pit)            |
|   | Chloride content: ppm Fluid volume: bbls                 |
| Commingled Permit #:  | Dewatering method used:                                  |
| Dual Completion Permit #:   |  |
| SWD Permit #:      ENHR Permit #:                                   | Location of fluid disposal if hauled offsite:            |
| ENHR Permit #:      GSW Permit #:                                   | Operator Name:   |
|   | Lease Name: License #:                                   |
| Spud Date or Date Reached TD Completion Date or                     | Quarter Sec Twp S. R East West                           |
| Recompletion Date Reached TD Recompletion Date of Recompletion Date | County: Permit #:  |

## AFFIDAVIT

I am the affiant and I hereby certify that all requirements of the statutes, rules and regulations promulgated to regulate the oil and gas industry have been fully complied with and the statements herein are complete and correct to the best of my knowledge.

## Submitted Electronically

| KCC Office Use ONLY             |
|---------------------------------|
| Confidentiality Requested       |
| Date:                           |
| Confidential Release Date:      |
| Wireline Log Received           |
| Geologist Report Received       |
| UIC Distribution                |
| ALT I II III Approved by: Date: |

|   | Page Iwo                         | 1210391   |
|---|----------------------------------|---|
| Operator Name:  | _ Lease Name:                    | Well #:   |
| Sec TwpS. R East _ West                                     | County:                          |   |
| INCTRUCTIONS. Chain important tang of formations papetrated | stail all aaraa Banart all final | conice of drill stome tests giving interval tested, time test |

**INSTRUCTIONS:** Show important tops of formations penetrated. Detail all cores. Report all final copies of drill stems tests giving interval tested, time tool open and closed, flowing and shut-in pressures, whether shut-in pressure reached static level, hydrostatic pressures, bottom hole temperature, fluid recovery, and flow rates if gas to surface test, along with final chart(s). Attach extra sheet if more space is needed.

Final Radioactivity Log, Final Logs run to obtain Geophysical Data and Final Electric Logs must be emailed to kcc-well-logs@kcc.ks.gov. Digital electronic log files must be submitted in LAS version 2.0 or newer AND an image file (TIFF or PDF).

| Drill Stem Tests Taken<br>(Attach Additional Sheets) |                      | Yes No                             | □ L                  | og Formatic                    | on (Top), Depth an | d Datum          | Sample                        |
|--|----------------------|------------------------------------|----------------------|--------------------------------|--------------------|------------------|-------------------------------|
| Samples Sent to Geolog                               | ical Survey          | Yes No                             | Nam                  | e                              |                    | Тор              | Datum                         |
| Cores Taken<br>Electric Log Run                      |                      | Yes No                             |                      |                                |                    |                  |                               |
| List All E. Logs Run:                                |                      |                                    |                      |                                |                    |                  |                               |
|  |                      |                                    |                      |                                |                    |                  |                               |
|  |                      | CASING<br>Report all strings set-c |                      | ew Used<br>ermediate, producti | on, 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  | Type and Percent<br>Additives |
|  |                      |                                    |                      |                                |                    |                  |                               |
|  |                      |                                    |                      |                                |                    |                  |                               |
|  |                      |                                    |                      |                                |                    |                  |                               |
|  |                      | ADDITIONAL                         | CEMENTING / SQU      | JEEZE RECORD                   |                    |                  |                               |
| Purpose:<br>Perforate                                | Depth<br>Top Bottom  | Type of Cement                     | # Sacks Used         |                                | Type and P         | ercent Additives |                               |
| Protect Casing Plug Back TD                          |                      |                                    |                      |                                |                    |                  |                               |
| Plug Off Zone  |                      |                                    |                      |                                |                    |                  |                               |

| Did you perform a hydraulic fracturing treatment on this well?  | Yes |
|---|-----|
| Does the volume of the total base fluid of the hydraulic fracturing treatment exceed 350,000 gallons? | Yes |
| Was the hydraulic fracturing treatment information submitted to the chemical disclosure registry?     | Yes |

| (If No, | skip | questions 2 and 3) |
|---------|------|--------------------|
| (If No, | skip | question 3)        |

No

No No

No

(If No, fill out Page Three of the ACO-1)

| Shots Per Foot  | PERFORATION RECORD - Bridge Plugs Set/Type<br>Specify Footage of Each Interval Perforated |                 |         |                 |         | е         | Ac        |                 | ement Squeeze Record<br>I of Material Used) | Depth   |
|---|---|-----------------|---------|-----------------|---------|-----------|-----------|-----------------|---|---------|
|   |   |                 |         |                 |         |           |           |                 |   |         |
|   |   |                 |         |                 |         |           |           |                 |   |         |
|   |   |                 |         |                 |         |           |           |                 |   |         |
|   |   |                 |         |                 |         |           |           |                 |   |         |
|   |   |                 |         |                 |         |           |           |                 |   |         |
| TUBING RECORD:  | Siz   | ze:             | Set At: |                 | Packer  | At:       | Liner Rur |                 | No  |         |
| Date of First, Resumed                                      | Producti  | on, SWD or ENHF | ł.      | Producing M     | lethod: | oing      | Gas Lift  | Other (Explain) |   |         |
| Estimated Production<br>Per 24 Hours                        |   | Oil Bb          | S.      | Gas             | Mcf     | Wate      | ər        | Bbls.           | Gas-Oil Ratio                               | Gravity |
| DISPOSITION OF GAS: METHOD OF COMPLETION: PRODUCTION INTERV |   |                 |         |                 |         |           |           |                 |   |         |
|   | _   | Jsed on Lease   |         | Open Hole       | Perf.   | Dually    | Comp.     | Commingled      | FRODUCTION                                  |         |
| (If vented, Su  | bmit ACO  | -18.)           |         | Other (Specify) |         | (Submit / | ,         | (Submit ACO-4)  |   |         |

Hurricane Services, Inc. 3613 A Y Road Madison, KS 66860 Office # 620-437-2661 Brad Cell # 620-437-6765



**Cement Service ticket** 

Ticket Number 100454 Location\_\_\_\_\_ Foreman\_ Dwayne Locuse\_\_\_

|   |              | Cement Sei        | rvice ticket   |                |   |                   |
|---|--------------|-------------------|--|----------------|---|-------------------|
| Date ,  | Customer     | # Well Nar        | Sec./Town  | ship/Range     | County  |                   |
| 5/29/14   |              | RoberSon          | #1 Producer  | ,              | Contraction of the second s | FRanklin co.      |
| Customer  |              | Mailing Addres    | 55   | City           | State   | Zip               |
| Denny Gi  | llat.        | 4318 Fina         |  | Rantoul        | KS 1  | 6079              |
| che any con   |              |                   | <i>icy</i>   | 1.1.6.1.1.6.64 |   |                   |
| Job Type:   |              |                   |  |                | Truck #   | Driver            |
| Lang 4<br>Hole Size:  | StRing       | 7001              |  |                | 231   | Tom               |
| Hole Size:  | 57/8         | Casing Size: 278  | Displacement   | : 4,06 BBM     |   | Amos Dang         |
| Hole Depth:   | 780          | Casing Weight:    | Displacement   |                | 110   | TYlor             |
| Bridge Plug:  |              | Tubing:           | Cement Left in   | n Casing: C    | 111   | Scott             |
| Packer:   |              | PBTD:             |  |                | 25  | Dwayne            |
| Quantity Or U   | Jnits        | Description       | n of Servcies or Pro   | oduct          | Pump charge   |                   |
| 20  |              | Mileage CEMENT    | PUMP   | 231            | \$3.25/Mile   | 6500              |
| 20  |              | Pickup            | 2  | 5              | 1.5   | 30 90-            |
|   |              |                   |  |                |   |                   |
| 6 10  | 6 SK         | 60/40 Pozr        | nix  |                | 12 00   | 1272 00           |
| 182   | 665          |                   | In cement  |                | 130   | 53 60             |
| 200   | 165          | Prem Gel          |  |                | . 30  | 6000              |
| 26.5  |              | Floscal           |  |                | 2.15  | 56 97             |
| and the second se |              |                   |  |                |   |                   |
| 2.  | hr           | Water TRuco       | K 110  |                | \$ 400  | 16800             |
| 2   | hr           | water TAuc        |  |                | 84.00   | 168 00            |
| 46.00   | Gal          | Water             |  |                | 1.36  | 60 04             |
| 12.00   | UAI          |                   |  |                |   |                   |
| 4,55  | Tons         | Bulk Truck Cement | Delivary 2   | 41             | \$1. <b>30</b> /Mile  | 300 00-           |
|   |              |                   | 85   |                |   |                   |
| 1   |              | Plugs 2 - Ruk     | ber Plug   |                | 2500  | 2500              |
| ana   |              |                   | 7  |                | Subtotal  | 2933 62           |
| and the second  |              |                   |  | 7, 65          | Sales Tax   | 25                |
|   |              |                   |  |                | Estimated Tot   | al                |
| Remarks: /  | tooked C     | nto Casing a      | and Estab  | lish cin       | •   | Dump              |
| IN RBI  |              | Flush Follo       | and a second | 15 0RA         |   | nd                |
|   | Cement       |                   | Sacks OF   |                | Doz Mix   | STOP              |
| the second s  | Wash C       |                   | hen Aums   | Plug to        | Bottom C  | ind               |
| Contraction of the second s   |              | PST               | in any   | any is         | Balland den Martin  | hat al Kalanangan |
| Shut I  | <u>n 700</u> | - C2/a. 4         |  |                | and a second  |                   |

(Rev. 1-2011)

**Customer Signature** 

| Contractor License #       32834       Cement Date         T.D.       780       Location       Sec 08       T 18       R 21         Lo. of pipe       714       4126 feet from       S       line         Surface pipe depth       20'       County       Franklin       S       line         Surface pipe depth       20'       County       Franklin       S       line         Driller's Log       Driller's Log       County       Franklin       S       line         2       dirt       0       2       14       43       G       line       li |   | Operator Licer<br>Operator<br>Address<br>City<br>Contractor  | nse #  | 35047<br>Denney Gillett<br>2530 Delaware Road<br>Pomona, KS 66076<br>JTC Oil, Inc. | j   | API #<br>Lease Nar<br>Well #<br>Spud Date |      | 15-059-2663<br>Roberson<br>P-1<br>5/28/2014 | 8-00-00 |      |
|--|---|--|--------|--|-----|---|------|---|---------|------|
| T.D. of pipe       714       4126 feet from       S       line         Surface pipe depth       20'       County       Franklin       E       line         Surface pipe depth       20'       County       Franklin       E       line         Thickness       Stratat       From       To       7       14       43       3         2       dirt       0       2       14       43       3       16       16       153       173         20       lime       43       63       153       173       193       173       193       16<  |   | Contractor Lice  | ense # | 32834  |     | Cement D                                  | ate  |   |         |      |
| Surface pipe depth $20'$ County       Franklin         Well Type       Production         Driller's Log         Thickness       Strata       From       To         2       dirt       0       2         12       lime       2       dirt       43         20       lime       43       63         90       shale       63       153         20       lime       153       173         20       shale       173       193         3       lime       193       196         6       shale       202       208         30       shale       202       208         31       lime       193       196         6       red shale       202       208         33       lime       238       256         9       shale       256       280         15       lime       282       295         15       lime       323       328         15       lime       323       328         13       lime       323       328         13       shale       486  |   | T.D.   |        | 780  |     | Location                                  |      | Sec 08                                      | T 18    | R 21 |
| Surface pipe depth         20'         County         Franklin           Well Type         Production         Driller's Log           Thickness         Strata         From         To           2         dirt         0         2           12         lime         2         14           29         shale         14         3           20         lime         43         63           90         shale         63         153           20         lime         153         173           20         lime         193         196           6         shale         202         208           33         lime         193         196           6         red shale         202         208           30         shale         208         238           18         lime         238         256           9         shale         206         282           13         lime         323         328           14         Mime         238         341           145         shale         341         486           3         lime   |   | T.D. of pipe   |        | 714  |     |   | 4126 | feet from                                   | S       | line |
| Well Type         Production<br>Driller's Log           Thickness         Strate         From         To           2         dirt         0         2           12         lime         2         14           29         shale         14         43           20         lime         43         63           90         shale         63         153           20         lime         173         193           20         shale         173         193           30         shale         196         202           6         shale         196         202           6         red shale         202         208           30         shale         206         238           18         lime         236         265           15         lime         265         280           2         shale         280         282           13         lime         323         328           14         ime         323         328           13         lime         323         328           13         lime         323         328     <  |   | Surface pipe si  | ze     | 7"   |     |   | 4126 | feet from                                   | E       | line |
| Driller's Log           Thickness         Strata         From         To           2         dirt         0         2           12         lime         2         14           29         shale         14         43           20         lime         43         63           90         shale         63         153           20         lime         153         193           20         shale         193         196           6         shale         196         202           6         shale         202         208           30         shale         208         208           30         shale         208         208           31         lime         238         256           9         shale         208         208           13         lime         282         295           7         black shale         280         282           13         lime         302         328           14         ifme         323         328           13         lime         581         561           14  |   |  | epth   | 20'  |     | County                                    |      | Franklin                                    |         |      |
| Thickness         Strata         From         To           2         dirt         0         2           12         lime         2         14           29         shale         14         43           20         lime         43         63           90         shale         63         153           20         lime         153         173           20         shale         173         193           3         lime         193         196           6         shale         202         208           30         shale         202         208           30         shale         202         208           31         lime         238         256           9         shale         202         208           13         lime         265         280           2         shale         282         295           7         black shale         295         302           13         lime         323         328           13         lime         328         341           145         shale         551  |   | Well Type  |        |  |     |   |      |   |         |      |
| 2       dirt       0       2         12       lime       2       14         29       shale       14       43         20       lime       43       63         90       shale       63       153         20       lime       153       173         20       shale       173       193         3       lime       193       196         6       shale       202       208         30       shale       208       238         18       lime       238       256         9       shale       256       280         2       shale       280       282         13       lime       282       295         7       black shale       295       302         21       lime       328       341         145       shale       341       486         3       lime       486       489         13       lime       502       515         46       shale       515       561         13       lime       581       586         9       shale  |   | ~  |        | -  |     |   |      |   |         |      |
| 12       lime       2       14         29       shale       14       43         20       lime       43       63         90       shale       63       153         20       lime       153       173         20       shale       173       193         3       lime       193       196         6       shale       196       202         6       shale       208       238         30       shale       238       256         9       shale       256       260         2       shale       282       295         7       black shale       295       302         13       lime       328       341         145       shale       341       486         3       lime       328       341         145       shale       3515       561         13       lime       502       515         46       shale       515       561         13       lime       561       572         9       shale       572       581         5       <  |   |  |        |  |     |   |      |   |         |      |
| 29       shale       14       43         20       lime       43       63         90       shale       63       153         20       lime       153       173         20       shale       173       193         3       lime       193       196         6       shale       196       202         6       red shale       202       208         30       shale       208       238         38       lime       238       256         9       shale       256       265         15       lime       265       280         2       shale       280       282         13       lime       282       295         7       black shale       295       302         21       lime       302       323         3       lime       323       328         13       lime       328       341         145       shale       314       486         3       lime       502       515         46       shale       515       561         13  |   |  |        |  |     |   |      |   |         |      |
| 20       lime       43       63         90       shale       63       153         20       lime       153       173         20       shale       173       193         3       lime       193       196         6       shale       202       208         30       shale       208       238         18       lime       238       256         9       shale       256       265         15       lime       265       280         2       shale       280       282         13       lime       323       328         13       lime       323       328         13       lime       323       328         13       lime       323       328         13       lime       341       486         3       lime       502       515         46       shale       515       561         13       lime       502       515         46       shale       515       561         5       lime       581       586         9       shal  |   |  |        |  |     |   |      |   |         |      |
| 90       shale       63       153         20       lime       153       173         20       shale       173       193         3       lime       193       196         6       shale       196       202         6       red shale       202       208         30       shale       208       238         18       lime       238       256         9       shale       265       260         2       shale       282       295         7       black shale       295       302         21       lime       302       323         13       lime       323       328         13       lime       323       328         13       lime       323       328         13       lime       328       341         145       shale       486       489         13       lime       502       515         46       shale       515       561         13       lime       502       515         46       shale       572       581         5 <td></td>   |   |  |        |  |     |   |      |   |         |      |
| 20       lime       153       173         20       shale       173       193         3       lime       193       196         6       shale       196       202         6       red shale       202       208         30       shale       208       238         18       lime       238       256         9       shale       226       265         15       lime       265       280         2       shale       282       295         7       black shale       295       302         21       (ime       302       323         5       shale/coal mix       323       328         13       lime       328       341         145       shale       341       486         3       lime       328       341         145       shale       341       486         3       lime       561       515         13       lime       561       515         14       shale       572       581         5       lime       581       586 <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>  |   |  |        |  |     |   |      |   |         |      |
| 20       shale       173       193         3       lime       193       196         6       shale       196       202         6       red shale       202       208         30       shale       208       238         18       lime       238       256         9       shale       256       265         15       lime       265       280         2       shale       280       282         13       lime       282       295         7       black shale       295       302         21       lime       302       323         5       shale/coal mix       323       328         13       lime       328       341         145       shale       341       486         3       lime       486       489         13       lime       502       515         13       lime       502       515         14       lime       561       572         9       shale       572       581         5       lime       586       595  |   |  |        |  |     |   |      |   |         |      |
| 3       lime       193       196         6       shale       196       202         6       red shale       202       208         30       shale       208       238         18       lime       238       256         9       shale       256       265         15       lime       265       280         13       lime       280       282         13       lime       302       323         5       shale/coal mix       323       328         13       lime       302       323         5       shale/coal mix       323       328         13       lime       328       341         145       shale       486       489         3       lime       486       489         3       lime       502       515         46       shale       515       561         5       lime       581       586         9       shale       572       581         5       lime       581       586         9       shale       595       606      10   |   | 200  |        |  |     |   |      |   |         |      |
| 6       shale       196       202         6       red shale       202       208         30       shale       208       238         18       lime       238       256         9       shale       256       265         15       lime       265       280         2       shale       280       282         13       lime       282       295         7       black shale       295       302         21       lime       302       323         5       shale/coal mix       323       328         13       lime       328       341         145       shale       341       486         3       lime       486       489         13       shale       489       502         13       lime       502       515         46       shale       515       561         11       lime       581       586         9       shale       572       581         5       lime       581       586         9       shale       586       595      11  |   |  |        |  |     |   |      |   |         |      |
| 6       red shale       202       208         30       shale       208       238         18       lime       238       256         9       shale       256       265         15       lime       265       280         2       shale       280       282         13       lime       282       295         7       black shale       295       302         21       ime       302       323         5       shale/coal mix       323       328         13       lime       328       341         145       shale       341       486         3       lime       486       489         13       lime       502       515         46       shale       515       561         11       lime       561       572         9       shale       572       581         5       lime       586       595         11       lime       595       606         10       shale       606       616         2       lime oil       616       618       bleed  |   |  |        |  |     |   |      |   |         |      |
| 30       shale       208       238         18       lime       238       256         9       shale       256       265         15       lime       265       280         2       shale       280       282         13       lime       282       295         7       black shale       295       302         21       lime       302       323         5       shale/coal mix       323       328         13       lime       328       341         145       shale       341       486         3       lime       486       489         13       shale       489       502         13       lime       502       515         46       shale       515       561         11       lime       561       572         9       shale       572       581         5       lime       586       595         11       lime       595       606         10       shale       606       616         2       lime oil       616       618       bleed </td <td></td>   |   |  |        |  |     |   |      |   |         |      |
| 18       lime       238       256         9       shale       256       265         15       lime       265       280         2       shale       280       282         13       lime       282       295         7       black shale       295       302         21       lime       302       323         5       shale/coal mix       323       328         13       lime       328       341         145       shale       341       486         3       lime       486       489         13       shale       489       502         13       lime       561       515         46       shale       515       561         11       lime       561       572         9       shale       572       581         5       lime       586       595         11       lime       595       606         10       shale       606       616         2       lime oil       616       618       bleed         2       lime oil       618       620  |   |  | le     |  |     |   |      |   |         |      |
| 9       shale       256       265         15       lime       265       280         2       shale       280       282         13       lime       282       295         7       black shale       295       302         21       lime       302       323         5       shale/coal mix       323       328         13       lime       328       341         145       shale       341       486         3       lime       486       489         13       shale       489       502         13       lime       502       515         46       shale       515       561         11       lime       561       572         9       shale       572       581         5       lime       586       595         11       lime       595       606         10       shale       606       616         2       lime oil       616       618       bleed         2       lime oil       618       620       good bleed   |   | 49 C 110 C 1 |        |  | 238 |   |      |   |         |      |
| 15       lime       265       280         2       shale       280       282         13       lime       282       295         7       black shale       295       302         21       lime       302       323         5       shale/coal mix       323       328         13       lime       328       341         145       shale       341       486         3       lime       486       489         13       shale       489       502         13       lime       502       515         46       shale       515       561         11       lime       561       572         9       shale       572       581         5       lime       586       595         11       lime       595       606         10       shale       606       616         2       lime oil       616       618       bleed         2       lime oil       618       620       good bleed   |   |  |        | 238  | 256 |   |      |   |         |      |
| 2       shale       280       282         13       lime       282       295         7       black shale       295       302         21       lime       302       323         5       shale/coal mix       323       328         13       lime       328       341         145       shale       341       486         3       lime       486       489         13       shale       489       502         13       shale       561       572         145       shale       515       561         13       lime       502       515         46       shale       515       561         11       lime       561       572         9       shale       572       581         5       lime       586       595         11       lime       595       606         10       shale       606       616         2       lime oi       616       618       bleed         2       lime oi       618       620       good bleed  |   |  |        |  | 265 |   |      |   |         |      |
| 13       lime       282       295         7       black shale       295       302         21       lime       302       323         5       shale/coal mix       323       328         13       lime       328       341         145       shale       341       486         3       lime       486       489         13       shale       489       502         13       shale       561       515         46       shale       515       561         11       lime       561       572         9       shale       586       595         11       lime       595       606         10       shale       606       616         2       lime oil       616       618       bleed         2       lime oil       618       620       good bleed   |   |  |        | 265  | 280 |   |      |   |         |      |
| 7       black shale       295       302         21       lime       302       323         5       shale/coal mix       323       328         13       lime       328       341         145       shale       341       486         3       lime       486       489         13       shale       489       502         13       shale       502       515         46       shale       515       561         11       lime       561       572         9       shale       572       581         5       lime       586       595         11       lime       595       606         10       shale       606       616         2       lime oil       616       618       bleed         2       lime oil       618       620       good bleed  |   |  |        |  | 282 |   |      |   |         |      |
| 21       ime       302       323         5       shale/coal mix       323       328         13       lime       328       341         145       shale       341       486         3       lime       486       489         13       shale       489       502         13       shale       489       502         13       shale       502       515         46       shale       515       561         11       lime       561       572         9       shale       572       581         5       lime       586       595         11       lime       595       606         10       shale       606       616         2       lime oil       616       618       bleed         2       lime oil       618       620       good bleed  |   |  |        |  | 295 |   |      |   |         |      |
| 5       shale/coal mix       323       328         13       lime       328       341         145       shale       341       486         3       lime       486       489         13       shale       489       502         13       lime       502       515         46       shale       515       561         11       lime       561       572         9       shale       572       581         5       lime       586       595         11       lime       595       606         10       shale       606       616         2       lime oil       616       618       bleed         2       lime oil       618       620       good bleed   |   |  | ale    |  | 302 |   |      |   |         |      |
| 13       lime       328       341         145       shale       341       486         3       lime       486       489         13       shale       489       502         13       lime       502       515         46       shale       515       561         11       lime       561       572         9       shale       572       581         5       lime       586       595         11       lime       595       606         10       shale       606       616         2       lime oil       616       618       bleed         2       lime oil       618       620       good bleed  |   |  |        |  | 323 |   |      |   |         |      |
| 145       shale       341       486         3       lime       486       489         13       shale       489       502         13       lime       502       515         46       shale       515       561         11       lime       561       572         9       shale       572       581         5       lime       586       595         11       lime       595       606         9       shale       606       616         2       lime oil       616       618       bleed         2       lime oil       618       620       good bleed   |   | shale/coal   | mix    | 323  | 328 |   |      |   |         |      |
| 3       lime       486       489         13       shale       489       502         13       lime       502       515         46       shale       515       561         11       lime       561       572         9       shale       572       581         5       lime       586       595         11       lime       595       606         9       shale       606       616         2       lime oil       616       618       bleed         2       lime oil       618       620       good bleed   |   |  |        |  | 341 |   |      |   |         |      |
| 13       shale       489       502         13       lime       502       515         46       shale       515       561         11       lime       561       572         9       shale       572       581         5       lime       586       595         11       lime       595       606         9       shale       595       606         10       shale       606       616         2       lime oil       616       618       bleed         2       lime oil       618       620       good bleed   |   |  |        |  | 486 |   |      |   |         |      |
| 13       lime       502       515         46       shale       515       561         11       lime       561       572         9       shale       572       581         5       lime       586       595         11       lime       595       606         10       shale       606       616         2       lime oil       616       618       bleed         2       lime oil       618       620       good bleed  |   |  |        |  |     |   |      |   |         |      |
| 46       shale       515       561         11       lime       561       572         9       shale       572       581         5       lime       586       595         11       lime       595       606         10       shale       606       616         2       lime oil       616       618       bleed         2       lime oil       618       620       good bleed  |   |  |        |  |     |   |      |   |         |      |
| 11       lime       561       572         9       shale       572       581         5       lime       586       595         9       shale       586       595         11       lime       595       606         10       shale       606       616         2       lime oil       616       618       bleed         2       lime oil       618       620       good bleed   |   |  |        |  |     |   |      |   |         |      |
| 9         shale         572         581           5         lime         581         586           9         shale         586         595           11         lime         595         606           10         shale         606         616           2         lime oil         616         618         bleed           2         lime oil         618         620         good bleed   |   |  |        |  | 561 |   |      |   |         |      |
| 5         lime         581         586           9         shale         586         595           11         lime         595         606           10         shale         606         616           2         lime oil         616         618         bleed           2         lime oil         618         620         good bleed   |   |  |        |  |     |   |      |   |         |      |
| 9         shale         586         595           11         lime         595         606           10         shale         606         616           2         lime oil         616         618         bleed           2         lime oil         618         620         good bleed  |   |  |        |  |     |   |      |   |         |      |
| 11     lime     595     606       10     shale     606     616       2     lime oil     616     618     bleed       2     lime oil     618     620     good bleed  |   |  |        |  |     |   |      |   |         |      |
| 10     shale     606     616       2     lime oil     616     618     bleed       2     lime oil     618     620     good bleed  |   |  |        |  |     |   |      |   |         |      |
| 2lime oil616618bleed2lime oil618620good bleed  |   |  |        |  |     |   |      |   |         |      |
| 2 lime oil 618 620 good bleed  |   |  |        |  |     |   |      |   |         |      |
|  |   |  |        |  |     |   |      |   |         |      |
| 2 lime oil 620 622 bleed   |   |  |        |  |     |   | d    |   |         |      |
|  | 2 | lime oi  |        | 620  | 622 | bleed                                     |      |   |         |      |

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| 2  | top sand | d 622 | 624 | ok |
|----|----------|-------|-----|----|
| 2  | good     | 624   | 626 |    |
| 2  | good     | 626   | 628 |    |
| 2  | good     | 628   | 630 |    |
| 2  | good     | 630   | 632 |    |
| 2  | good     | 632   | 634 |    |
| 2  | ok       | 634   | 636 |    |
| 2  | ok       | 636   | 638 |    |
| 4  | end      | 638   | 642 |    |
| 83 | shale    | 642   | 725 |    |
| 55 | mix      | 725   | 780 |    |
|    |          |       |     |    |