



**PHOENIX**  
**TECHNOLOGY SERVICES**

December 23, 2016

Oil Conservation Division  
State of New Mexico  
811 S. First St.  
Artesia, New Mexico 88210

**NM OIL CONSERVATION**  
ARTESIA DISTRICT

JAN 23 2017

RECEIVED

Dear District 2 - Artesia

Attention: Regulatory Department

Re: BC Operating  
Lackey 34 #1 SWD  
Eddy County, NM  
API #30-015-42998 ✓  
Job No. 60639

Enclosed please find the Survey Data Certification, and the original Plat and one copy of the Survey Report performed on the above referenced Well by Phoenix Technology Services, Inc. (P-5 No. 664171). Other information required by your office is as follows:

| Name & Title of Surveyor | Drain Hole Number | Surveyed Depths |       | Dates Performed |          | Type of Survey |
|--------------------------|-------------------|-----------------|-------|-----------------|----------|----------------|
|                          |                   | From            | To    | Start           | End      |                |
| Jeff Arenas              | 1                 | 694             | 3,544 | 12/17/16        | 12/19/16 | MWD            |

A certified plat on which the bottom hole location is oriented both to the surface location and to the lease lines (or unit lines in case of pooling) is attached to the survey report. If any other information is required, please contact the undersigned at the letterhead address and phone number.

Best Regards,

*Brittany Carley*

Brittany Carley  
Operations Administrator

Accepted for record - NMOCD  
*RJP 1-26-17*

# Phoenix Technology Services SURVEY DATA CERTIFICATION



PHOENIX JOB NUMBER 60639

ENERGY COMPANY BC Operating INC

WELL NAME Lackey 34 # 1 SWD

COUNTY & STATE

Eddy County, New Mexico

|                 |              |
|-----------------|--------------|
| API WELL NUMBER | 30-015-42998 |
|-----------------|--------------|

|                    |      |
|--------------------|------|
| PROPOSED DIRECTION | 0.00 |
|--------------------|------|

| TIE-IN DATA |           |        |         |          |         |         |
|-------------|-----------|--------|---------|----------|---------|---------|
| MEASURED    | VERTICAL  |        |         | N-S      | E-W     | DATA    |
| DEPTH       | DEPTH     | INCLIN | AZIMUTH | COORD    | COORD   | SOURCE  |
| 612.00 ft   | 611.97 ft | 0.67   | 96.41   | -2.91 ft | 4.92 ft | MS Gyro |

| FIRST     | FIRST     |        |         |
|-----------|-----------|--------|---------|
| SURVEY    | SURVEY    |        |         |
| DATE      | DEPTH     | INCLIN | AZIMUTH |
| 17-Dec-16 | 694.00 ft | 1.00   | 84.80   |

| SURVEY INSTRUMENT |
|-------------------|
| TYPE              |
| Phoenix MWD       |

| LAST      | LAST        |        |         |
|-----------|-------------|--------|---------|
| SURVEY    | SURVEY      |        |         |
| DATE      | DEPTH       | INCLIN | AZIMUTH |
| 19-Dec-16 | 3,544.00 ft | 0.30   | 74.00   |

TO THE BEST OF MY KNOWLEDGE I  
CERTIFY THIS SURVEY DATA TO BE  
TRUE AND CORRECT.

| PROJECTED | PROJECTED   |        |         |
|-----------|-------------|--------|---------|
| TD SURVEY | TD SURVEY   |        |         |
| DATE      | DEPTH       | INCLIN | AZIMUTH |
| 19-Dec-16 | 3,606.00 ft | 0.30   | 74.00   |

Jeff Arenas  
PRINT YOUR NAME ABOVE

Jeff arenas  
SIGN YOUR NAME ABOVE

## MAGNETIC DECLINATION OR TOTAL GRID

|                       |      |
|-----------------------|------|
| TOTAL CORRECTION USED | 7.51 |
| DECLINATION OR GRID   | GRID |

12/2/2016  
TODAY'S DATE

MWD SUPERVISOR 1 Jeff Arenas

DIRECTIONAL DRILLER 1

Ruben Cano

MWD SUPERVISOR 2 0

DIRECTIONAL DRILLER 2

0



NM OIL CONSERVATION  
ARTESIA DISTRICT  
JAN 23 2017  
RECEIVED

**BC Operating, Inc.**  
Eddy County, New Mexico (NAD27)  
Lackey SWD  
#1

OH / Job #60639

Survey: Phoenix MWD Surveys

## Standard Survey Report

21 December, 2016



**Company:** BC Operating, Inc.  
**Project:** Eddy County, New Mexico (NAD27)  
**Site:** Lackey SWD  
**Well:** #1  
**Wellbore:** OH / Job #60639  
**Design:** Surveys (Patterson 244)

**Local Co-ordinate Reference:** Well #1  
**TVD Reference:** GL + KB @ 3372.50usft (Patterson 244)  
**MD Reference:** GL + KB @ 3372.50usft (Patterson 244)  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** Compass 5000 GCR

|                    |                                      |                      |                |
|--------------------|--------------------------------------|----------------------|----------------|
| <b>Project</b>     | Eddy County, New Mexico (NAD27)      |                      |                |
| <b>Map System:</b> | US State Plane 1927 (Exact solution) | <b>System Datum:</b> | Mean Sea Level |
| <b>Geo Datum:</b>  | NAD 1927 (NADCON CONUS)              |                      |                |
| <b>Map Zone:</b>   | New Mexico East 3001                 |                      |                |

|                              |            |                     |                 |                          |                     |
|------------------------------|------------|---------------------|-----------------|--------------------------|---------------------|
| <b>Site</b>                  | Lackey SWD |                     |                 |                          |                     |
| <b>Site Position:</b>        |            | <b>Northing:</b>    | 458,367.43 usft | <b>Latitude:</b>         | 32° 15' 36.57956 N  |
| <b>From:</b>                 | Map        | <b>Easting:</b>     | 513,906.52 usft | <b>Longitude:</b>        | 104° 17' 18.04322 W |
| <b>Position Uncertainty:</b> | 0.00 usft  | <b>Slot Radius:</b> | 13-3/16 "       | <b>Grid Convergence:</b> | 0.02 °              |

|                             |              |           |                            |                 |                      |                     |
|-----------------------------|--------------|-----------|----------------------------|-----------------|----------------------|---------------------|
| <b>Well</b>                 | #1           |           |                            |                 |                      |                     |
| <b>Well Position</b>        | <b>+N/-S</b> | 0.00 usft | <b>Northing:</b>           | 458,367.43 usft | <b>Latitude:</b>     | 32° 15' 36.57956 N  |
|                             | <b>+E/-W</b> | 0.00 usft | <b>Easting:</b>            | 513,906.52 usft | <b>Longitude:</b>    | 104° 17' 18.04322 W |
| <b>Position Uncertainty</b> |              | 0.00 usft | <b>Wellhead Elevation:</b> | 0.00 usft       | <b>Ground Level:</b> | 3,344.00 usft       |

|                  |                   |                    |                        |                      |                            |
|------------------|-------------------|--------------------|------------------------|----------------------|----------------------------|
| <b>Wellbore</b>  | OH / Job #60639   |                    |                        |                      |                            |
| <b>Magnetics</b> | <b>Model Name</b> | <b>Sample Date</b> | <b>Declination (°)</b> | <b>Dip Angle (°)</b> | <b>Field Strength (nT)</b> |
|                  | HDGM              | 12/14/2016         | 7.53                   | 60.02                | 48,110                     |

|                          |                                |                     |                     |                      |      |
|--------------------------|--------------------------------|---------------------|---------------------|----------------------|------|
| <b>Design</b>            | Surveys (Patterson 244)        |                     |                     |                      |      |
| <b>Audit Notes:</b>      |                                |                     |                     |                      |      |
| <b>Version:</b>          | 1.0                            | <b>Phase:</b>       | ACTUAL              | <b>Tie On Depth:</b> | 0.00 |
| <b>Vertical Section:</b> | <b>Depth From (TVD) (usft)</b> | <b>+N/-S (usft)</b> | <b>+E/-W (usft)</b> | <b>Direction (°)</b> |      |
|                          | 0.00                           | 0.00                | 0.00                | 0.00                 |      |

|                       |                  |                                       |                  |                       |  |
|-----------------------|------------------|---------------------------------------|------------------|-----------------------|--|
| <b>Survey Program</b> | <b>Date</b>      | 12/21/2016                            |                  |                       |  |
| <b>From (usft)</b>    | <b>To (usft)</b> | <b>Survey (Wellbore)</b>              | <b>Tool Name</b> | <b>Description</b>    |  |
| 694.00                | 3,606.00         | Phoenix MWD Surveys (OH / Job #60639) | MWD+HDGM         | OWSG Rev.2 MWD + HDGM |  |

### Survey

| Measured Depth (usft)           | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) |
|---------------------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| 612.00                          | 0.67            | 96.41       | 611.97                | -2.91        | 4.92         | -2.91                   | 0.00                    | 0.00                   | 0.00                  |
| <b>Tie In</b>                   |                 |             |                       |              |              |                         |                         |                        |                       |
| 694.00                          | 1.00            | 84.80       | 693.96                | -2.90        | 6.11         | -2.90                   | 0.45                    | 0.40                   | -14.16                |
| <b>First Phoenix MWD Survey</b> |                 |             |                       |              |              |                         |                         |                        |                       |
| 786.00                          | 1.50            | 86.60       | 785.94                | -2.75        | 8.11         | -2.75                   | 0.55                    | 0.54                   | 1.96                  |
| 971.00                          | 2.80            | 50.90       | 970.81                | 0.24         | 14.03        | 0.24                    | 0.98                    | 0.70                   | -19.30                |
| 1,156.00                        | 2.90            | 12.50       | 1,155.60              | 7.66         | 18.55        | 7.66                    | 1.01                    | 0.05                   | -20.76                |
| 1,249.00                        | 1.90            | 40.73       | 1,248.52              | 11.12        | 20.07        | 11.12                   | 1.63                    | -1.08                  | 30.35                 |
| 1,341.00                        | 3.10            | 128.70      | 1,340.46              | 10.72        | 23.01        | 10.72                   | 3.89                    | 1.30                   | 95.62                 |
| 1,434.00                        | 1.80            | 148.70      | 1,433.37              | 7.90         | 25.73        | 7.90                    | 1.65                    | -1.40                  | 21.51                 |

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**Local Co-ordinate Reference:** Well #1  
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**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** Compass 5000 GCR

**Survey**

| Measured Depth (usft)           | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) |
|---------------------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| 1,526.00                        | 0.60            | 293.60      | 1,525.36              | 6.86         | 26.04        | 6.86                    | 2.52                    | -1.30                  | 157.50                |
| 1,620.00                        | 1.50            | 307.70      | 1,619.34              | 7.81         | 24.61        | 7.81                    | 0.99                    | 0.96                   | 15.00                 |
| 1,712.00                        | 0.50            | 223.30      | 1,711.33              | 8.26         | 23.39        | 8.26                    | 1.67                    | -1.09                  | -91.74                |
| 1,804.00                        | 1.20            | 177.30      | 1,803.32              | 7.00         | 23.16        | 7.00                    | 1.01                    | 0.76                   | -50.00                |
| 1,897.00                        | 0.70            | 359.80      | 1,896.32              | 6.60         | 23.20        | 6.60                    | 2.04                    | -0.54                  | -190.86               |
| 1,991.00                        | 1.60            | 14.60       | 1,990.30              | 8.44         | 23.53        | 8.44                    | 1.00                    | 0.96                   | 15.74                 |
| 2,086.00                        | 0.60            | 311.90      | 2,085.28              | 10.06        | 23.49        | 10.06                   | 1.50                    | -1.05                  | -66.00                |
| 2,180.00                        | 0.80            | 269.30      | 2,179.27              | 10.38        | 22.47        | 10.38                   | 0.58                    | 0.21                   | -45.32                |
| 2,274.00                        | 0.80            | 271.20      | 2,273.26              | 10.38        | 21.16        | 10.38                   | 0.03                    | 0.00                   | 2.02                  |
| 2,368.00                        | 1.00            | 270.50      | 2,367.25              | 10.40        | 19.68        | 10.40                   | 0.21                    | 0.21                   | -0.74                 |
| 2,463.00                        | 0.90            | 254.50      | 2,462.24              | 10.21        | 18.13        | 10.21                   | 0.30                    | -0.11                  | -16.84                |
| 2,557.00                        | 0.40            | 202.10      | 2,556.23              | 9.71         | 17.30        | 9.71                    | 0.77                    | -0.53                  | -55.74                |
| 2,579.00                        | 0.50            | 200.80      | 2,578.23              | 9.55         | 17.24        | 9.55                    | 0.46                    | 0.45                   | -5.91                 |
| 2,678.00                        | 0.50            | 272.10      | 2,677.23              | 9.16         | 16.65        | 9.16                    | 0.59                    | 0.00                   | 72.02                 |
| 2,740.00                        | 0.50            | 286.40      | 2,739.23              | 9.25         | 16.12        | 9.25                    | 0.20                    | 0.00                   | 23.06                 |
| 2,835.00                        | 0.50            | 274.40      | 2,834.22              | 9.40         | 15.31        | 9.40                    | 0.11                    | 0.00                   | -12.63                |
| 2,929.00                        | 0.40            | 292.00      | 2,928.22              | 9.55         | 14.60        | 9.55                    | 0.18                    | -0.11                  | 18.72                 |
| 3,023.00                        | 0.40            | 300.50      | 3,022.22              | 9.84         | 14.01        | 9.84                    | 0.06                    | 0.00                   | 9.04                  |
| 3,116.00                        | 0.50            | 301.40      | 3,115.22              | 10.22        | 13.38        | 10.22                   | 0.11                    | 0.11                   | 0.97                  |
| 3,211.00                        | 0.30            | 312.00      | 3,210.21              | 10.60        | 12.85        | 10.60                   | 0.22                    | -0.21                  | 11.16                 |
| 3,304.00                        | 0.00            | 121.80      | 3,303.21              | 10.76        | 12.66        | 10.76                   | 0.32                    | -0.32                  | 0.00                  |
| 3,399.00                        | 0.10            | 70.30       | 3,398.21              | 10.79        | 12.74        | 10.79                   | 0.11                    | 0.11                   | 0.00                  |
| 3,492.00                        | 0.20            | 95.50       | 3,491.21              | 10.80        | 12.98        | 10.80                   | 0.13                    | 0.11                   | 27.10                 |
| 3,544.00                        | 0.30            | 74.00       | 3,543.21              | 10.83        | 13.20        | 10.83                   | 0.26                    | 0.19                   | -41.35                |
| <b>Final Phoenix MWD Survey</b> |                 |             |                       |              |              |                         |                         |                        |                       |
| 3,606.00                        | 0.30            | 74.00       | 3,605.21              | 10.92        | 13.51        | 10.92                   | 0.00                    | 0.00                   | 0.00                  |
| <b>Projection to TD</b>         |                 |             |                       |              |              |                         |                         |                        |                       |

**Survey Annotations**

| Measured Depth (usft) | Vertical Depth (usft) | Local Coordinates |              | Comment                  |
|-----------------------|-----------------------|-------------------|--------------|--------------------------|
|                       |                       | +N/-S (usft)      | +E/-W (usft) |                          |
| 612.00                | 611.97                | -2.91             | 4.92         | Tie In                   |
| 694.00                | 693.96                | -2.90             | 6.11         | First Phoenix MWD Survey |
| 3,544.00              | 3,543.21              | 10.83             | 13.20        | Final Phoenix MWD Survey |
| 3,606.00              | 3,605.21              | 10.92             | 13.51        | Projection to TD         |

State of New Mexico  
Energy, Minerals & Natural Resources Department  
OIL CONSERVATION DIVISION  
1220 South St. Francis Dr.  
Santa Fe, NM 87505

Form C-102

**RECEIVED** Submit one copy to appropriate  
District Office

☐ AMENDED REPORT

|                                                                                                                                                                                                                                                                                                                                          |            |                                                                                                                                                                                                                                                                                                                               |            |            |            |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|------------|------------|
| 16                                                                                                                                                                                                                                                                                                                                       |            |                                                                                                                                                                                                                                                                                                                               |            |            |            |
| SECTION 28                                                                                                                                                                                                                                                                                                                               | SECTION 27 |                                                                                                                                                                                                                                                                                                                               |            |            | SECTION 26 |
| SECTION 33                                                                                                                                                                                                                                                                                                                               | SECTION 34 |                                                                                                                                                                                                                                                                                                                               |            |            | SECTION 35 |
|                                                                                                                                                                                                                                                                                                                                          |            | <p><b>SURFACE HOLE LOCATION</b><br/>         2480' FNL 235' FWL<br/>         NAD 83, SPCS NM EAST<br/>         X:555088.59' / Y:458425.34'<br/>         LAT:32.26027852N / LON:104.28884715W<br/>         NAD 27, SPCS NM EAST<br/>         X:513906.52' / Y:458367.43'<br/>         LAT:32.26016099N / LON:104.28834534W</p> |            |            |            |
| <div style="display: flex; align-items: center;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">2480'</div> <div style="margin-left: 10px;"> <div style="border-top: 1px solid black; width: 20px; height: 10px;"></div> <div style="border-left: 1px solid black; width: 20px; height: 10px;"></div> </div> </div> |            |                                                                                                                                                                                                                                                                                                                               |            |            |            |
| SECTION 33                                                                                                                                                                                                                                                                                                                               |            | T23S-R26E                                                                                                                                                                                                                                                                                                                     | SECTION 34 | SECTION 35 |            |
| SECTION 4                                                                                                                                                                                                                                                                                                                                |            | T24S-R26E                                                                                                                                                                                                                                                                                                                     | SECTION 3  | SECTION 2  |            |

**17 OPERATOR CERTIFICATION**

*I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.*

Signature \_\_\_\_\_

Date \_\_\_\_\_

Printed Name \_\_\_\_\_

E-mail Address \_\_\_\_\_

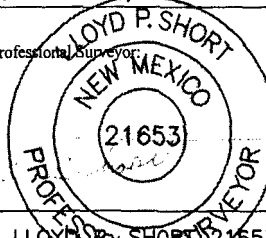
**18 SURVEYOR CERTIFICATION**

*I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.*

DECEMBER 12, 2014

Date of Survey

Signature and Seal of Professional Surveyor

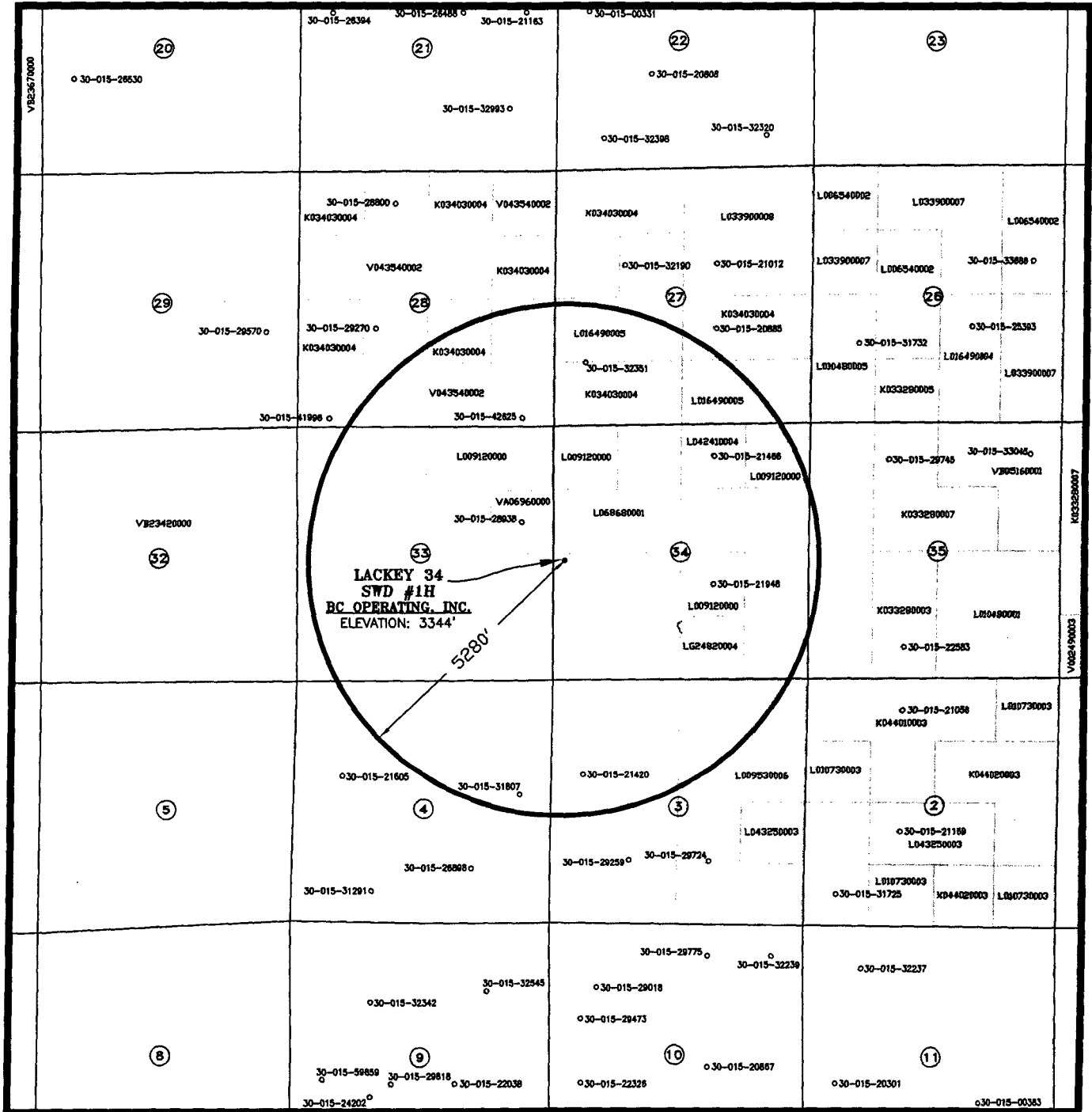


Certificate Number

LLOYD P. SHORT 21653

# EXISTING LEASE & WELL MAP

LACKEY SWD #1  
2480' FSL & 235' FWL  
SEC. 34 TWP. 23-S RGE. 26-E  
SURVEY: N.M.P.M.  
COUNTY: EDDY  
U.S.G.S. TOPOGRAPHIC MAP: KITCHEN COVE, N.M.



SCALE: 1" = 3000'

## LEGEND

EXISTING WELL °

EXISTING LEASE

1500' 0' 1500' 3000'  
SCALE: 1" = 3000'

PREPARED BY:  
R-SQUARED GLOBAL, LLC  
1309 LOUISVILLE AVENUE, MONROE, LA 71201  
318-323-8900 OFFICE  
JOB No. R3525\_001

U.S.G.S. TOPOGRAPHIC MAP: KITCHEN COVE, N.M.



PROPOSED WELL PAD \_\_\_\_\_

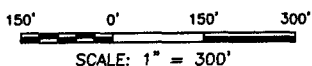
EXISTING WELL PAD \_\_\_\_\_

ARCH SURVEY LIMITS \_\_\_\_\_

EXISTING ROAD \_\_\_\_\_

PROPOSED LEASE ROAD \_\_\_\_\_

FROM THE INTERSECTION OF U.S. HIGHWAY 62 AND STATE HIGHWAY 396 TRAVEL  
NORTHEAST ON U.S. HIGHWAY 62 FOR 3.0 MILES TO EXISTING LEASE ROAD ON THE  
RIGHT. TRAVEL SOUTHEAST ON LEASE ROAD FOR 0.3 MILES TO PROPOSED WELL PAD  
1023 FEET TO THE SOUTHEAST.



PREPARED BY:  
R-SQUARED GLOBAL, LLC  
1309 LOUISVILLE AVENUE, MONROE, LA 71201  
318-323-6900 OFFICE  
JOB No. R3525\_001