

Submit 1 Copy To Appropriate District Office  
 District I - (575) 393-6161  
 1625 N. French Dr., Hobbs, NM 88240  
 District II - (575) 748-1283  
 811 S. First St., Artesia, NM 88210  
 District III - (505) 334-6178  
 1000 Rio Brazos Rd., Aztec, NM 87410  
 District IV - (505) 476-3460  
 1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico  
 Energy, Minerals and Natural Resources

Form C-103  
 Revised August 1, 2011

OIL CONSERVATION DIVISION  
 1220 South St. Francis Dr.  
 Santa Fe, NM 87505

|   |  |   |
|---|--|---|
| <b>SUNDRY NOTICES AND REPORTS ON WELLS</b><br>(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)<br>1. Type of Well: Oil Well <input checked="" type="checkbox"/> Gas Well <input type="checkbox"/> Other <input type="checkbox"/> |  | WELL API NO.<br><b>30-045-35522</b>   |
| 2. Name of Operator <b>Logos Operating, LLC</b>   |  | 5. Indicate Type of Lease<br>STATE <input checked="" type="checkbox"/> FEE <input type="checkbox"/> |
| 3. Address of Operator<br>4001 North Butler Ave, Bldg. 7101, Farmington, NM 87401   |  | 6. State Oil & Gas Lease No.<br><b>LG-1916</b>  |
| 4. Well Location<br>Unit Letter <u>A</u> : <u>962</u> feet from the <u>N</u> line and <u>336</u> feet from the <u>E</u> line<br>Section <u>2</u> Township <u>24N</u> Range <u>8W</u> NMPM County <u>San Juan</u>  |  | 7. Lease Name or Unit Agreement Name<br><b>Roadrunner</b>   |
| 11. Elevation (Show whether DR, RKB, RT, GR, etc.)<br>7334' GL  |  | 8. Well Number <b>1H</b>  |
| 9. OGRID Number <b>289408</b>   |  | 10. Pool name or Wildcat<br><b>Dufers Point-Gallup Dakota</b>                                       |

12. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

|   |  |
|---|--|
| <b>NOTICE OF INTENTION TO:</b><br>PERFORM REMEDIAL WORK <input type="checkbox"/> PLUG AND ABANDON <input type="checkbox"/><br>TEMPORARILY ABANDON <input type="checkbox"/> CHANGE PLANS <input checked="" type="checkbox"/><br>PULL OR ALTER CASING <input type="checkbox"/> MULTIPLE COMPL <input type="checkbox"/><br>DOWNHOLE COMMINGLE <input type="checkbox"/> | <b>SUBSEQUENT REPORT OF:</b><br>REMEDIAL WORK <input type="checkbox"/> ALTERING CASING <input type="checkbox"/><br>COMMENCE DRILLING OPNS. <input type="checkbox"/> P AND A <input type="checkbox"/><br>CASING/CEMENT JOB <input type="checkbox"/> |
| OTHER: <input type="checkbox"/>   | OTHER: <input type="checkbox"/>  |

Hold C104  
 for Directional Survey  
 and "As Drilled" plat

13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 19.15.7.14 NMAC. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.

Logos has changed plans from the APD to drill this well as a horizontal and would like to change the name from Roadrunner 6A to Roadrunner 1H. The surface hole location will remain the same, please see the attached C-102, Drilling Plans and Directional Plans. The Gallup will still be the target zone. Anticipated bottom hole is 330' FNL & 330' FWL, UL D, Section 2, T24N, R08W

OIL CONS. DIV DIST. 3

JUL 15 2014

Spud Date:  Rig Release Date:

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE Tam Sessions TITLE Operations Tech DATE 07/14/2014  
 Type or print name Tamra Sessions E-mail address: tsessions@logosresourcesllc.com PHONE: 505-330-9333

**For State Use Only**  
 APPROVED BY: Charlie Torres TITLE SUPERVISOR DISTRICT # 3 DATE 7-29-14  
 Conditions of Approval (if any): AV

Hold C 04  
 for Directional Survey  
 and "As Drilled" plat

District I  
1625 N. French Dr., Hobbs, NM 88240  
Phone: (575) 393-6161 Fax: (575) 393-0720  
District II  
811 S. First St., Artesia, NM 88210  
Phone: (575) 748-1283 Fax: (575) 748-9720  
District III  
1000 Rio Brazos Road, Aztec, NM 87410  
Phone: (505) 334-6178 Fax: (505) 334-6170  
District IV  
1220 S. St. Francis Dr., Santa Fe, NM 87505  
Phone: (505) 476-3460 Fax: (505) 476-3462

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

Form C-102  
Revised August 1, 2011  
Submit one copy to appropriate  
District Office

OIL CONS. DIV DIST. 3 AMENDED REPORT

JUL 15 2014

WELL LOCATION AND ACREAGE DEDICATION PLAT

|   |  |   |  |  |                                 |
|---|--|---|--|--|---------------------------------|
| <sup>1</sup> API Number<br>30-045-35522 |  | <sup>2</sup> Pool Code<br>19859                     |  | <sup>3</sup> Pool Name<br>Dufers Point - Gallup Dakota |                                 |
| <sup>4</sup> Property Code<br>40163     |  | <sup>5</sup> Property Name<br>ROADRUNNER            |  |  | <sup>6</sup> Well Number<br>1H  |
| <sup>7</sup> OGRID No.<br>289408        |  | <sup>8</sup> Operator Name<br>Logos Operating, LLC. |  |  | <sup>9</sup> Elevation<br>7334' |

<sup>10</sup> Surface Location

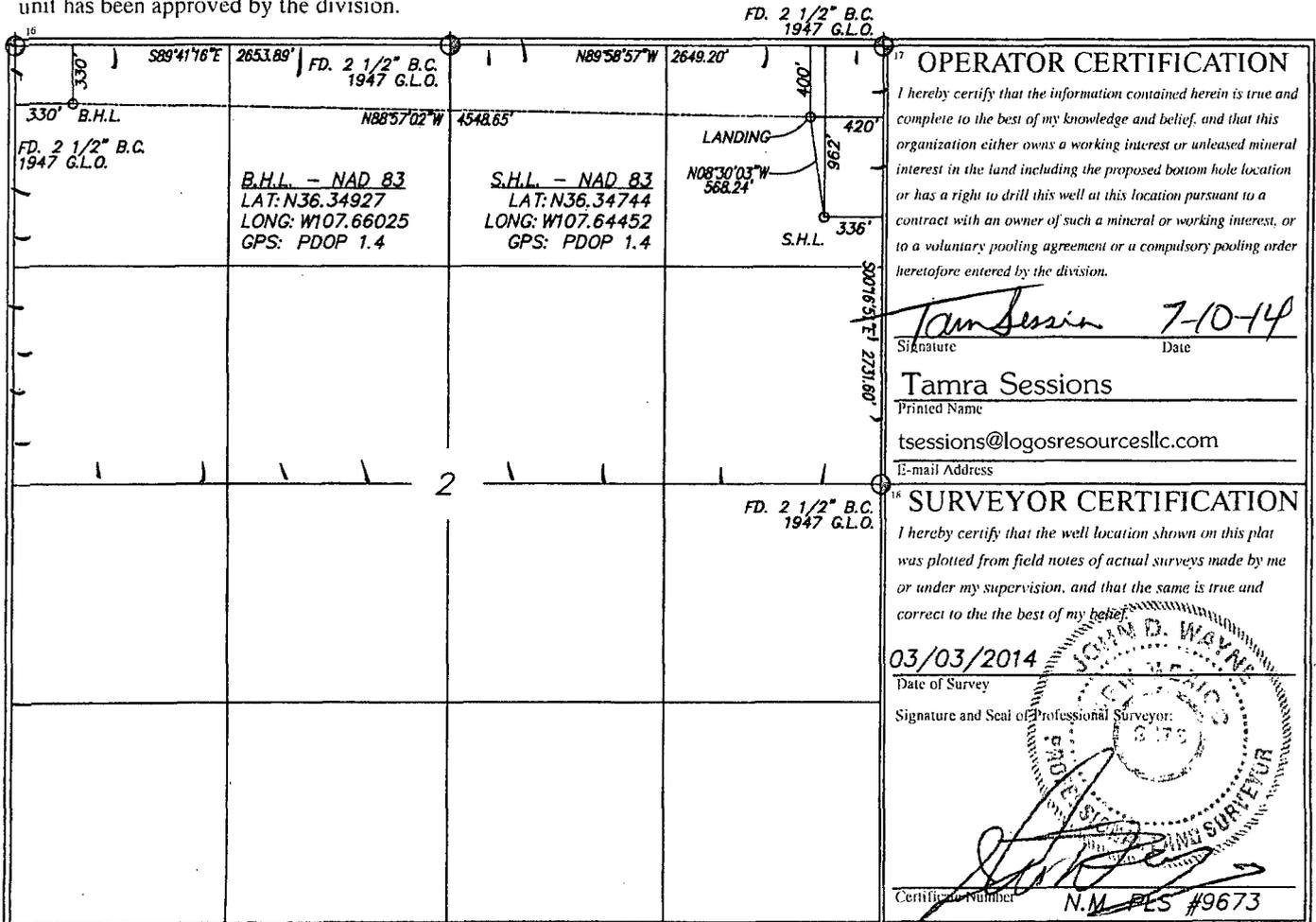
| UL or lot no. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County   |
|---------------|---------|----------|-------|---------|---------------|------------------|---------------|----------------|----------|
| A             | 2       | T24N     | R8W   |         | 962'          | NORTH            | 336'          | EAST           | SAN JUAN |

<sup>11</sup> Bottom Hole Location If Different From Surface

| UL or lot no. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County   |
|---------------|---------|----------|-------|---------|---------------|------------------|---------------|----------------|----------|
| D             | 2       | T24N     | R8W   |         | 330'          | NORTH            | 330'          | WEST           | SAN JUAN |

|  |   |                                  |                         |
|--|---|----------------------------------|-------------------------|
| <sup>12</sup> Dedicated Acres<br>336.8 | <sup>13</sup> Join or Infill<br>N/2 section 2 | <sup>14</sup> Consolidation Code | <sup>15</sup> Order No. |
|--|---|----------------------------------|-------------------------|

No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.



**Attachment To Application For Permit To Drill.  
Drilling program**

LOGOS OPERATING, LLC  
4001 N. Butler, Bldg. 7101  
Farmington, NM 87401  
U.S.A

**ROADRUNNER 1H**

Horizontal Gallup Oil and Gas Well  
Surface Location: 962' FNL – 336' FEL  
Section 2, T24N, R8W  
Ungraded GL Elev = 7334'  
Estimate KB Elev = 7349'  
Lat. = 36.347440 deg N  
Long. = 107.644520 deg W  
NAD83  
San Juan County, New Mexico

Proposed Bottom Hole Location: 330' FNL – 330' FWL  
Section 2, T24N, R8W  
San Juan County, New Mexico

Drilling program written in compliance with onshore Oil and Gas Order No. 1  
(III.D.3, effective May 2007) and Onshore Order No. 2 Dated November 18, 1988

**1. ESTIMATED TOPS FOR IMPORTANT GEOLOGICAL FORMATIONS**

| <u>Formation Tops</u> | <u>Surface (TVD)</u> |
|-----------------------|----------------------|
| Kirtland              | 2177                 |
| Fruitland             | 2565                 |
| Pictured Cliffs       | 2696                 |
| Chacra                | 3135                 |
| Cliffs House          | 4269                 |
| Menefee               | 4285                 |
| Point Lookout         | 5003                 |
| Mancos                | 5198                 |
| Gallup                | 6132                 |
| Top Lower Gallup      | 6302                 |

**Drilling Plan**

Drill 12 1/4" hole to 320' then set 9 5/8" casing. Drill 8 3/4" hole with fresh water mud from 320' MD to kick off point #1 3544' MD and build 2 degrees per 100' to 20 degrees, 47.46 degrees azimuth and hold to approximately 5717' MD.

Trip out of hole and pick up 8 3/4" kick off assembly at 5717' MD. Build angle at 10 deg/100' to 85 degrees inclination and 271.34 degrees azimuth in the Gallup formation at 6274' MD / 6132' TVD where 7" intermediate casing will be set at 6711' MD / 6320' TVD.

7" casing will be set in a legal position 400' FNL & 420' FWL in Section 2.

The 7" casing will be drilled out with a 6 1/8" drilling assembly building angle at 5 deg/100' to 90.34 degrees inclination and 270.28 degree azimuth to 6818' MD / 6324' TVD. Hold 90.34 degrees, 271.34 degrees azimuth and drill to a total depth at 11264' MD / 6298' TVD. Adjustments may be made to the directional program based on geology. Total depth will be 11264' MD / 6298' TVD - 90.34 degrees, 271.34 degrees Azimuth.

The Bottom hole location will be in a legal location at 11264' MD at 330' FNL & 330' FWL of section 2.

A total of 4553' of horizontal hole will be drilled.

## 2. ANTICIPATED DEPTHS OF PROSPECTIVE OIL GAS AND OTHER HYDROCARBONS

Primary objective is the Gallup formation encountered first at 6131' TVD

See formation listings in #1 above for additional zones of interest.

## 3. MINIMUM SPECIFICATIONS FOR PRESSURE CONTROL EQUIPMENT

### Wellhead Equipment 2,000 PSI System (See Exhibit A)

- 9 5/8" slip-on / welded x 11" 2,000 psi casing head.
- One 11" 2,000 psi WP double-ram preventer with one (1) set of blind rams on top & one (1) set of pipe rams on bottom complete with hand wheels and extension arms.
- The choke and kill lines will be connected to outlets between the bottom and top rams, utilizing either the ram body outlet or a drilling spool with side outlets for 2" kill line and minimum 3" choke line
- One 11" x 2,000 psi WP Hydril GK (or equivalent) annular preventer.
- Accumulator - Four Station Koomey (or equivalent) 120 gallon closing unit with remote, backup. The accumulator shall have sufficient capacity to open the hydraulically-controlled gate valve and close all rams plus the annular preventer, with a 50% safety factor and retain a minimum of 200 psi above the precharge on the closing manifold without the use of the closing unit pumps. The reservoir capacity shall be double the usable accumulator capacity, and the fluid level shall be maintained at the manufacturer's recommendations.
- The BOP system shall have two (2) independent power sources (electric and air) available for powering the closing unit pumps. Sufficient nitrogen bottles are suitable as a backup power source only, and shall be recharged when the pressure falls below manufacturer's specification.
- A valve shall be installed in the closing line as close as possible to the annular preventer to act as a locking device. This valve shall be maintained in the open position and shall be closed only when the power source for the accumulator system is inoperative.

### All BOP equipment will be hydraulically operated with controls accessible both on the rig floor.

The wellhead BOP equipment will be nipped-up on the 9-5/8" x 11" 2,000 psi WP casing head prior to drilling out from under surface casing. All ram preventers and related equipment will be tested to 2,000 psi for 10 minutes. Annular preventers will be tested to 50% of rated working pressure for 10 minutes. Surface casing will be tested to 70% of internal yield pressure. All preventers and surface casing will be tested before drilling out of surface casing. BOP equipment will be tested every 14 days, after any repairs are made to the BOP equipment, and after the BOP equipment is subjected to pressure. Annular preventers will be functionally operated at least once per week. Pipe rams will be activated daily and blind rams shall be activated each trip or at least weekly. The New Mexico Oil & Gas Conservation Commission and the BLM will be notified 24 hours in advance of testing of BOPE.

#### 4. PROPOSED BIT AND CASING PROGRAM

##### A. Bit Program

12-1/4" Surface Hole = Surface to 320'

8-3/4" = 320' to 6711' = 7" Casing point

6-1/8" Lateral = 6711' MD to 11264' MD = Gallup Pay Zone Horizontal

##### B. Casing Program – all casing strings are new casing

| Casing & Hole Size | Weight   | Grade     | Coupling | Setting Depth (MD) | Comments   |
|--------------------|----------|-----------|----------|--------------------|--|
| 9-5/8" (12 1/4")   | 36 ppf   | K or J-55 | LT&C     | 0' - 320'          | New casing.<br>Cement to surface.  |
| 7" (8 3/4")        | 23 ppf   | K or J-55 | LT&C     | 0' - 6711' MD      | New Casing.<br>Cement to surface with cement.  |
| 4-1/2" (6 1/8")    | 11.6 ppf | P-110     | LT&C     | 6450' - 11264' MD  | New Casing - Horizontal Hole<br>Cemented full length with foam cement - TOL at 60 degrees. |

**Casing strings below the conductor casing will be tested to .22 psi per foot of casing string length or 1500 psi, whichever is greater, but not to exceed 70% of the minimum internal yield.**

Minimum casing design factors used:

|                |       |
|----------------|-------|
| Collapse -     | 1.125 |
| Burst -        | 1.0   |
| Jt. Strength - | 1.60  |

Surface casing shall have a minimum of 1 centralizer per joint on the bottom three (3) joints, starting with the shoe joint for a total of (4) minimum centralizers. Centralizers will be placed 10' above the shoe on the shoe joint, on the 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> casing collars.

The intermediate casing will be centralized using 1 centralizer the first 6 jts and spaced appropriately through the curve section of the well-bore and then spaced +/- 1 centralizer / 4 jts through the remainder of the cement column, using approximately 40 centralizers.

#### 5. PROPOSED CEMENTING PROGRAM

The proposed cementing program has been designed to protect and/or isolate all usable water zones, potentially productive zones, lost circulation zones, abnormally pressured zones, and any prospectively valuable deposits of minerals. Any isolating medium other than cement shall receive approval prior to use. The casing setting depth shall be calculated to position the casing seat opposite a competent formation which will contain the maximum pressure to which it will be exposed during normal drilling operations. All indications of useable water shall be reported.

- The proposed cementing program is as follows:

Top plugs shall be used to reduce contamination of cement by displacement fluid. A bottom plug or other acceptable technique, such as a pre-flush fluid, inner string cement method, etc. shall be utilized to help isolate the cement from contamination by the mud fluid being displaced ahead of the cement slurry.

**Surface Casing Single Stage Job – (0-320’):**

**Excess – 100% over gauge hole – 12-1/4” hole and 9-5/8” casing (0.3132ft3/ft)**

**Top of Cement - Surface**

Primary Cement  
 HALCEM (TM) SYSTEM  
 0.125 lbm/sk Poly-E-Flake (Lost Circulation Additive)  
 0.4 % Halad(R)-344 (Low Fluid Loss Control)

Fluid Weight 15.80 lbm/gal  
 Slurry Yield: 1.15 ft<sup>3</sup>/sk  
 Total Mixing Fluid: 4.94 Gal/sk  
 Top of Fluid: 0 ft  
 Calculated Fill: 500 ft  
 Volume: 55.8 bbl 313.2  
 Calculated Sacks: 273 sks

**Intermediate Casing – One Stage Stage Job (0-6711’ MD):**

**Excess – 50% over gauge hole – 8-3/4” hole and 7” casing (0.1503 ft3/ft)**

**Top of Cement – Surface**

Foamed Lead Cement  
 ELASTISEAL (TM) SYSTEM  
 0.2 % Versaset (Thixotropic Additive)  
 0.15 % HALAD-766 (Low Fluid Loss Control)  
 1.5 % CHEM - FOAMER 760, TOTETANK (Foamer)

Fluid Weight 13 lbm/gal  
 Slurry Yield: 1.43 ft<sup>3</sup>/sk  
 Total Mixing Fluid: 6.74 Gal/sk  
 Top of Fluid: 0 ft  
 Calculated Fill: 5760 ft  
 Volume: 231 bbl  
 Calculated Sacks: 908 sks

**Tail Cement**

HALCEM (TM) SYSTEM  
 0.2 % Versaset (Thixotropic Additive)  
 0.15 % HALAD-766 (Low Fluid Loss Control)

Fluid Weight 13.50 lbm/gal  
 Slurry Yield: 1.29 ft<sup>3</sup>/sk  
 Total Mixing Fluid: 5.70 Gal/sk  
 Top of Fluid: 5760 ft  
 Calculated Fill: 500 ft  
 Volume: 20  
 Calculated Sacks: 90 sks

**Primary Cement – Cap Cement**

HALCEM (TM) SYSTEM  
 2 % Calcium Chloride (Accelerator)

Fluid Weight 15.80 lbm/gal  
 Slurry Yield: 1.17 ft<sup>3</sup>/sk  
 Total Mixing Fluid: 5.02 Gal/sk  
 Calculated Fill: 500 ft  
 Volume: 20.77 bbl  
 Calculated Sacks: 100 sks

**Detailed Pumping Schedule**

| Fluid # | Fluid Type | Fluid Name         | Surface Density lbm/gal | Estimated Avg Rate bbl/min | Downhole Volume |
|---------|------------|--------------------|-------------------------|----------------------------|-----------------|
| 1       | Spacer     | Fresh Water Spacer | 8.3                     |                            | 10 bbl          |
| 2       | Spacer     | CHEMICAL WASH      | 8.4                     |                            | 40 bbl          |
| 3       | Spacer     | Fresh Water Spacer | 8.3                     |                            | 10 bbl          |
| 4       | Cement     | Foamed Lead Cement | 13.0                    |                            | 908 sks         |
| 5       | Cement     | Tail Cement        | 13.5                    |                            | 90 sks          |
| 6       | Spacer     | Displacement       | 8.3                     |                            |                 |
| 7       | Cement     | Cap Cement         | 15.8                    |                            | 100 sks         |

**Foam Output Parameter Summary:**

| Fluid #        | Fluid Name         | Unfoamed Liquid Volume | Beginning Density lbm/gal | Ending Density lbm/gal | Beginning Rate scf/bbl | Ending Rate scf/bbl |
|----------------|--------------------|------------------------|---------------------------|------------------------|------------------------|---------------------|
| <b>Stage 1</b> |                    |                        |                           |                        |                        |                     |
| 4              | Foamed Lead Cement | 200bbl                 | 9.5                       | 9.5                    | 4.2                    | 372.9               |

**Foam Design Specifications:**

|                               |                  |                  |             |
|-------------------------------|------------------|------------------|-------------|
| Foam Calculation Method:      | Constant Density | Calculated Gas = | 23129.9 scf |
| Backpressure:                 | 14 psig          | Additional Gas = | 50000 scf   |
| Bottom Hole Circulating Temp: | 105 degF         | Total Gas =      | 73129.9 scf |
| Mud Outlet Temperature:       | 85 degF          |                  |             |

**Cement volumes are minimums and may be adjusted based on caliper log results.**

**Production Casing – Single Stage Job (6450' - 11264' MD):**

**Excess – 50% over gauge hole – 6-1/8" hole and 4-1/2" casing (0.0942 ft<sup>3</sup>/ft)**

**Top of Cement – Top of Liner.**

**Lead Cement - Cap Cement**

ELASTISEAL (TM) SYSTEM

0.2 % Versaset (Thixotropic Additive)

0.15 % HALAD-766 (Low Fluid Loss Control)

0.2 % Halad(R)-344 (Low Fluid Loss Control)

|                     |                          |
|---------------------|--------------------------|
| Fluid Weight        | 13 lbm/gal               |
| Slurry Yield:       | 1.43 ft <sup>3</sup> /sk |
| Total Mixing Fluid: | 6.75 Gal/sk              |
| Top of Fluid:       | 5300 ft                  |
| Calculated Fill:    | 300 ft                   |
| Volume:             | 7.15 bbl                 |
| Calculated Sacks:   | 30 sks                   |

**Foamed Lead Cement**

ELASTISEAL (TM) SYSTEM

0.2 % Versaset (Thixotropic Additive)

0.15 % HALAD-766 (Low Fluid Loss Control)

2.5 % CHEM - FOAMER 760, TOTETANK (Foamer)

0.2 % Halad(R)-344 (Low Fluid Loss Control)

|                     |                          |
|---------------------|--------------------------|
| Fluid Weight        | 13 lbm/gal               |
| Slurry Yield:       | 1.43 ft <sup>3</sup> /sk |
| Total Mixing Fluid: | 6.75 Gal/sk              |
| Top of Fluid:       | 5600 ft                  |
| Calculated Fill:    | 3914 ft                  |
| Volume:             | 99 bbl                   |
| Calculated Sacks:   | 387 sks                  |

**Tail Cement**

ELASTISEAL (TM) SYSTEM

0.2 % Versaset (Thixotropic Additive)

0.15 % HALAD-766 (Low Fluid Loss Control)

0.05 % SA-1015 (Suspension Agent)

|                     |                          |
|---------------------|--------------------------|
| Fluid Weight        | 13.50 lbm/gal            |
| Slurry Yield:       | 1.28 ft <sup>3</sup> /sk |
| Total Mixing Fluid: | 5.64 Gal/sk              |
| Top of Fluid:       | 9514 ft                  |
| Calculated Fill:    | 1069 ft                  |
| Volume:             | 20.85 bbl                |
| Calculated Sacks:   | 100 sks                  |

**Detailed Pumping Schedule**

| Fluid # | Fluid Type | Fluid Name               | Surface Density<br>lbm/gal | Estimated<br>Avg Rate<br>bbl/min | Downhole<br>Volume |
|---------|------------|--------------------------|----------------------------|----------------------------------|--------------------|
| 1       | Spacer     | Fresh Water Spacer       | 8.3                        |                                  | 10 bbl             |
| 2       | Spacer     | CHEMICAL WASH            | 8.4                        |                                  | 40 bbl             |
| 3       | Spacer     | Fresh Water Spacer       | 8.3                        |                                  | 10 bbl             |
| 4       | Cement     | Cap Cement               | 13.0                       |                                  | 30 sks             |
| 5       | Cement     | Foamed Lead Cement       | 13.0                       |                                  | 387 sks            |
| 6       | Cement     | Tail Cement              | 13.5                       |                                  | 100 sks            |
| 7       | Spacer     | MMCR Spacer              | 8.3                        |                                  | 20 bbl             |
| 8       | Spacer     | Fresh Water Displacement | 8.3                        |                                  |                    |

**Foam Output Parameter Summary:**

| Fluid #        | Fluid Name         | Unfoamed<br>Liquid<br>Volume | Beginning<br>Density<br>lbm/gal | Ending<br>Density<br>lbm/gal | Beginning<br>Rate scf/bbl | Ending Rate<br>scf/bbl |
|----------------|--------------------|------------------------------|---------------------------------|------------------------------|---------------------------|------------------------|
| <b>Stage 1</b> |                    |                              |                                 |                              |                           |                        |
| 5              | Foamed Lead Cement | 50.98bbl                     | 10.0                            | 10.0                         | 303.8                     | 509.4                  |

**Foam Design Specifications:**

|                               |                  |                  |             |
|-------------------------------|------------------|------------------|-------------|
| Foam Calculation Method:      | Constant Density | Calculated Gas = | 20792.1 scf |
| Backpressure:                 | 14 psig          | Additional Gas = | 50000 scf   |
| Bottom Hole Circulating Temp: | 158 degF         | Total Gas =      | 70792.1 scf |
| Mud Outlet Temperature:       | 100 degF         |                  |             |

Production liner clarification: Utilizing foam cement for zonal isolation in the production liner.

Actual volumes will be calculated and determined by conditions onsite. All cement slurries will meet or exceed minimum BLM and New Mexico Oil Conservation Division requirements. Slurries used will be the slurries listed above or equivalent slurries depending on service provider selected. Cement yields may change depending on slurries selected.

All waiting on cement times shall be a minimum of 8 hours or adequate to achieve a minimum of 500 psi compressive strength at the casing shoe prior to drilling out.

## 6. PROPOSED DRILLING FLUIDS PROGRAM

### A. Vertical Portion

| Hole Size (in) | TVD (ft)   | Mud Type         | Density (lb/gal) | Viscosity (sec/qt) | Fluid Loss (cc) |
|----------------|------------|------------------|------------------|--------------------|-----------------|
| 12-1/4"        | 0-320'     | Fresh Water      | 8.4-8.6          | 60-70              | NC              |
| 8-3/4"         | 320'-3544' | Fresh Water LSND | 8.5-8.8          | 40-50              | 8-10            |

### B. Kick off to Horizontal Lateral

| Hole Size (in) | TVD/MD (ft)                 | Mud Type                | Density (lb/gal) | Viscosity (sec/qt) | Fluid Loss (CC) |
|----------------|-----------------------------|-------------------------|------------------|--------------------|-----------------|
| 8-3/4"         | 3544' MD (KOP)-<br>6711' MD | Fresh Water LSND        | 8.5-8.8          | 40-50              | 8-10            |
| 6-1/8"         | 6818' MD - 11264'<br>MD     | Synthetic Oil Based Mud | 7.0-9.0          | 15-25              | <1              |

- There will be sufficient mud on location to control a blowout should one occur. Mud flow and volume will be monitored both visually and with electronic pit volume totalizers. Mud tests shall be performed every 24 hours after mudding up to determine, as applicable: density, viscosity, gel strength, filtration, and pH.
- A temporary pit will be used during the vertical drilling of the well. The drill cuttings and drilling fluids will be placed in a reserve pit. The reserve pit will be lined with a 20 mil string re-enforced material and constructed to meet the NMOCD pit guidelines. The reserve pit will be fenced prior to drilling. After drilling, any free liquids in the pit will be disposed of at the appropriate waste disposal facilities. The solids in the reserve pit will be allowed to dry, tested, and buried according to NMOCD pit rules.
- A closed-loop system will be used to recover drilling fluid in the horizontal phase of the well during oil-based operations. Above-ground tanks will be utilized to hold cuttings and fluids for rig operations. A frac tank will be on location to store fresh water. Waste will be disposed of properly at an EPA-approved hazardous waste facility. Fresh water cuttings will be disposed of at Basin Disposal, Inc. and/or Industrial Ecosystems, Inc.

## 7. TESTING, CORING and LOGGING

- Drill Stem Testing - None anticipated
- Coring - None anticipated.
- Mud Logging - Mud loggers will be on location from intermediate casing point to TD.
- Logging - See Below
- Gamma Ray from surface casing point to TD

Cased Hole:

CBL/CCL/GRNDL will be run as needed for perforating control

## 8. ABNORMAL PRESSURES & HYDROGEN SULFIDE

The anticipated bottom hole pressure is +/- 2947 psi based on a 9.0 ppg at 6298' TVD of the landing point of the horizontal. No abnormal pressure or temperatures are anticipated.

No hydrogen sulfide gas is anticipated, however, if H<sub>2</sub>S is encountered, the guidelines in Onshore Order No. 6 will be followed.

## 9. ANTICIPATED START DATE AND DURATION OF OPERATIONS

Drilling is estimated to commence on May 16, 2014. It is anticipated that completion operations will begin within 30 days after the well has been drilled depending on fracture treatment schedules with various pumping service companies.

It is anticipated that the drilling of this well will take approximately 45 days.

*Does not apply to this well \**

\* Based on the following rulings we are going to TD the well at 250' from the FEL, but due to the length of the RSI sleeve the first perf will be greater than 330' FEL. Although this horizontal well will be drilled past the applicable setbacks, an unorthodox location application is not required because the completed interval in this well, as defined by 19.15.16.7 B(1) NMAC, will be entirely within the applicable setbacks. This approach complies with all applicable rules, including 19.15.16.14 A(3) NMAC, 19.15.16.14 B(2) NMAC, 19.15.16.15 B(2) NMAC, and 19.15.16.15 B(4) NMAC.

## CLOSED-LOOP SYSTEM DESIGN PLAN

The closed-loop system will consist of a series of temporary above-ground storage tanks and/or haul-off bins suitable for holding the cuttings and fluids from drilling operations. The closed loop system will not entail temporary pits, below-grade storage tanks, below-grade sumps, or drying pads.

Design considerations include:

- The closed-loop system will be signed in accordance with 19.15.17.11 NMAC.
- The closed-loop system storage tanks will be of adequate volume to ensure confinement of all fluids and provide sufficient freeboard to prevent uncontrolled releases.
- Topsoil will be salvaged and stored for use in reclamation activities.
- The closed-loop system storage tanks will be placed in bermed secondary containment sized to contain a minimum of 110 percent of the volume of the largest storage tank.

## CLOSED-LOOP SYSTEM OPERATING & MAINTENANCE PLAN

The closed-loop system will be operated and maintained to contain liquids and solids; minimize the amount of drilling fluids and cuttings that require disposal; maximize the amount of drilling fluid recycled and reused in the drilling process; isolate drilling wastes from the environment; prevent contamination of fresh water; and protect public health and the environment.

Operation and maintenance considerations include:

- Fluid levels will be maintained to provide sufficient freeboard to prevent over-topping.
- Visual inspections will be conducted on a daily basis to identify any potential leaks and to ensure that the closed-loop system storage tanks have sufficient freeboard to prevent over-topping.
- Only drilling fluids or cuttings intrinsic to, used by, or generated from, drilling operations will be stored in the closed-loop system storage tanks. Hazardous waste, miscellaneous solid waste, and/or debris will not be stored in the storage tanks.
- The OCD District Office will be notified within 48 hours of discovery of a leak in the closed-loop drilling system. If a leak is discovered, all liquid will be removed within 48 hours and the damage repaired.

## CLOSED-LOOP SYSTEM CLOSURE PLAN

The closed-loop system will be closed in accordance with 19.15.17.13 NMAC. Closure considerations include:

- Drilling fluids will be recycled and transferred to other permitted closed-loop systems or returned to the vendor for reuse, as practical.
- Residual fluids will be pulled from the storage tanks, mixed with saw dust or similar absorbent material, and disposed of at Industrial Ecosystem, Inc. waste disposal facilities.
- Remaining cuttings or sludges will be vacuumed from the storage tanks and disposed of at the Envirotech, Inc and/or Industrial Ecosystem, Inc. waste disposal facilities.
- Storage tanks will be removed from the well location during the rig move.
- The well pad will be reclaimed and seeded in accordance with subsections G, Hand I of 19.15.17.13 NMAC.

# Well Control Equipment Schematic for 2M Service

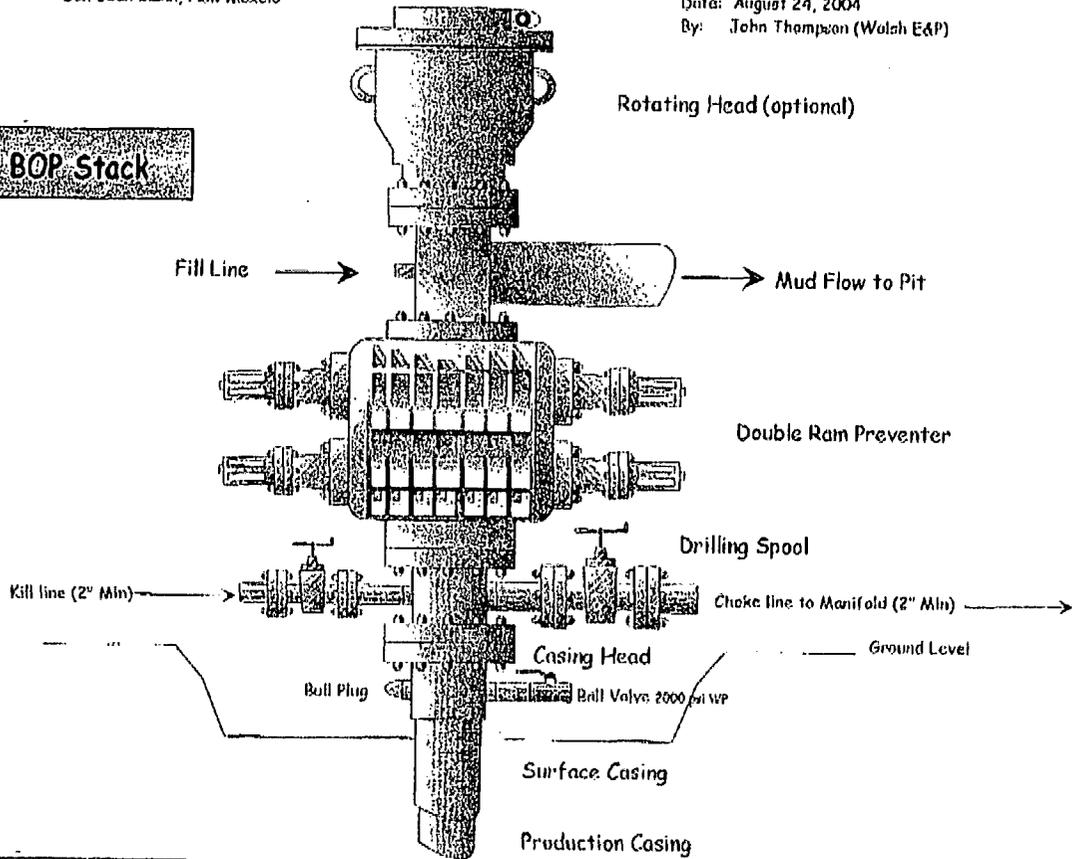
Attachment to Drilling Technical Program

## Exhibit #1 Typical BOP setup

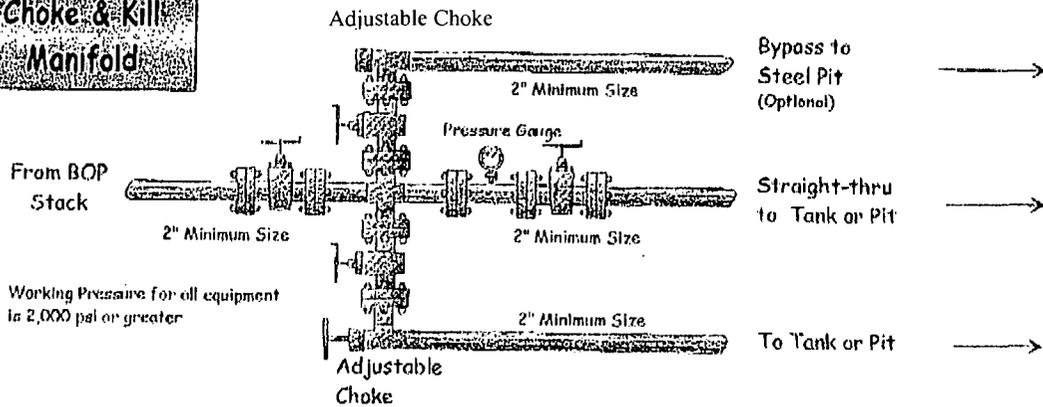
Location: San Juan Basin, New Mexico

Date: August 24, 2004  
By: John Thompson (Walch E&P)

**BOP Stack**



**Choke & Kill  
Manifold**



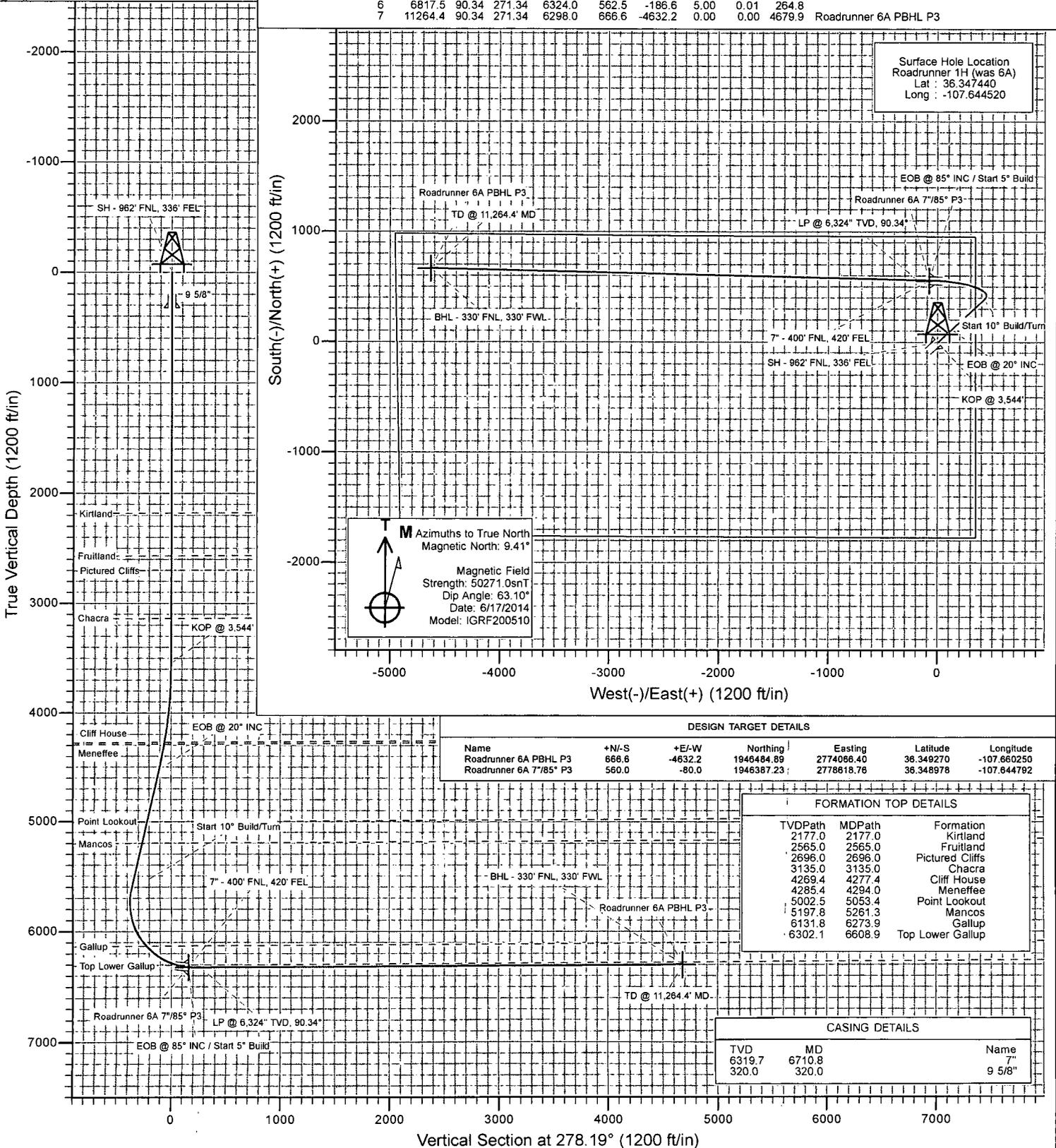


Project: San Juan County, NM  
 Site: S2-T24N-R8W (Roadrunner Pad)  
 Well: Roadrunner 1H (was 6A)  
 Wellbore: HZ  
 Design: Plan #3



Plan #3  
 Roadrunner 1H (was 6A)  
 145XXX, SC  
 KB=15' @ 7349.0ft (Aztec #222)  
 Ground Elevation @ 7334.0  
 North American Datum 1983  
 Well Roadrunner 1H (was 6A), True North

| SECTION DETAILS |         |       |        |        |       |         |       |         |        |                         |
|-----------------|---------|-------|--------|--------|-------|---------|-------|---------|--------|-------------------------|
| Sec             | MD      | Inc   | Azi    | TVD    | +N/-S | +E/-W   | Dleg  | TFace   | VSect  | Target                  |
| 1               | 0.0     | 0.00  | 0.00   | 0.0    | 0.0   | 0.0     | 0.00  | 0.00    | 0.0    |                         |
| 2               | 3544.0  | 0.00  | 0.00   | 3544.0 | 0.0   | 0.0     | 0.00  | 0.00    | 0.0    |                         |
| 3               | 4544.0  | 20.00 | 47.46  | 4523.8 | 116.8 | 127.3   | 2.00  | 47.46   | -109.4 |                         |
| 4               | 5716.6  | 20.00 | 47.46  | 5625.7 | 388.0 | 422.8   | 0.00  | 0.00    | -363.2 |                         |
| 5               | 6710.8  | 85.00 | 271.34 | 6319.7 | 560.0 | -80.0   | 10.00 | -135.58 | 158.9  | Roadrunner 6A 7"/85° P3 |
| 6               | 6817.5  | 90.34 | 271.34 | 6324.0 | 562.5 | -186.6  | 5.00  | 0.01    | 264.8  |                         |
| 7               | 11264.4 | 90.34 | 271.34 | 6298.0 | 666.6 | -4632.2 | 0.00  | 0.00    | 4679.9 | Roadrunner 6A PBHL P3   |



Surface Hole Location  
 Roadrunner 1H (was 6A)  
 Lat : 36.347440  
 Long : -107.644520

**M** Azimuths to True North  
 Magnetic North: 9.41°  
 Magnetic Field  
 Strength: 50271.0snT  
 Dip Angle: 63.10°  
 Date: 6/17/2014  
 Model: IGRF200510

| DESIGN TARGET DETAILS   |       |         |            |            |           |             |
|-------------------------|-------|---------|------------|------------|-----------|-------------|
| Name                    | +N/-S | +E/-W   | Northing   | Easting    | Latitude  | Longitude   |
| Roadrunner 6A PBHL P3   | 666.6 | -4632.2 | 1946484.89 | 2774056.40 | 36.349270 | -107.660250 |
| Roadrunner 6A 7"/85° P3 | 560.0 | -80.0   | 1946387.23 | 2778818.76 | 36.348978 | -107.644792 |

| FORMATION TOP DETAILS |        |                  |
|-----------------------|--------|------------------|
| TVDPath               | MDPath | Formation        |
| 2177.0                | 2177.0 | Kirtland         |
| 2565.0                | 2565.0 | Fruitland        |
| 2696.0                | 2696.0 | Pictured Cliffs  |
| 3135.0                | 3135.0 | Chacra           |
| 4269.4                | 4277.4 | Cliff House      |
| 4285.4                | 4294.0 | Menefee          |
| 5002.5                | 5053.4 | Point Lookout    |
| 5197.8                | 5261.3 | Mancos           |
| 6131.8                | 6273.9 | Gallup           |
| 6302.1                | 6608.9 | Top Lower Gallup |

| CASING DETAILS |        |        |
|----------------|--------|--------|
| TVD            | MD     | Name   |
| 6319.7         | 6710.8 | 7"     |
| 320.0          | 320.0  | 9 5/8" |

Vertical Section at 278.19° (1200 ft/in)

# Cathedral Energy Services

## Planning Report

|                  |                              |                                     |                                |
|------------------|------------------------------|-------------------------------------|--------------------------------|
| <b>Database:</b> | USA:EDM 5000 Multi Users DB  | <b>Local Co-ordinate Reference:</b> | Well Roadrunner 1H (was 6A)    |
| <b>Company:</b>  | LOGOS Operating LLC          | <b>TVD Reference:</b>               | KB=15' @ 7349.0ft (Aztec #222) |
| <b>Project:</b>  | San Juan County, NM          | <b>MD Reference:</b>                | KB=15' @ 7349.0ft (Aztec #222) |
| <b>Site:</b>     | S2-T24N-R8W (Roadrunner Pad) | <b>North Reference:</b>             | True                           |
| <b>Well:</b>     | Roadrunner 1H (was 6A)       | <b>Survey Calculation Method:</b>   | Minimum Curvature              |
| <b>Wellbore:</b> | HZ                           |                                     |                                |
| <b>Design:</b>   | Plan #3                      |                                     |                                |

|                    |                           |                      |                |
|--------------------|---------------------------|----------------------|----------------|
| <b>Project:</b>    | San Juan County, NM       |                      |                |
| <b>Map System:</b> | US State Plane 1983       | <b>System Datum:</b> | Mean Sea Level |
| <b>Geo Datum:</b>  | North American Datum 1983 |                      |                |
| <b>Map Zone:</b>   | New Mexico Western Zone   |                      |                |

|                              |                              |                     |                 |                          |             |
|------------------------------|------------------------------|---------------------|-----------------|--------------------------|-------------|
| <b>Site:</b>                 | S2-T24N-R8W (Roadrunner Pad) |                     |                 |                          |             |
| <b>Site Position:</b>        |                              | <b>Northing:</b>    | 1,945,827.38 ft | <b>Latitude:</b>         | 36.347440   |
| <b>From:</b>                 | Lat/Long                     | <b>Easting:</b>     | 2,778,699.85 ft | <b>Longitude:</b>        | -107.644520 |
| <b>Position Uncertainty:</b> | 0.0 ft                       | <b>Slot Radius:</b> | 13.200 in       | <b>Grid Convergence:</b> | 0.11 °      |

|                             |                        |        |                            |                 |                      |             |
|-----------------------------|------------------------|--------|----------------------------|-----------------|----------------------|-------------|
| <b>Well:</b>                | Roadrunner 1H (was 6A) |        |                            |                 |                      |             |
| <b>Well Position</b>        | <b>+N-S</b>            | 0.0 ft | <b>Northing:</b>           | 1,945,827.38 ft | <b>Latitude:</b>     | 36.347440   |
|                             | <b>+E-W</b>            | 0.0 ft | <b>Easting:</b>            | 2,778,699.85 ft | <b>Longitude:</b>    | -107.644520 |
| <b>Position Uncertainty</b> |                        | 0.0 ft | <b>Wellhead Elevation:</b> | 0.0 ft          | <b>Ground Level:</b> | 7,334.0 ft  |

|                  |                   |                    |                    |                  |                       |
|------------------|-------------------|--------------------|--------------------|------------------|-----------------------|
| <b>Wellbore</b>  | HZ                |                    |                    |                  |                       |
| <b>Magnetics</b> | <b>Model Name</b> | <b>Sample Date</b> | <b>Declination</b> | <b>Dip Angle</b> | <b>Field Strength</b> |
|                  |                   |                    | (°)                | (°)              | (nT)                  |
|                  | IGRF200510        | 6/17/2014          | 9.41               | 63.10            | 50,271                |

|                          |                         |             |                      |                  |
|--------------------------|-------------------------|-------------|----------------------|------------------|
| <b>Design</b>            | Plan #3                 |             |                      |                  |
| <b>Audit Notes:</b>      |                         |             |                      |                  |
| <b>Version:</b>          | <b>Phase:</b>           | PLAN        | <b>Tie On Depth:</b> | 0.0              |
| <b>Vertical Section:</b> | <b>Depth From (TVD)</b> | <b>+N-S</b> | <b>+E-W</b>          | <b>Direction</b> |
|                          | (ft)                    | (ft)        | (ft)                 | (°)              |
|                          | 0.0                     | 0.0         | 0.0                  | 278.19           |

| Plan Sections       |                 |             |                     |           |           |                       |                      |                     |         |                      |
|---------------------|-----------------|-------------|---------------------|-----------|-----------|-----------------------|----------------------|---------------------|---------|----------------------|
| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N-S (ft) | +E-W (ft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) | TFO (°) | Target               |
| 0.0                 | 0.00            | 0.00        | 0.0                 | 0.0       | 0.0       | 0.00                  | 0.00                 | 0.00                | 0.00    |                      |
| 3,544.0             | 0.00            | 0.00        | 3,544.0             | 0.0       | 0.0       | 0.00                  | 0.00                 | 0.00                | 0.00    |                      |
| 4,544.0             | 20.00           | 47.46       | 4,523.8             | 116.8     | 127.3     | 2.00                  | 2.00                 | 0.00                | 47.46   |                      |
| 5,716.6             | 20.00           | 47.46       | 5,625.7             | 388.0     | 422.8     | 0.00                  | 0.00                 | 0.00                | 0.00    |                      |
| 6,710.8             | 85.00           | 271.34      | 6,319.7             | 560.0     | -80.0     | 10.00                 | 6.54                 | -13.69              | -135.58 | Roadrunner 6A 7°/85° |
| 6,817.5             | 90.34           | 271.34      | 6,324.0             | 562.5     | -186.6    | 5.00                  | 5.00                 | 0.00                | 0.01    |                      |
| 11,264.4            | 90.34           | 271.34      | 6,298.0             | 666.6     | -4,632.2  | 0.00                  | 0.00                 | 0.00                | 0.00    | Roadrunner 6A PBHL   |

# Cathedral Energy Services

## Planning Report

|                  |                              |                                     |                                |
|------------------|------------------------------|-------------------------------------|--------------------------------|
| <b>Database:</b> | USA EDM 5000 Multi Users DB  | <b>Local Co-ordinate Reference:</b> | Well Roadrunner 1H (was 6A)    |
| <b>Company:</b>  | LOGOS Operating LLC          | <b>TVD Reference:</b>               | KB=15' @ 7349.0ft (Aztec #222) |
| <b>Project:</b>  | San Juan County, NM          | <b>MD Reference:</b>                | KB=15' @ 7349.0ft (Aztec #222) |
| <b>Site:</b>     | S2-T24N-R8W (Roadrunner Pad) | <b>North Reference:</b>             | True                           |
| <b>Well:</b>     | Roadrunner 1H (was 6A)       | <b>Survey Calculation Method:</b>   | Minimum Curvature              |
| <b>Wellbore:</b> | HZ                           |                                     |                                |
| <b>Design:</b>   | Plan #3                      |                                     |                                |

| Planned Survey      |                 |             |                     |            |            |                       |                       |                      |                         |
|---------------------|-----------------|-------------|---------------------|------------|------------|-----------------------|-----------------------|----------------------|-------------------------|
| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Vertical Section (ft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Comments / Formations   |
| 0.0                 | 0.00            | 0.00        | 0.0                 | 0.0        | 0.0        | 0.0                   | 0.00                  | 0.00                 |                         |
| 0.5                 | 0.00            | 0.00        | 0.5                 | 0.0        | 0.0        | 0.0                   | 0.00                  | 0.00                 | SH - 962' FNL, 336' FEL |
| 100.0               | 0.00            | 0.00        | 100.0               | 0.0        | 0.0        | 0.0                   | 0.00                  | 0.00                 |                         |
| 200.0               | 0.00            | 0.00        | 200.0               | 0.0        | 0.0        | 0.0                   | 0.00                  | 0.00                 |                         |
| 300.0               | 0.00            | 0.00        | 300.0               | 0.0        | 0.0        | 0.0                   | 0.00                  | 0.00                 |                         |
| 320.0               | 0.00            | 0.00        | 320.0               | 0.0        | 0.0        | 0.0                   | 0.00                  | 0.00                 | 9 5/8"                  |
| 400.0               | 0.00            | 0.00        | 400.0               | 0.0        | 0.0        | 0.0                   | 0.00                  | 0.00                 |                         |
| 500.0               | 0.00            | 0.00        | 500.0               | 0.0        | 0.0        | 0.0                   | 0.00                  | 0.00                 |                         |
| 600.0               | 0.00            | 0.00        | 600.0               | 0.0        | 0.0        | 0.0                   | 0.00                  | 0.00                 |                         |
| 700.0               | 0.00            | 0.00        | 700.0               | 0.0        | 0.0        | 0.0                   | 0.00                  | 0.00                 |                         |
| 800.0               | 0.00            | 0.00        | 800.0               | 0.0        | 0.0        | 0.0                   | 0.00                  | 0.00                 |                         |
| 900.0               | 0.00            | 0.00        | 900.0               | 0.0        | 0.0        | 0.0                   | 0.00                  | 0.00                 |                         |
| 1,000.0             | 0.00            | 0.00        | 1,000.0             | 0.0        | 0.0        | 0.0                   | 0.00                  | 0.00                 |                         |
| 1,100.0             | 0.00            | 0.00        | 1,100.0             | 0.0        | 0.0        | 0.0                   | 0.00                  | 0.00                 |                         |
| 1,200.0             | 0.00            | 0.00        | 1,200.0             | 0.0        | 0.0        | 0.0                   | 0.00                  | 0.00                 |                         |
| 1,300.0             | 0.00            | 0.00        | 1,300.0             | 0.0        | 0.0        | 0.0                   | 0.00                  | 0.00                 |                         |
| 1,400.0             | 0.00            | 0.00        | 1,400.0             | 0.0        | 0.0        | 0.0                   | 0.00                  | 0.00                 |                         |
| 1,500.0             | 0.00            | 0.00        | 1,500.0             | 0.0        | 0.0        | 0.0                   | 0.00                  | 0.00                 |                         |
| 1,600.0             | 0.00            | 0.00        | 1,600.0             | 0.0        | 0.0        | 0.0                   | 0.00                  | 0.00                 |                         |
| 1,700.0             | 0.00            | 0.00        | 1,700.0             | 0.0        | 0.0        | 0.0                   | 0.00                  | 0.00                 |                         |
| 1,800.0             | 0.00            | 0.00        | 1,800.0             | 0.0        | 0.0        | 0.0                   | 0.00                  | 0.00                 |                         |
| 1,900.0             | 0.00            | 0.00        | 1,900.0             | 0.0        | 0.0        | 0.0                   | 0.00                  | 0.00                 |                         |
| 2,000.0             | 0.00            | 0.00        | 2,000.0             | 0.0        | 0.0        | 0.0                   | 0.00                  | 0.00                 |                         |
| 2,100.0             | 0.00            | 0.00        | 2,100.0             | 0.0        | 0.0        | 0.0                   | 0.00                  | 0.00                 |                         |
| 2,177.0             | 0.00            | 0.00        | 2,177.0             | 0.0        | 0.0        | 0.0                   | 0.00                  | 0.00                 | Kirtland                |
| 2,200.0             | 0.00            | 0.00        | 2,200.0             | 0.0        | 0.0        | 0.0                   | 0.00                  | 0.00                 |                         |
| 2,300.0             | 0.00            | 0.00        | 2,300.0             | 0.0        | 0.0        | 0.0                   | 0.00                  | 0.00                 |                         |
| 2,400.0             | 0.00            | 0.00        | 2,400.0             | 0.0        | 0.0        | 0.0                   | 0.00                  | 0.00                 |                         |
| 2,500.0             | 0.00            | 0.00        | 2,500.0             | 0.0        | 0.0        | 0.0                   | 0.00                  | 0.00                 |                         |
| 2,565.0             | 0.00            | 0.00        | 2,565.0             | 0.0        | 0.0        | 0.0                   | 0.00                  | 0.00                 | Fruitland               |
| 2,600.0             | 0.00            | 0.00        | 2,600.0             | 0.0        | 0.0        | 0.0                   | 0.00                  | 0.00                 |                         |
| 2,696.0             | 0.00            | 0.00        | 2,696.0             | 0.0        | 0.0        | 0.0                   | 0.00                  | 0.00                 | Pictured Cliffs         |
| 2,700.0             | 0.00            | 0.00        | 2,700.0             | 0.0        | 0.0        | 0.0                   | 0.00                  | 0.00                 |                         |
| 2,800.0             | 0.00            | 0.00        | 2,800.0             | 0.0        | 0.0        | 0.0                   | 0.00                  | 0.00                 |                         |
| 2,900.0             | 0.00            | 0.00        | 2,900.0             | 0.0        | 0.0        | 0.0                   | 0.00                  | 0.00                 |                         |
| 3,000.0             | 0.00            | 0.00        | 3,000.0             | 0.0        | 0.0        | 0.0                   | 0.00                  | 0.00                 |                         |
| 3,100.0             | 0.00            | 0.00        | 3,100.0             | 0.0        | 0.0        | 0.0                   | 0.00                  | 0.00                 |                         |
| 3,135.0             | 0.00            | 0.00        | 3,135.0             | 0.0        | 0.0        | 0.0                   | 0.00                  | 0.00                 | Chacra                  |
| 3,200.0             | 0.00            | 0.00        | 3,200.0             | 0.0        | 0.0        | 0.0                   | 0.00                  | 0.00                 |                         |
| 3,300.0             | 0.00            | 0.00        | 3,300.0             | 0.0        | 0.0        | 0.0                   | 0.00                  | 0.00                 |                         |
| 3,400.0             | 0.00            | 0.00        | 3,400.0             | 0.0        | 0.0        | 0.0                   | 0.00                  | 0.00                 |                         |
| 3,500.0             | 0.00            | 0.00        | 3,500.0             | 0.0        | 0.0        | 0.0                   | 0.00                  | 0.00                 |                         |
| 3,544.0             | 0.00            | 0.00        | 3,544.0             | 0.0        | 0.0        | 0.0                   | 0.00                  | 0.00                 | KOP @ 3,544'            |
| 3,600.0             | 1.12            | 47.46       | 3,600.0             | 0.4        | 0.4        | -0.3                  | 2.00                  | 2.00                 |                         |
| 3,700.0             | 3.12            | 47.46       | 3,699.9             | 2.9        | 3.1        | -2.7                  | 2.00                  | 2.00                 |                         |
| 3,800.0             | 5.12            | 47.46       | 3,799.7             | 7.7        | 8.4        | -7.2                  | 2.00                  | 2.00                 |                         |
| 3,900.0             | 7.12            | 47.46       | 3,899.1             | 14.9       | 16.3       | -14.0                 | 2.00                  | 2.00                 |                         |
| 4,000.0             | 9.12            | 47.46       | 3,998.1             | 24.5       | 26.7       | -22.9                 | 2.00                  | 2.00                 |                         |
| 4,100.0             | 11.12           | 47.46       | 4,096.5             | 36.4       | 39.6       | -34.0                 | 2.00                  | 2.00                 |                         |
| 4,200.0             | 13.12           | 47.46       | 4,194.3             | 50.6       | 55.1       | -47.3                 | 2.00                  | 2.00                 |                         |
| 4,277.4             | 14.67           | 47.46       | 4,269.4             | 63.1       | 68.8       | -59.1                 | 2.00                  | 2.00                 | Cliff House             |
| 4,294.0             | 15.00           | 47.46       | 4,285.4             | 66.0       | 71.9       | -61.8                 | 2.00                  | 2.00                 | Meneffee                |

# Cathedral Energy Services

## Planning Report

|  |   |
|--|---|
| <b>Database:</b> USA EDM 5000 Multi Users DB | <b>Local Co-ordinate Reference:</b> Well Roadrunner 1H (was 6A) |
| <b>Company:</b> LOGOS Operating, LLC         | <b>TVD Reference:</b> KB=15' @ 7349.0ft (Aztec #222)            |
| <b>Project:</b> San Juan County, NM          | <b>MD Reference:</b> KB=15' @ 7349.0ft (Aztec #222)             |
| <b>Site:</b> S2-T24N-R8W (Roadrunner Pad)    | <b>North Reference:</b> True                                    |
| <b>Well:</b> Roadrunner 1H (was 6A)          | <b>Survey Calculation Method:</b> Minimum Curvature             |
| <b>Wellbore:</b> HZ                          |   |
| <b>Design:</b> Plan #3                       |   |

| Planned Survey      |                 |             |                     |           |           |                       |                       |                      |   |
|---------------------|-----------------|-------------|---------------------|-----------|-----------|-----------------------|-----------------------|----------------------|---|
| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N-S (ft) | +E-W (ft) | Vertical Section (ft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Comments / Formations                           |
| 4,300.0             | 15.12           | 47.46       | 4,291.3             | 67.1      | 73.1      | -62.8                 | 2.00                  | 2.00                 |   |
| 4,400.0             | 17.12           | 47.46       | 4,387.3             | 85.8      | 93.5      | -80.4                 | 2.00                  | 2.00                 |   |
| 4,500.0             | 19.12           | 47.46       | 4,482.4             | 106.9     | 116.4     | -100.0                | 2.00                  | 2.00                 |   |
| 4,544.0             | 20.00           | 47.46       | 4,523.8             | 116.8     | 127.3     | -109.4                | 2.00                  | 2.00                 | EOB @ 20° INC                                   |
| 4,600.0             | 20.00           | 47.46       | 4,576.4             | 129.8     | 141.4     | -121.5                | 0.00                  | 0.00                 |   |
| 4,700.0             | 20.00           | 47.46       | 4,670.4             | 152.9     | 166.6     | -143.1                | 0.00                  | 0.00                 |   |
| 4,800.0             | 20.00           | 47.46       | 4,764.4             | 176.0     | 191.8     | -164.8                | 0.00                  | 0.00                 |   |
| 4,900.0             | 20.00           | 47.46       | 4,858.3             | 199.1     | 217.0     | -186.4                | 0.00                  | 0.00                 |   |
| 5,000.0             | 20.00           | 47.46       | 4,952.3             | 222.3     | 242.2     | -208.1                | 0.00                  | 0.00                 |   |
| 5,053.4             | 20.00           | 47.46       | 5,002.5             | 234.6     | 255.7     | -219.6                | 0.00                  | 0.00                 | Point Lookout                                   |
| 5,100.0             | 20.00           | 47.46       | 5,046.3             | 245.4     | 267.4     | -229.7                | 0.00                  | 0.00                 |   |
| 5,200.0             | 20.00           | 47.46       | 5,140.3             | 268.5     | 292.6     | -251.4                | 0.00                  | 0.00                 |   |
| 5,261.3             | 20.00           | 47.46       | 5,197.8             | 282.7     | 308.0     | -264.6                | 0.00                  | 0.00                 | Mancos  |
| 5,300.0             | 20.00           | 47.46       | 5,234.2             | 291.6     | 317.8     | -273.0                | 0.00                  | 0.00                 |   |
| 5,400.0             | 20.00           | 47.46       | 5,328.2             | 314.8     | 343.0     | -294.7                | 0.00                  | 0.00                 |   |
| 5,500.0             | 20.00           | 47.46       | 5,422.2             | 337.9     | 368.2     | -316.3                | 0.00                  | 0.00                 |   |
| 5,600.0             | 20.00           | 47.46       | 5,516.1             | 361.0     | 393.4     | -338.0                | 0.00                  | 0.00                 |   |
| 5,700.0             | 20.00           | 47.46       | 5,610.1             | 384.1     | 418.6     | -359.6                | 0.00                  | 0.00                 |   |
| 5,716.6             | 20.00           | 47.46       | 5,625.7             | 388.0     | 422.8     | -363.2                | 0.00                  | 0.00                 | Start 10° Build/Turn                            |
| 5,750.0             | 17.76           | 39.78       | 5,657.3             | 395.7     | 430.3     | -369.5                | 10.00                 | -6.70                |   |
| 5,800.0             | 15.16           | 24.62       | 5,705.3             | 407.6     | 437.9     | -375.4                | 10.00                 | -5.20                |   |
| 5,850.0             | 13.90           | 5.23        | 5,753.7             | 419.5     | 441.1     | -376.9                | 10.00                 | -2.52                |   |
| 5,900.0             | 14.35           | 344.72      | 5,802.2             | 431.5     | 440.1     | -374.1                | 10.00                 | 0.88                 |   |
| 5,950.0             | 16.35           | 327.31      | 5,850.5             | 443.4     | 434.6     | -367.0                | 10.00                 | 4.01                 |   |
| 6,000.0             | 19.44           | 314.43      | 5,898.1             | 455.1     | 424.9     | -355.7                | 10.00                 | 6.17                 |   |
| 6,050.0             | 23.18           | 305.27      | 5,944.6             | 466.6     | 410.9     | -340.2                | 10.00                 | 7.48                 |   |
| 6,100.0             | 27.31           | 298.63      | 5,989.9             | 477.8     | 392.8     | -320.7                | 10.00                 | 8.26                 |   |
| 6,150.0             | 31.67           | 293.66      | 6,033.4             | 488.6     | 370.7     | -297.3                | 10.00                 | 8.73                 |   |
| 6,200.0             | 36.19           | 289.80      | 6,074.9             | 498.9     | 344.7     | -270.2                | 10.00                 | 9.03                 |   |
| 6,250.0             | 40.80           | 286.70      | 6,114.0             | 508.6     | 315.2     | -239.6                | 10.00                 | 9.23                 |   |
| 6,273.9             | 43.03           | 285.42      | 6,131.8             | 513.0     | 299.9     | -223.7                | 10.00                 | 9.34                 | Gallup  |
| 6,300.0             | 45.48           | 284.14      | 6,150.5             | 517.6     | 282.2     | -205.6                | 10.00                 | 9.39                 |   |
| 6,350.0             | 50.21           | 281.95      | 6,184.0             | 526.0     | 246.1     | -168.7                | 10.00                 | 9.46                 |   |
| 6,400.0             | 54.98           | 280.05      | 6,214.4             | 533.5     | 207.2     | -129.1                | 10.00                 | 9.53                 |   |
| 6,450.0             | 59.77           | 278.36      | 6,241.3             | 540.2     | 165.6     | -87.0                 | 10.00                 | 9.59                 |   |
| 6,500.0             | 64.59           | 276.83      | 6,264.7             | 546.1     | 121.8     | -42.8                 | 10.00                 | 9.63                 |   |
| 6,550.0             | 69.42           | 275.42      | 6,284.2             | 551.0     | 76.0      | 3.2                   | 10.00                 | 9.66                 |   |
| 6,600.0             | 74.25           | 274.09      | 6,299.8             | 554.9     | 28.7      | 50.6                  | 10.00                 | 9.68                 |   |
| 6,608.9             | 75.11           | 273.86      | 6,302.1             | 555.5     | 20.2      | 59.2                  | 10.00                 | 9.69                 | Top Lower Gallup                                |
| 6,650.0             | 79.10           | 272.83      | 6,311.3             | 557.8     | -19.8     | 99.1                  | 10.00                 | 9.69                 |   |
| 6,700.0             | 83.95           | 271.60      | 6,318.7             | 559.7     | -69.2     | 148.3                 | 10.00                 | 9.70                 |   |
| 6,710.8             | 85.00           | 271.34      | 6,319.7             | 560.0     | -80.0     | 158.9                 | 10.00                 | 9.71                 | EOB @ 85° INC / Start 5° Build - 7" - 400' FNL, |
| 6,800.0             | 89.46           | 271.34      | 6,324.0             | 562.1     | -169.0    | 247.4                 | 5.00                  | 5.00                 |   |
| 6,817.5             | 90.34           | 271.34      | 6,324.0             | 562.5     | -186.6    | 264.8                 | 5.00                  | 5.00                 | LP @ 6,324" TVD, 90.34°                         |
| 6,900.0             | 90.34           | 271.34      | 6,323.6             | 564.4     | -269.0    | 346.7                 | 0.00                  | 0.00                 |   |
| 7,000.0             | 90.34           | 271.34      | 6,323.0             | 566.8     | -369.0    | 445.9                 | 0.00                  | 0.00                 |   |
| 7,100.0             | 90.34           | 271.34      | 6,322.4             | 569.1     | -469.0    | 545.2                 | 0.00                  | 0.00                 |   |
| 7,200.0             | 90.34           | 271.34      | 6,321.8             | 571.4     | -568.9    | 644.5                 | 0.00                  | 0.00                 |   |
| 7,300.0             | 90.34           | 271.34      | 6,321.2             | 573.8     | -668.9    | 743.8                 | 0.00                  | 0.00                 |   |
| 7,400.0             | 90.34           | 271.34      | 6,320.6             | 576.1     | -768.9    | 843.1                 | 0.00                  | 0.00                 |   |
| 7,500.0             | 90.34           | 271.34      | 6,320.0             | 578.5     | -868.8    | 942.4                 | 0.00                  | 0.00                 |   |
| 7,600.0             | 90.34           | 271.34      | 6,319.5             | 580.8     | -968.8    | 1,041.7               | 0.00                  | 0.00                 |   |

# Cathedral Energy Services

## Planning Report

|                  |                              |                                     |                                |
|------------------|------------------------------|-------------------------------------|--------------------------------|
| <b>Database:</b> | USA EDM 5000 Multi Users DB  | <b>Local Co-ordinate Reference:</b> | Well Roadrunner 1H (was 6A)    |
| <b>Company:</b>  | LOGOS Operating LLC          | <b>TVD Reference:</b>               | KB=15' @ 7349.0ft (Aztec #222) |
| <b>Project:</b>  | San Juan County, NM          | <b>MD Reference:</b>                | KB=15' @ 7349.0ft (Aztec #222) |
| <b>Site:</b>     | S2-T24N-R8W (Roadrunner Pad) | <b>North Reference:</b>             | True                           |
| <b>Well:</b>     | Roadrunner 1H (was 6A)       | <b>Survey Calculation Method:</b>   | Minimum Curvature              |
| <b>Wellbore:</b> | HZ                           |                                     |                                |
| <b>Design:</b>   | Plan #3                      |                                     |                                |

| Planned Survey      |                 |             |                     |            |            |                       |                       |                      |                          |
|---------------------|-----------------|-------------|---------------------|------------|------------|-----------------------|-----------------------|----------------------|--------------------------|
| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Vertical Section (ft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Comments / Formations    |
| 7,700.0             | 90.34           | 271.34      | 6,318.9             | 583.1      | -1,068.8   | 1,140.9               | 0.00                  | 0.00                 |                          |
| 7,800.0             | 90.34           | 271.34      | 6,318.3             | 585.5      | -1,168.8   | 1,240.2               | 0.00                  | 0.00                 |                          |
| 7,900.0             | 90.34           | 271.34      | 6,317.7             | 587.8      | -1,268.7   | 1,339.5               | 0.00                  | 0.00                 |                          |
| 8,000.0             | 90.34           | 271.34      | 6,317.1             | 590.2      | -1,368.7   | 1,438.8               | 0.00                  | 0.00                 |                          |
| 8,100.0             | 90.34           | 271.34      | 6,316.5             | 592.5      | -1,468.7   | 1,538.1               | 0.00                  | 0.00                 |                          |
| 8,200.0             | 90.34           | 271.34      | 6,315.9             | 594.8      | -1,568.6   | 1,637.4               | 0.00                  | 0.00                 |                          |
| 8,300.0             | 90.34           | 271.34      | 6,315.4             | 597.2      | -1,668.6   | 1,736.6               | 0.00                  | 0.00                 |                          |
| 8,400.0             | 90.34           | 271.34      | 6,314.8             | 599.5      | -1,768.6   | 1,835.9               | 0.00                  | 0.00                 |                          |
| 8,500.0             | 90.34           | 271.34      | 6,314.2             | 601.9      | -1,868.5   | 1,935.2               | 0.00                  | 0.00                 |                          |
| 8,600.0             | 90.34           | 271.34      | 6,313.6             | 604.2      | -1,968.5   | 2,034.5               | 0.00                  | 0.00                 |                          |
| 8,700.0             | 90.34           | 271.34      | 6,313.0             | 606.5      | -2,068.5   | 2,133.8               | 0.00                  | 0.00                 |                          |
| 8,800.0             | 90.34           | 271.34      | 6,312.4             | 608.9      | -2,168.5   | 2,233.1               | 0.00                  | 0.00                 |                          |
| 8,900.0             | 90.34           | 271.34      | 6,311.9             | 611.2      | -2,268.4   | 2,332.4               | 0.00                  | 0.00                 |                          |
| 9,000.0             | 90.34           | 271.34      | 6,311.3             | 613.6      | -2,368.4   | 2,431.6               | 0.00                  | 0.00                 |                          |
| 9,100.0             | 90.34           | 271.34      | 6,310.7             | 615.9      | -2,468.4   | 2,530.9               | 0.00                  | 0.00                 |                          |
| 9,200.0             | 90.34           | 271.34      | 6,310.1             | 618.2      | -2,568.3   | 2,630.2               | 0.00                  | 0.00                 |                          |
| 9,300.0             | 90.34           | 271.34      | 6,309.5             | 620.6      | -2,668.3   | 2,729.5               | 0.00                  | 0.00                 |                          |
| 9,400.0             | 90.34           | 271.34      | 6,308.9             | 622.9      | -2,768.3   | 2,828.8               | 0.00                  | 0.00                 |                          |
| 9,500.0             | 90.34           | 271.34      | 6,308.3             | 625.3      | -2,868.3   | 2,928.1               | 0.00                  | 0.00                 |                          |
| 9,600.0             | 90.34           | 271.34      | 6,307.8             | 627.6      | -2,968.2   | 3,027.4               | 0.00                  | 0.00                 |                          |
| 9,700.0             | 90.34           | 271.34      | 6,307.2             | 629.9      | -3,068.2   | 3,126.6               | 0.00                  | 0.00                 |                          |
| 9,800.0             | 90.34           | 271.34      | 6,306.6             | 632.3      | -3,168.2   | 3,225.9               | 0.00                  | 0.00                 |                          |
| 9,900.0             | 90.34           | 271.34      | 6,306.0             | 634.6      | -3,268.1   | 3,325.2               | 0.00                  | 0.00                 |                          |
| 10,000.0            | 90.34           | 271.34      | 6,305.4             | 637.0      | -3,368.1   | 3,424.5               | 0.00                  | 0.00                 |                          |
| 10,100.0            | 90.34           | 271.34      | 6,304.8             | 639.3      | -3,468.1   | 3,523.8               | 0.00                  | 0.00                 |                          |
| 10,200.0            | 90.34           | 271.34      | 6,304.2             | 641.6      | -3,568.1   | 3,623.1               | 0.00                  | 0.00                 |                          |
| 10,300.0            | 90.34           | 271.34      | 6,303.7             | 644.0      | -3,668.0   | 3,722.4               | 0.00                  | 0.00                 |                          |
| 10,400.0            | 90.34           | 271.34      | 6,303.1             | 646.3      | -3,768.0   | 3,821.6               | 0.00                  | 0.00                 |                          |
| 10,500.0            | 90.34           | 271.34      | 6,302.5             | 648.7      | -3,868.0   | 3,920.9               | 0.00                  | 0.00                 |                          |
| 10,600.0            | 90.34           | 271.34      | 6,301.9             | 651.0      | -3,967.9   | 4,020.2               | 0.00                  | 0.00                 |                          |
| 10,700.0            | 90.34           | 271.34      | 6,301.3             | 653.3      | -4,067.9   | 4,119.5               | 0.00                  | 0.00                 |                          |
| 10,800.0            | 90.34           | 271.34      | 6,300.7             | 655.7      | -4,167.9   | 4,218.8               | 0.00                  | 0.00                 |                          |
| 10,900.0            | 90.34           | 271.34      | 6,300.1             | 658.0      | -4,267.9   | 4,318.1               | 0.00                  | 0.00                 |                          |
| 11,000.0            | 90.34           | 271.34      | 6,299.6             | 660.4      | -4,367.8   | 4,417.3               | 0.00                  | 0.00                 |                          |
| 11,100.0            | 90.34           | 271.34      | 6,299.0             | 662.7      | -4,467.8   | 4,516.6               | 0.00                  | 0.00                 |                          |
| 11,200.0            | 90.34           | 271.34      | 6,298.4             | 665.0      | -4,567.8   | 4,615.9               | 0.00                  | 0.00                 |                          |
| 11,264.4            | 90.34           | 271.34      | 6,298.0             | 666.6      | -4,632.1   | 4,679.9               | 0.00                  | 0.00                 | BHL - 330' FNL, 330' FWL |

# Cathedral Energy Services

## Planning Report

|                  |                              |                                     |                                |
|------------------|------------------------------|-------------------------------------|--------------------------------|
| <b>Database:</b> | USA EDM 5000 Multi Users DB  | <b>Local Co-ordinate Reference:</b> | Well Roadrunner 1H (was 6A)    |
| <b>Company:</b>  | LOGOS Operating LLC          | <b>TVD Reference:</b>               | KB=15' @ 7349.0ft (Aztec #222) |
| <b>Project:</b>  | San Juan County, NM          | <b>MD Reference:</b>                | KB=15' @ 7349.0ft (Aztec #222) |
| <b>Site:</b>     | S2-T24N-R8W (Roadrunner Pad) | <b>North Reference:</b>             | True                           |
| <b>Well:</b>     | Roadrunner 1H (was 6A)       | <b>Survey Calculation Method:</b>   | Minimum Curvature              |
| <b>Wellbore:</b> | HZ                           |                                     |                                |
| <b>Design:</b>   | Plan #3                      |                                     |                                |

| Targets   |           |          |         |       |          |              |              |           |             |
|---|-----------|----------|---------|-------|----------|--------------|--------------|-----------|-------------|
| Target Name   | Dip Angle | Dip Dir. | TVD     | +N/-S | +E/-W    | Northing     | Easting      | Latitude  | Longitude   |
| - hit/miss target   | (°)       | (°)      | (ft)    | (ft)  | (ft)     | (ft)         | (ft)         |           |             |
| - Shape   |           |          |         |       |          |              |              |           |             |
| Roadrunner 6A PBHL P:<br>- plan hits target center<br>- Point   | 0.00      | 0.00     | 6,298.0 | 666.6 | -4,632.2 | 1,946,484.89 | 2,774,066.40 | 36.349270 | -107.660250 |
| Roadrunner 6A PBHL<br>- plan misses target center by 13.8ft at 11256.8ft MD (6298.1 TVD, 666.4 N, -4624.6 E)<br>- Point | 0.00      | 0.00     | 6,298.0 | 652.6 | -4,624.9 | 1,946,470.97 | 2,774,073.70 | 36.349232 | -107.660225 |
| Roadrunner 6A 7"/85° P:<br>- plan hits target center<br>- Point   | 0.00      | 0.00     | 6,319.7 | 560.0 | -80.0    | 1,946,387.23 | 2,778,618.76 | 36.348978 | -107.644792 |
| Roadrunner 6A 7"/85°<br>- plan misses target center by 68.9ft at 6792.8ft MD (6323.9 TVD, 561.9 N, -161.8 E)<br>- Point | 0.00      | 0.00     | 6,319.7 | 630.7 | -160.4   | 1,946,457.77 | 2,778,538.22 | 36.349173 | -107.645065 |

| Casing Points  |                |        |                 |               |  |  |
|----------------|----------------|--------|-----------------|---------------|--|--|
| Measured Depth | Vertical Depth | Name   | Casing Diameter | Hole Diameter |  |  |
| (ft)           | (ft)           |        | (in)            | (in)          |  |  |
| 6,710.8        | 6,319.7        | 7"     | 0.000           | 0.000         |  |  |
| 320.0          | 320.0          | 9 5/8" | 0.000           | 0.000         |  |  |

| Formations     |                |                  |           |       |               |  |
|----------------|----------------|------------------|-----------|-------|---------------|--|
| Measured Depth | Vertical Depth | Name             | Lithology | Dip   | Dip Direction |  |
| (ft)           | (ft)           |                  |           | (°)   | (°)           |  |
| 2,177.0        | 2,177.0        | Kirtland         |           | -0.34 | 270.00        |  |
| 2,565.0        | 2,565.0        | Fruitland        |           | -0.34 | 270.00        |  |
| 2,696.0        | 2,696.0        | Pictured Cliffs  |           | -0.34 | 270.00        |  |
| 3,135.0        | 3,135.0        | Chacra           |           | -0.34 | 270.00        |  |
| 4,277.4        | 4,269.0        | Cliff House      |           | -0.34 | 270.00        |  |
| 4,294.0        | 4,285.0        | Meneffee         |           | -0.34 | 270.00        |  |
| 5,053.4        | 5,001.0        | Point Lookout    |           | -0.34 | 270.00        |  |
| 5,261.3        | 5,196.0        | Mancos           |           | -0.34 | 270.00        |  |
| 6,273.9        | 6,130.0        | Gallup           |           | -0.34 | 270.00        |  |
| 6,608.9        | 6,302.0        | Top Lower Gallup |           | -0.34 | 270.00        |  |

# Cathedral Energy Services

## Planning Report

|                  |                              |                                     |                                |
|------------------|------------------------------|-------------------------------------|--------------------------------|
| <b>Database:</b> | USA EDM 5000 Multi Users DB  | <b>Local Co-ordinate Reference:</b> | Well Roadrunner 1H (was 6A)    |
| <b>Company:</b>  | LOGOS Operating LLC          | <b>TVD Reference:</b>               | KB=15' @ 7349.0ft (Aztec #222) |
| <b>Project:</b>  | San Juan County, NM          | <b>MD Reference:</b>                | KB=15' @ 7349.0ft (Aztec #222) |
| <b>Site:</b>     | S2-T24N-R8W (Roadrunner Pad) | <b>North Reference:</b>             | True                           |
| <b>Well:</b>     | Roadrunner 1H (was 6A)       | <b>Survey Calculation Method:</b>   | Minimum Curvature              |
| <b>Wellbore:</b> | HZ                           |                                     |                                |
| <b>Design:</b>   | Plan #3                      |                                     |                                |

| Plan Annotations          |                           |                   |               |                                |  |
|---------------------------|---------------------------|-------------------|---------------|--------------------------------|--|
| Measured<br>Depth<br>(ft) | Vertical<br>Depth<br>(ft) | Local Coordinates |               | Comment                        |  |
|                           |                           | +N/-S<br>(ft)     | +E/-W<br>(ft) |                                |  |
| 0.5                       | 0.5                       | 0.0               | 0.0           | SH - 962' FNL, 336' FEL        |  |
| 3,544.0                   | 3,544.0                   | 0.0               | 0.0           | KOP @ 3,544'                   |  |
| 4,544.0                   | 4,523.8                   | 116.8             | 127.3         | EOB @ 20° INC                  |  |
| 5,716.6                   | 5,625.7                   | 388.0             | 422.8         | Start 10° Build/Turn           |  |
| 6,710.8                   | 6,319.7                   | 560.0             | -80.0         | EOB @ 85° INC / Start 5° Build |  |
| 6,710.8                   | 6,319.7                   | 560.0             | -80.0         | 7" - 400' FNL, 420' FEL        |  |
| 6,817.5                   | 6,324.0                   | 562.5             | -186.6        | LP @ 6,324" TVD, 90.34°        |  |
| 11,264.4                  | 6,298.0                   | 666.6             | -4,632.1      | BHL - 330' FNL, 330' FWL       |  |
| 11,264.4                  | 6,298.0                   | 666.6             | -4,632.2      | TD @ 11,264.4' MD              |  |