State of New Mexico
# Energy, Minerals and Natural Resources Department

**Michelle Lujan Grisham**
Governor

**Sarah Cottrell Propst**
Cabinet Secretary

**Todd E. Leahy, JD, PhD**
Deputy Secretary

**Adrienne Sandoval,** Division Director
**Oil Conservation Division**

New Mexico Oil Conservation Division approval and conditions listed below are made in accordance with OCD Rule 19.15.7.11 and are in addition to the actions approved by BLM on the following 3160-3 APD form.

**Operator Signature Date:** 8/27/2020
**Operator:** Coleman Oil & Gas **Well Name and Number:** Carson 32-5-9 #1
**API#:** 30-039-31398 , **Section:** 16 **Township:** 32N, **Range:** 5 W

Conditions of Approval: (See the below checked and handwritten conditions)

**X** Notify appropriate OCD district office 24hrs prior to casing & cement.

**X** If cement doesn't circulate on any casing string or stage tool a CBL will be required. Contact the regulatory agencies prior to proceeding.

☒ Hold C-104 for directional survey & "As Drilled" Plat

☐ Hold C-104 for: ☐ NSL, ☐ NSP, ☐ DHC, ☐ 5.9 Compliance

☐ Spacing rule violation. Operator must follow up with change of status notification on other well to be shut in or abandoned

**X** Regarding the use of a pit, closed loop system or below grade tank, the operator must comply with the following as applicable:

- A pit requires a complete C-144 be submitted and approved prior to the construction or use of the pit, pursuant to 19.15.17.8.A
- A closed loop system requires notification prior to use, pursuant to 19.15.17.9.A
- A below grade tank requires a registration be filed prior to the construction or use of the below grade tank, pursuant to 19.15.17.8.C

**X** Once the well is spud, to prevent ground water contamination through whole or partial conduits from the surface, the operator shall drill without interruption through the freshwater zone or zones and shall immediately set in cement the water protection string

**X** Regarding Hydraulic Fracturing, review EPA Underground Injection Control Guidance 84

**X** Oil base muds are not to be used until fresh water zones are cased and cemented providing isolation from the oil or diesel. This includes synthetic oils. Oil based mud, drilling fluids and solids must be contained in a steel closed loop system.

**X** Well-bore communication is regulated under 19.15.29 NMAC. This requires well-bore Communication to be reported in accordance with 19.15.29.8.

NMOCD Approved by Signature

11/1/2020
Date

Form 3160-3
(June 2015)

FORM APPROVED
OMB No. 1004-0137
Expires: January 31, 2018

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

**APPLICATION FOR PERMIT TO DRILL OR REENTER**

5. Lease Serial No.: NMNM130341

6. If Indian, Allotee or Tribe Name:

1a. Type of work: ☑ DRILL ☐ REENTER

1b. Type of Well: ☐ Oil Well ☑ Gas Well ☐ Other

1c. Type of Completion: ☐ Hydraulic Fracturing ☑ Single Zone ☐ Multiple Zone

7. If Unit or CA Agreement, Name and No.:

8. Lease Name and Well No.: CARSON 32-5-9 1

2. Name of Operator: COLEMAN OIL & GAS INCORPORATED

9. API Well No.: 30-039-31398

3a. Address: PO BOX 3337, FARMINGTON, NM 87499

3b. Phone No. *(include area code)*: (505) 330-2903

10. Field and Pool, or Exploratory: BASIN FRUITLAND COAL

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*

At surface: NWNE / 124 FNL / 2626 FEL / LAT 32.9871264 / LONG -107.3677452

At proposed prod. zone: SENE / 660 FNL / 660 FEL / LAT 36.9982852 / LONG -107.3610173

11. Sec., T. R. M. or Blk. and Survey or Area: SEC 16/T32N/R5W/NMP

14. Distance in miles and direction from nearest town or post office*: 17 miles

12. County or Parish: RIO ARRIBA

13. State: NM

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any): 11 feet

16. No of acres in lease: 418.78

17. Spacing Unit dedicated to this well: 279.14

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.: 235 feet

19. Proposed Depth: 3673 feet / 7041 feet

20. BLM/BIA Bond No. in file: FED: NMB001509

21. Elevations (Show whether DF, KDB, RT, GL, etc.): 7230 feet

22. Approximate date work will start*: 10/01/2020

23. Estimated duration: 60 days

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, and the Hydraulic Fracturing rule per 43 CFR 3162.3-3 (as applicable)

1. Well plat certified by a registered surveyor.
2. A Drilling Plan.
3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office).
4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
5. Operator certification.
6. Such other site specific information and/or plans as may be requested by the BLM.

| 25. Signature | Name *(Printed/Typed)* | Date |
|---|---|---|
| (Electronic Submission) | BRIAN WOOD / Ph: (505) 330-2903 | 08/27/2020 |

Title: President

| Approved by *(Signature)* | Name *(Printed/Typed)* | Date |
|---|---|---|
| (Electronic Submission) | Dave Mankiewicz / Ph: (505) 564-7761 | 09/22/2020 |

| Title | Office |
|---|---|
| AFM-Minerals | Farmington Field Office |

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.
Conditions of approval, if any, are attached.

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

APPROVED WITH CONDITIONS

(Continued on page 2)

*(Instructions on page 2)

AV

**Approval Date: 09/22/2020**

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

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

☐ AMENDED REPORT

# WELL LOCATION AND ACREAGE DEDICATION PLAT

| 1 API Number | 2 Pool Code | 3 Pool Name |
|---|---|---|
| 30-039-31398 | 71629 | Basin Fruitland Coal |

| 4 Property Code | 5 Property Name | 6 Well Number |
|---|---|---|
| 329873 | CARSON 32-5-9 | 1 |

| 7 OGRID No. | 8 Operator Name | 9 Elevation |
|---|---|---|
| 4838 | COLEMAN OIL & GAS, INC. | 7230 |

## 10 Surface Location

| UL or lot no. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|---|---|---|---|---|---|---|---|---|---|
| B | 16 | 32 N | 5 W | | 124 | NORTH | 2626 | EAST | RIO ARRIBA |

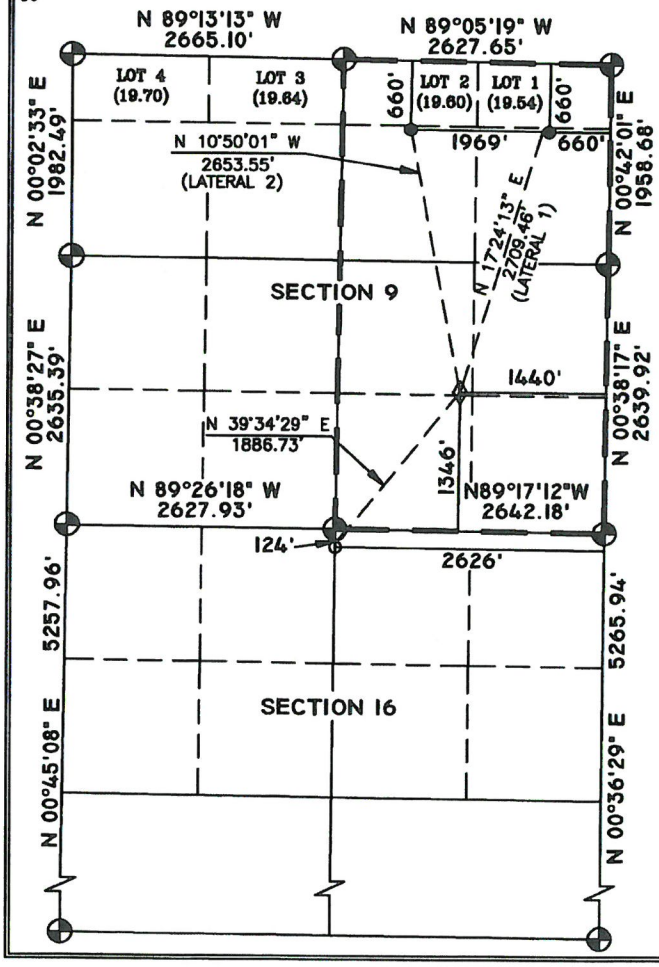
## 11 Bottom Hole Location If Different From Surface

| UL or lot no. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|---|---|---|---|---|---|---|---|---|---|
| J | 9 | 32 N | 5 W | | 1346 | SOUTH | 1440 | EAST | RIO ARRIBA |
| H | 9 | 32 N | 5 W | | 660 | NORTH | 660 | EAST | RIO ARRIBA |
| G | 9 | 32 N | 5 W | | 660 | NORTH | 1969 | EAST | RIO ARRIBA |

| 12 Dedicated Acres | 13 Joint or Infill | 14 Consolidation Code | 15 Order No. |
|---|---|---|---|
| 279.14 (E/2) | | | |

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

16




LATERAL 1 BHL
SEC. 9, 660' FNL, 660 FEL
LAT: 36.9982852° N
LONG: 107.3610173° W
NAD 83

LATERAL 2 BHL
SEC. 9, 660' FNL, 1969' FEL
LAT: 36.9983003° N
LONG: 107.3655005° W
NAD 83

PILOT BHL
SEC. 9, 1346' FSL, 1440' FEL
LAT: 36.9911589° N
LONG: 107.3636884° W
NAD 83

SURFACE
SEC. 16, 124' FNL, 2626' FEL
LAT: 36.9871264° N
LONG: 107.3677452° W
NAD 83

LEGEND:
○ = SURFACE LOCATION
● = BOTTOM HOLE LOCATION
◇ = PILOT BHL
⊕ = FOUND 1924 U.S.G.L.O. BRASS CAP

## 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.*

Michael T Hanson 11/2/2020
Signature Date

Michael T Hanson
Printed Name

mhanson@coq-fmn.com
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.*

04/16/15
Date of Survey
Plat Revised: 10/05/20
Signature and Seal of Professional Surveyor:

MARSHALL W. LINDEEN
NEW MEXICO
17078
10-5-20
PROFESSIONAL SURVEYOR

17078
Certificate Number

**Application for Permit to Drill**
**Drilling Plan**

## COLEMAN OIL & GAS

### Carson 32-5-9 1H

Vertical Pilot Hole
Surface Hole Location: 124' FNL & 2626' FEL
Section 16, T32N, R5W
Proposed GL Elevation = 7230'
Lat. = 36.9871264º N
Long. = 107.3677452º W
NAD 83
Rio Arriba, New Mexico

Proposed Top of Production Location (Pilot): 1124' FSL – 1510' FEL
Proposed Bottom Hole Location (Pilot): 1346' FSL – 1440' FEL
Proposed KOP (Lateral #1): 673' FSL – 1650' FEL
Proposed Landing (Lateral #1) 2020' FSL – 1989' FEL
Proposed Bottom Hole Location (Lateral #1): 660' FNL – 660' FEL
Proposed KOP (Lateral #2): 682' FSL – 1647' FEL
Proposed Landing (Lateral #2) 2481' FSL – 690' FEL
Proposed Bottom Hole Location (Lateral #2): 660' FNL – 1969' FEL
Section 9, T32N, R5W
Rio Arriba, 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

**A. Names and estimated tops of all geologic groups, formations, members or zones.**

| Carson 32-5-9 1H Geological Report | | | | | | |
|---|---|---|---|---|---|---|
| APD | Top MD (KB) | Top TVD (KB) | Top Subsea TVD | Thickness (FT) | Rock Type | Drilling Notes |
| San Jose | Surface | Surface | 7245 | 1878 | Unconsolidated Gravels | Boulders, Water, Lost Circulation |
| Nacimiento | 2006 | 1878 | 5367 | 1200 | Nonmarine shale, siltstone and sandstones | Water, Lost Circulation |
| Ojo Alamo | 3482 | 3078 | 4167 | 147 | Comglomerate sandstone, sandstone, siltstone and | Water, Possible Gas, Lost Circulation |
| Kirtland | 3674 | 3225 | 4020 | 363 | Claystone and white and brown sanstones | Clay, Water |
| Fruitland | 4148 | 3588 | 3657 | 135 | Mudstone, siltstone, sandstones, carbonaceous shales and coals | Gas Water |
| Main Fruitland Coal | 4324 | 3723 | 3522 | 65 | Target Coal 25' Top 3723 | HZ Lateral |
| Bottom Coal | 4409 | 3788 | 3457 | 8 | Coal | Gas Water |
| Pictured Cliffs | 4419 | 3796 | 3450 | 204 | Shoreface sandstone | Gas Water |
| TD | 4686 | 4000 | 3245 | 4000 | TD Designed From Base of Bottom Coal Seam with 130 ft rathole + 45 Ft Shoe and Complete Log Coverage Over Fruitland | |

**B. Estimated depth and thickness of formations, members or zones potentially containing useable water, oil, gas or prospectively valuable deposits of other minerals that the operator expects to encounter, and the operator's plans for protecting such resources.**

| Carson 32-5-9 1H Geological Report | | | | | | |
|---|---|---|---|---|---|---|
| APD | Top MD (KB) | Top TVD (KB) | Top Subsea TVD | Thickness (FT) | Rock Type | Drilling Notes |
| San Jose | Surface | Surface | 7245 | 1878 | Unconsolidated Gravels | Boulders, Water, Lost Circulation |
| Nacimiento | 2006 | 1878 | 5367 | 1200 | Nonmarine shale, siltstone and sandstones | Water, Lost Circulation |
| Ojo Alamo | 3482 | 3078 | 4167 | 147 | Comglomerate sandstone, sandstone, siltstone and | Water, Possible Gas, Lost Circulation |
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| TD | 4686 | 4000 | 3245 | 4000 | TD Designed From Base of Bottom Coal Seam with 130 ft rathole + 45 Ft Shoe and Complete Log Coverage Over Fruitland | |

**Conductor:** No conductor casing is necessary

**Surface Casing:** Protection of shallow fresh water shall be accomplished by setting surface casing 50' below known fresh water sources and cemented to surface with 9-5/8" surface casing.

**Possible Aquifers:** San Jose, Nacimiento and Ojo Alamo

**Production Casing:** Protection for all other formations will be accomplished by setting 7" casing and cementing to surface. The 7" production casing will be matrix stimulated prior to re-entry for the lateral open hole sections. Same as Completion procedure on page 7 and Horizontal Re-Entry Procedure page 8.
Not planning on hydraulic fracture treatment – perforate with near wellbore matrix acid clean up, cement drilling fluids damage.

**Production Liners:** Will be pre-perforated, uncemented, unstimulated liners to maintain hole stability.

**C. The operator's minimum specifications for blowout prevention equipment and diverter systems to be used, including size, pressure rating, configuration and the testing procedure and frequency. Blowout prevention equipment must meet the minimum standards outlined in Order 2.**

BOP equipment and accessories will meet or exceed BLM requirements outlined in 43 CFR Part 3160.

The working pressure of all BOPE shall exceed the anticipated surface pressure to which it may be subjected, assuming a partially evacuated hole with a pressure gradient of 0.22 psi/ft.

Expected Maximum Bottom Hole pressure = 0.433 psi/ft. x 4000' = 1732 psi, which is less than 2,000 psi working pressure. Maximum anticipated surface pressure will be 1732 psi – (4000' x .22 psi/ft) = 852 psi. Therefore, a 2000 psi Class 2 BOPE system is required that consists of the following:

- 2 preventers with either double ram (blind and pipe) or annular preventer and blind rams.
- Kill line (2" minimum)
- 1 Kill line valve (2" minimum)
- 1 choke line valve
- 2 chokes (refer to diagram in Attachment 1)
- Upper Kelly cock valve with handle available

- Safety valve and subs to fit all drill strings in use
- Pressure gauge on choke manifold
- 2" minimum choke manifold
- Fill-up line above the uppermost preventer

See attached diagram for the proposed BOP systems. Stack #1 will be nippled-up on the 11" 3,000 psi top flange of the wellhead A section for the pilot hole and the dual lateral re-entry. The BOP will be hydraulically operated.

All ram preventers and related equipment will be tested to 2,000 psi for 10 minutes. Annular preventers will be tested to 70% of rated working pressure for 10 minutes. Surface casing will be tested to 1500 psi. All preventers and surface casing will be tested before drilling out of surface casing. BOP equipment will be tested when initially installed, whenever any seal subject to test pressure is broken, following related repairs and at least once every 30 days. Annular preventers will be functionally operated at least once per week. Rams preventers will be activated each trip, not to exceed once per day.

**D. The operator's proposed casing program, including size, grade, weight, type of thread and coupling, the setting depth of each string, and it's condition. The operator must include the minimum design criteria, including casing loading assumptions and corresponding safety factors for burst, collapse, and tensions (body yield and joint strength). The operator must also include the lengths and setting depth of each casing when a tapered casing string is proposed. The hole size for each wellbore section of hole drilled must be included. Special casing designs such as the use of coil tubing or expandable casing may necessitate additional information.**

| Casing & Hole Size | Grade | Weight | Coupling | Setting Depth (MD) | Condition |
|---|---|---|---|---|---|
| 9-5/8" (12-1/4") | J-55 | 36 ppf | LT&C | 0' - 300' | New casing. |
| 7" (8-3/4") | J-55 | 26 ppf | LT&C | 0' - 4686' | New casing. |
| 4-1/2" (6-1/8") Lateral #1 | J-55 | 11.6 ppf | LT&C | 3590-7041' | Used casing. 10' below window TD |
| 4-1/2" (6-1/8") Lateral #2 | J-55 | 11.6 ppf | LT&C | 3605'-7279' | Used casing. 10' below window TD |

The 9-5/8" surface and 7" production casing strings will be tested to .22 psi per foot of the casing string length or 1500 psi, whichever is greater, but not to exceed 70% of the minimum internal yield. The 4-1/2" pre-perforated production casing liners will be uncemented, unstimulated and not tested. The purpose of the 4-1/2"" liner is to keep the hole from collapsing. Isolation for the 4-3/4" laterals will be maintained by the cased and cemented pilot hole with 7" casing and cement to surface.

Minimum casing design factors used: Collapse - 1.0
Burst - 1.1
Tension - 1.4

Surface casing shall have a minimum of 1 centralizer per joint on the bottom three (3) joints, starting with the shoe joint. The 7" production casing will be centralized approximately 1 every fourth joint.

**Surface Casing Design - Evaluation/Casing Test (Collaspe & Burst), 100k overpull (Tension)**

| | | | | Collaspe | Burst | Tension | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Minimum Safety Factors | 1.125 | 1.100 | 1.400 | | | |
| | Size | Weight | Grade | Conn | Collaspe | Burst | Tension (Pipe Body) | Tension (Connection) | Notes |
| Surface | 9.625 | 36 | J-55 | LT&C | 2020 | 3520 | 546000 | 453,000 | 0-300' |
| | | | | | 80% of Burst | 2816 | | | |

| | Casing Depth | MW IN | MW Out | Pres In | Pres Out | SF | |
|---|---|---|---|---|---|---|---|
| Collaspe | 300 | 0.0 | 15.8 | 0 | 246 | 8.20 | Full evacualtion with 15.8 ppg cement in the annulus |
| Burst | 300 | 9.0 | 0.0 | 1500 | 0 | 2.35 | 1500 psig test |

| | | Mud Wt | Air Weight | Bouy Wt | BW+100K | | |
|---|---|---|---|---|---|---|---|
| Tension (Pipe Body) | 300 | 9.0 | 10800 | 9316 | 109316 | 4.99 | 100K overpull |
| Tension (Connection) | 300 | 9.0 | 10800 | 9316 | 109316 | 4.14 | |
| BF = 1-MW/65.5= 0.84732 | | | | | | | |

**Production Casing Design - Evaluation/Casing Test (Collaspe & Burst), 100k overpull (Tension)**

| | | | | Collaspe | Burst | Tension | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Minimum Safety Factors | 1.125 | 1.100 | 1.400 | | | |
| | Size | Weight | Grade | Conn | Collaspe | Burst | Tension (Pipe Body) | Tension (Connection) | Notes |
| Production | 7 | 26 | J-55 | LT&C | 4320 | 4980 | 415000 | 367,000 | 0-4686' |
| | | | | | 80% of Burst | 3984 | | | |

| | Casing Depth | MW IN | MW Out | Pres In | Pres Out | SF | |
|---|---|---|---|---|---|---|---|
| Collaspe | 4686 | 0.0 | 13.5 | 0 | 3290 | 1.31 | Full evacualtion with 15.8 ppg cement in the annulus |
| Burst | 4686 | 10.0 | 0.0 | 1500 | 0 | 3.32 | 1500 psig test |

| | | Mud Wt | Air Weight | Bouy Wt | BW+100K | | |
|---|---|---|---|---|---|---|---|
| Tension (Pipe Body) | 4686 | 10.0 | 121836 | 103235 | 203235 | 2.04 | 100K overpull |
| Tension (Connection) | 4686 | 10.0 | 121836 | 103235 | 203235 | 1.81 | |
| BF = 1-MW/65.5= 0.84732 | | | | | | | |

**E. The estimated amount and type(s) of cement expected to be used in the setting of each casing string. If stage cementing will be used, provide the setting depth of the stage tool(s) and the amount and type of cement including additives, to be used for each stage. Provide the yield of each cement slurry and the expected top of cement, with excess, for each cemented string or stage.**

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. All indications of useable water shall be reported.

The 9-5/8" surface casing shall be cemented back to surface. In the event cement does not circulate to surface, remedial cementing shall be done to cement the casing back to surface. If returns are lost and/or cement is not brought to surface, a cement bond log (CBL) will be required to determine the quality of the job prior to drilling ahead (see OO2).

Top plugs shall be used to reduce contamination of cement by displacement fluid. A fluid spacer will be pumped to help isolate the cement from contamination by the mud fluid being displaced ahead of the cement slurry.

The 7" production casing will be cemented to surface. Tail cement for the 7" production casing cement job is designed to cover 500' above the Fruitland formation top, lead cement is designed to be circulate to surface. Planned excess is 30% in the open hole, excess volume approximately 33 bbls. The 4-1/2" production liners will be uncemented.

**Surface Casing Single Stage Job – (0-300'MD):**
**Excess – 100% over gauge hole – 12-1/4" hole and 9-5/8" casing (0.31318 ft3/ft)**
**Top of Tail Cement - 0'**
**Tail Slurry - (0' – 300' MD): 177 sx** - 15.8 ppg, conventional cement containing:
PREMIUM CEMENT – Cement – 94 lbs/sx
Calcium Chloride - 2%
Poly-E-Flake – Lost Circulation Control Agent – 0.125 lbs/sx
Yield – 1.174 ft3/sx
Water requirement – 5.13 gal/sx.
**Total sacks of cement pumped on surface job = 177 sx**

**Production Casing Single Stage Job – (0-4686'MD):**
**Excess – 30% over gauge hole – 8-3/4" hole and 7" casing (0.1503 ft3/ft)**
**Excess - 0% inside surface casing – 8.921" surf csg ID and 7" casing (0.1668 ft3/ft)**
**Top of Lead Cement - Surface**
**Lead Slurry - (0' – 3300' MD): 268 sx** - 12.3 ppg, conventional cement containing:
VARICEM ™ CEMENT – Cement – 94.02 lbs/sx
FE-2 – Controls Gel Thickening – 0.30%
Kol-Seal – Lost Circulation Control Agent – 5 lbs/sx
Poly-E-Flake – Lost Circulation Control Agent – 0.125 lbs/sx
Yield – 2.395 ft3/sx
Water requirement – 13.29 gal/sx.

**Top of Tail Cement - 3300' MD**
**Tail Slurry - (3300' – 4685'): 150 sx** - 13.5 ppg, conventional cement containing:
VARICEM ™ CEMENT – Cement – 94.02 lbs/sx
Super CBL - Gas Block Additive - 0.30%
FE-2 – Controls Gel Thickening – 0.30%
Kol-Seal – Lost Circulation Control Agent – 5 lbs/sx
Poly-E-Flake – Lost Circulation Control Agent – 0.125 lbs/sx
Yield – 1.844 ft3/sx
Water requirement – 9.16 gal/sx.

**Total sacks of cement pumped on production job = 418 sx**
Actual volumes will be calculated and determined by conditions onsite. All cement slurries will meet or exceed minimum BLM and COGCC requirements. Slurries used will be the slurries listed above or equivalent slurries depending on service provider selected. Cement yields may change depending on selected slurries.

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.

**F. Type and characteristics of the proposed circulating medium or mediums proposed for the drilling of each well bore section, the quantities and types of mud and weighting material to be maintained, and the monitoring equipment to be used on the circulating system. The operator must submit the detailed information when air or gas drill is proposed.**

| Interval (MD) | Hole Section | Hole Size | Type | MW (ppg) | VIS (s/qt) | FL (mL/30 min) | PV (cP) | YP (lbs/100ft²) | Max Salinity (mg/L) | pH |
|---|---|---|---|---|---|---|---|---|---|---|
| 0'-300' | Surface | 12-1/4" | FW/Gel | 8.4-9.0 | ~100 | NC | 16-22 | 18-24 | 2500 | 8-8.9 |
| 300'-4424' | Production | 8-3/4" | LSND | 8.4-9.0 | 35-45 | <10 | 6-21 | 4-27 | 5000 | 8-9.5 |
| 3590'-7041' | Lat #1 | 6-1/8" | Brine | 8.6-9.8 | 28-34 | NC | 1 | 4 | 300000 | 8-9.1 |
| 3605'-7284' | Lat #2 | 6-1/8" | Brine | 8.6-9.8 | 28-34 | NC | 1 | 4 | 300000 | 8-9.1 |

Sufficient weighting material will be on hand to weight mud up to 10.5 PPG, if required.

The formula for weight up with barite is listed below:
Sacks of Barite per 100 bbl of mud = 1470 x (W2 – W1) ÷ (35 – W2)
Where; W1 = current mud weight, W2 = new mud weight
**Sacks = 1470 x (10.5 – 9.0)/ (35-10.5) = 126 sx * 3 (300bbls minimum) = 270sx**

| Mud Product | Estimated Quantity on Location |
|---|---|
| Baroid 41 | 270 sx |
| Aquagel Gold Seal | 250 sx |
| Lime | 4 sx |
| Caustic Soda | 8 sx |
| EZ-Mud | 20 buckets |
| Barazan D Plus | 20 sx |
| Pac R | 20 sx |
| Filter-Chek | 30 sx |
| LCM | 120 sx |

Pit Volume Totalizer (PVT) equipment (or equivalent) will be on each pit to monitor pit levels. A trip tank equipped with a PVT sensor will be used to monitor trip volumes. Possible lost circulation in the Fruitland Coal and Pictured Cliffs Sand. Lost circulation has been successfully mitigated with lost circulation materials.

There will not be a reserve pit for this well. A closed-loop system will be used to recover drilling fluid and dry cuttings during both the pilot hole and laterals hole sections of the well. Above-ground tanks will be utilized to hold cuttings and fluids for rig operations. Frac tanks will be on location to store fresh water, produced water, drilling mud and brine.

## G. The testing, logging, and coring procedures proposed, including drill stem testing procedures, equipment, and safety measures.

**Testing:** None planned.
**Open Hole Logging:** LWD gamma ray for all lateral hole sections (from casing exit to TD).
**Mud Logging:** All lateral hole sections. Samples taken every 90'.
**Coring:** None planned.
**Cased Hole Logging:** If cement is not brought to surface on the surface casing string, then a cement bond log (CBL) will be run to determine the quality of the job prior to drilling ahead. A Cement Bond Log (CBL) will be run after the drilling of the well has been completed and as the start of the completion process. The CBL will confirm the quality of the cement bond and the actual TOC. Gamma ray and density logs may be obtained with the CBL to describe the stratigraphy of the wellbore.

## H. The expected bottom-hole pressure and any anticipated abnormal pressures, temperatures, or potential hazards that the operator expects to encounter, such as lost circulation and hydrogen sulfide. A description or the operators plans for mitigating such hazards must be included.

Maximum expected BHP @ TD 4686' MD / 4000' TVD (0.433 psi/ft): 1732 psi
Maximum expected BHT @ 4000' TVD: ~140º F
The maximum anticipated bottom hole pressure will be controlled with mud weight and BOP equipment.

Possible lost circulation in the Fruitland Coal at 4324' MD and Pictured Cliffs Sand at 4419' MD during the pilot hole drilling. Lost circulation has been successfully mitigated with lost circulation materials. 120sx of LCM materials will be located onsite to manage lost circulation as needed. Possible lost circulation during the lateral re-entry hole sections. Drilling with losses will be mitigated with additional storage tanks for produced water and brine storage.

No hydrogen sulfide gas is anticipated, however, if $H_2S$ is encountered, the guidelines in Onshore Order No. 6 will be followed.

I. **Any other facets of the proposed operation that the operator would like the BLM to considered in reviewing the application. Examples include, but are not limited to: For directional wells, proposed directional designs, plan view, and vertical section in true vertical and measured depths: Horizontal drilling; and Coil tubing Operations.**

**Timing:**
The operation is expected to start October 2020. The pilot hole drilling operations will last approximately 7 days. After the pilot hole has been perforated and acid stimulated the drilling rig will re-enter the 7" production casing, set whipstock(s), sidetrack and drill the 6-1/8" lateral hole sections. The pilot hole and laterals may be drilled in one drilling rig event. Upon completion of the drilling and completion events, the completion rig will be on location approximately two to three weeks to run tubing and set artificial lift.

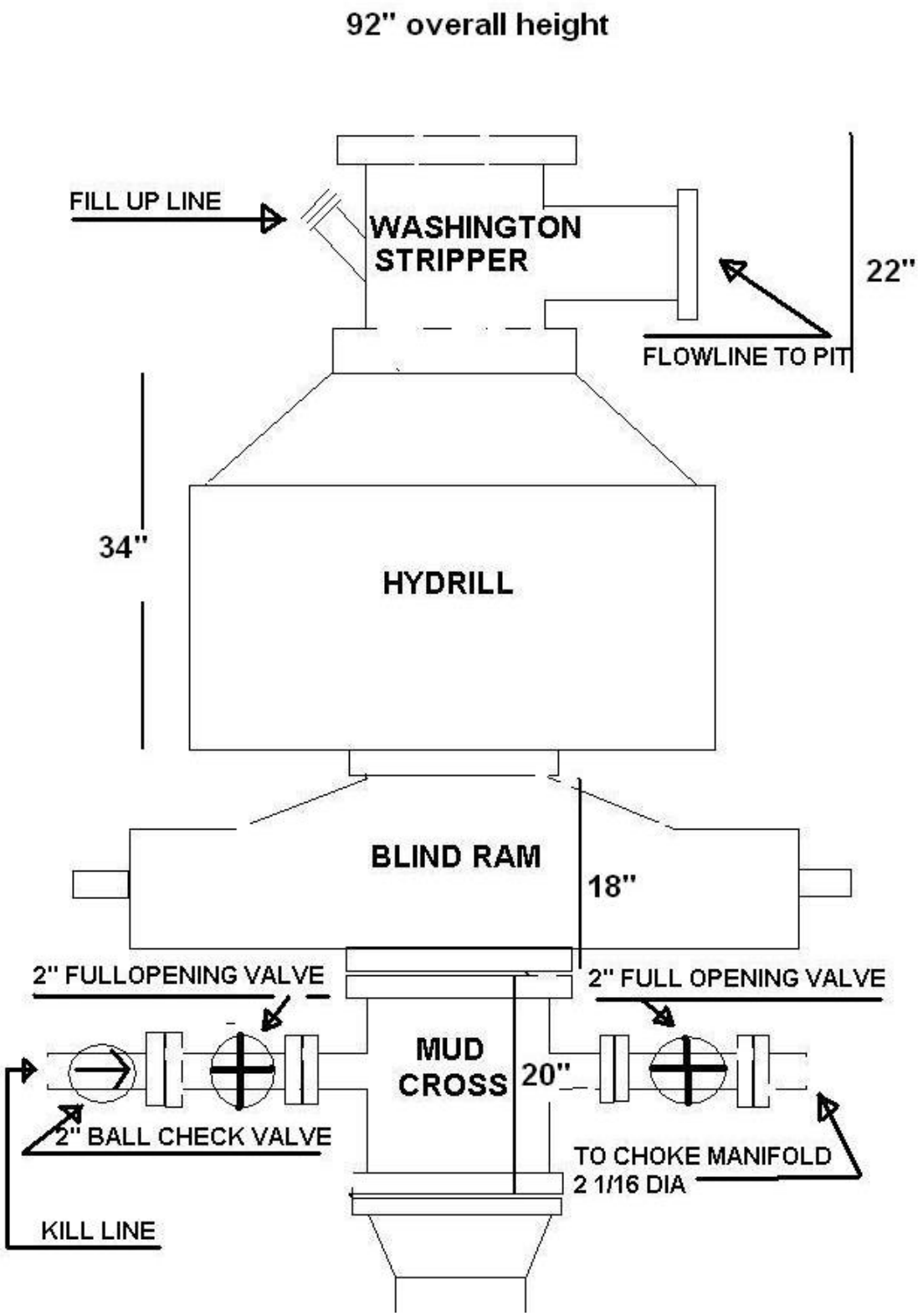
**Directional Plans:**
Pilot hole, Lateral #1, Lateral #2 directional plans and proposed wellbore schematic attached.

**Completion:**
The vertical pilot hole well will be perforated, and acid stimulated to the economic coal seams, identified by cased hole logs, within the Fruitland coal interval estimated from 4224'-4283' MD. It will be cased and cementing with 7" production casing and stimulated with a small volume of acid to ensure perforations are open. The laterals will be cased with 4-1/2" pre-perforated un-cemented tubing to maintain hole stability for natural open hole completion.

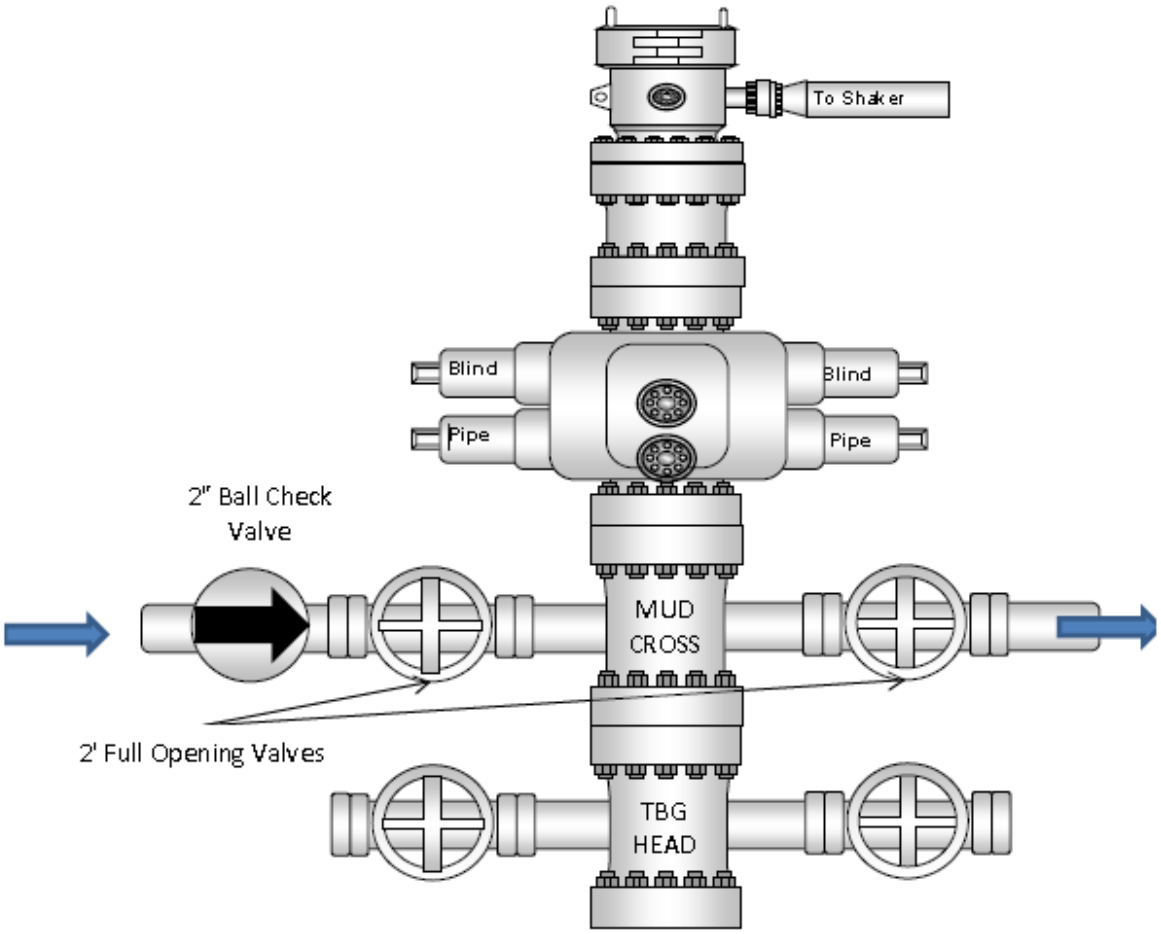
**Horizontal Re-entry Procedure:**

- Drill vertical pilot hole.
- Completed with 7" production casing and cement to surface.
- Pilot hole will be perforated and may be stimulated with a light acid treatment in the Fruitland Coal.
- Run gyro survey, orient and set whipstock for casing exit #1 @ +/-3967' MD
- Mill window and TOOH for curve BHA.
- Planned KOP #1 @ 3605' MD / 3173' TVD.
- Drill 6-1/8" curve from 3605' MD / 3173' TVD to landing point @ 5800' MD / 3605' TVD at 88.35°.
- TOOH and PU lateral BHA.
- Drill from 5800' MD / 3605' TVD to 7284' MD / 3648' TVD.
- TOOH and run 4-1/2" pre-perforated liner from 3610' MD to TD @ 7279' MD.
- Run gyro survey, orient and set whipstock for casing exit #2 @ +/-3590' MD
- Mill window and TOOH for curve BHA.
- Planned KOP #2 @ 3590' MD / 3161' TVD.
- Drill 6-1/8" curve from 3590' MD / 3161' TVD to landing point @ 5107' MD / 3612' TVD at 88.20°.
- TOOH and PU lateral BHA.
- Drill from 5107' MD / 3612' TVD to 7041' MD / 3673' TVD.
- TOOH and run 4-1/2" pre-perforated liner from 3595' MD to TD @ 7036' MD.
- TIH and Set Retrievable Kill Plug.
- Test Plug.
- Secure well, rig down and move off location.

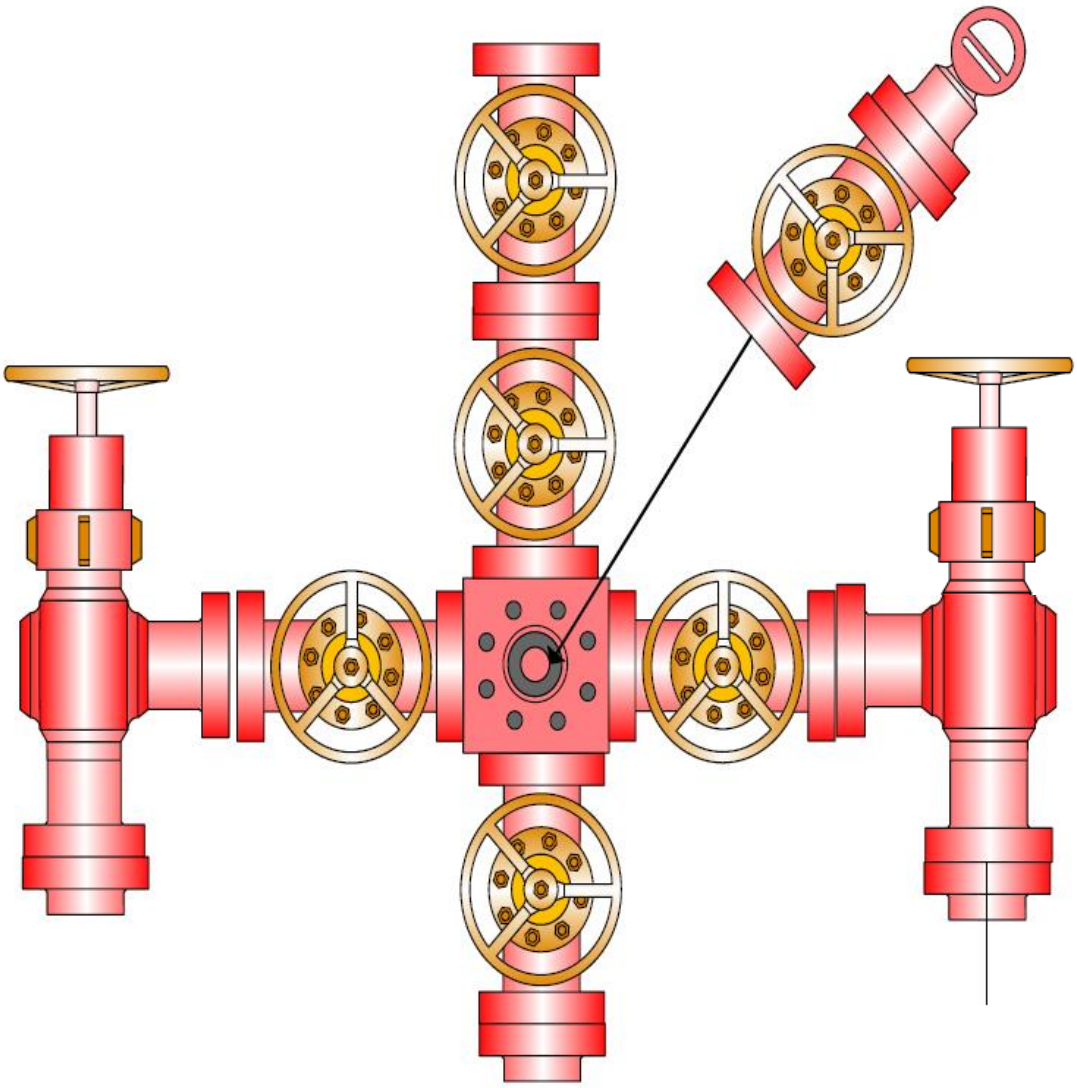
NOTE: Depths and directional plans are based on estimated formation tops. Corrections for KOP and landing points will be made based on actual formation tops from logs and BHA selection.




**Proposed Class 2 BOP Stack - STACK #1 (PILOT HOLE)**




**Proposed Class 2 BOP Stack - STACK #2 (LATERAL RE-ENTRY)**



(Minimum 2”)

**Proposed 2,000 psi Choke Manifold Stack**

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Received by OCD: 1/26/2021 8:05:50 AM

Carson 32-5-9 1 | Plan 2 | PROJECT DETAILS: Rio Arriba County, NM

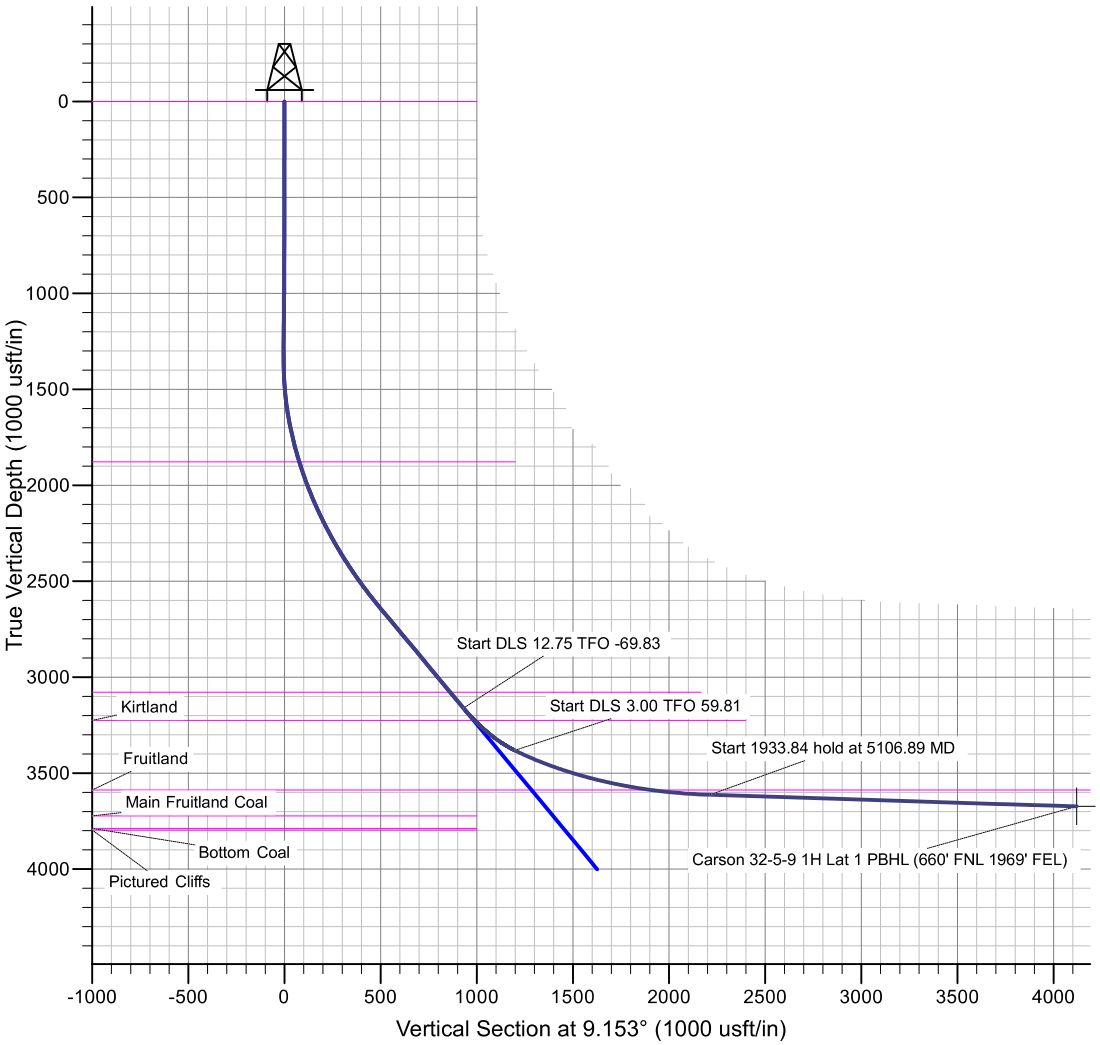
GL 7230' & KB 15' @ 7245.00usft

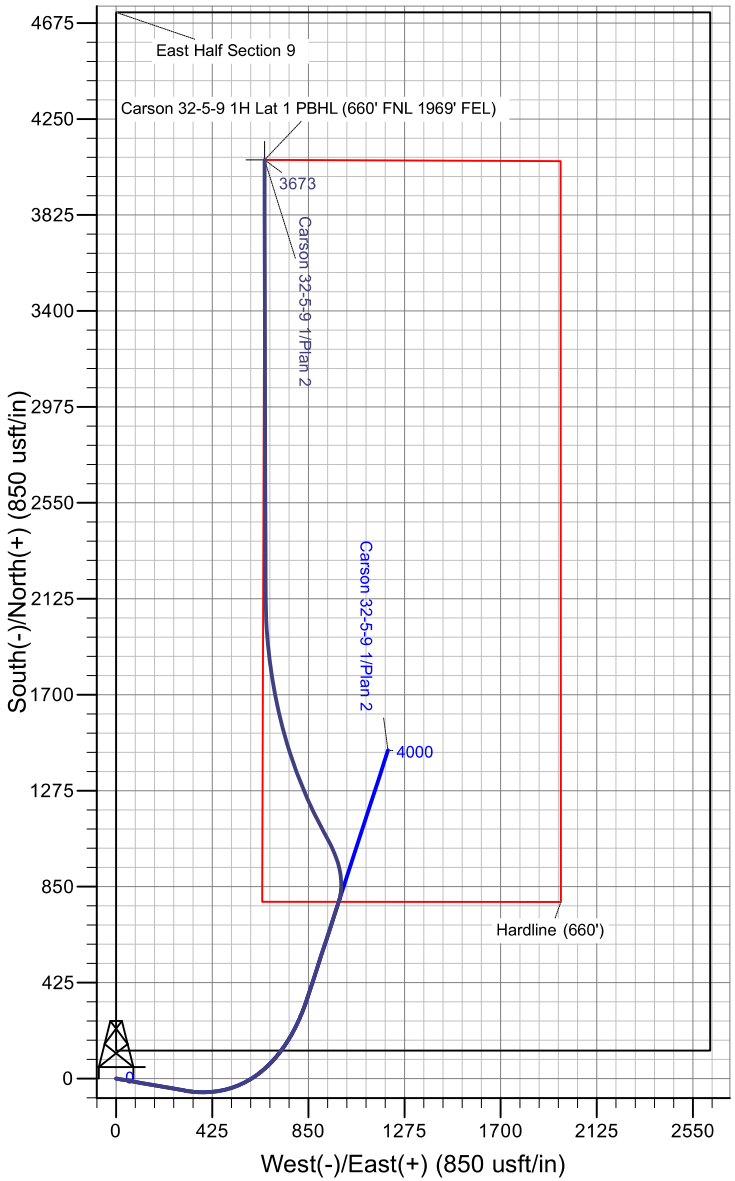
| Northing | Easting | Latitude | Longitude |
|---|---|---|---|
| 2180525.56 | 1313970.64 | 36.9871264 | -107.3677452 |

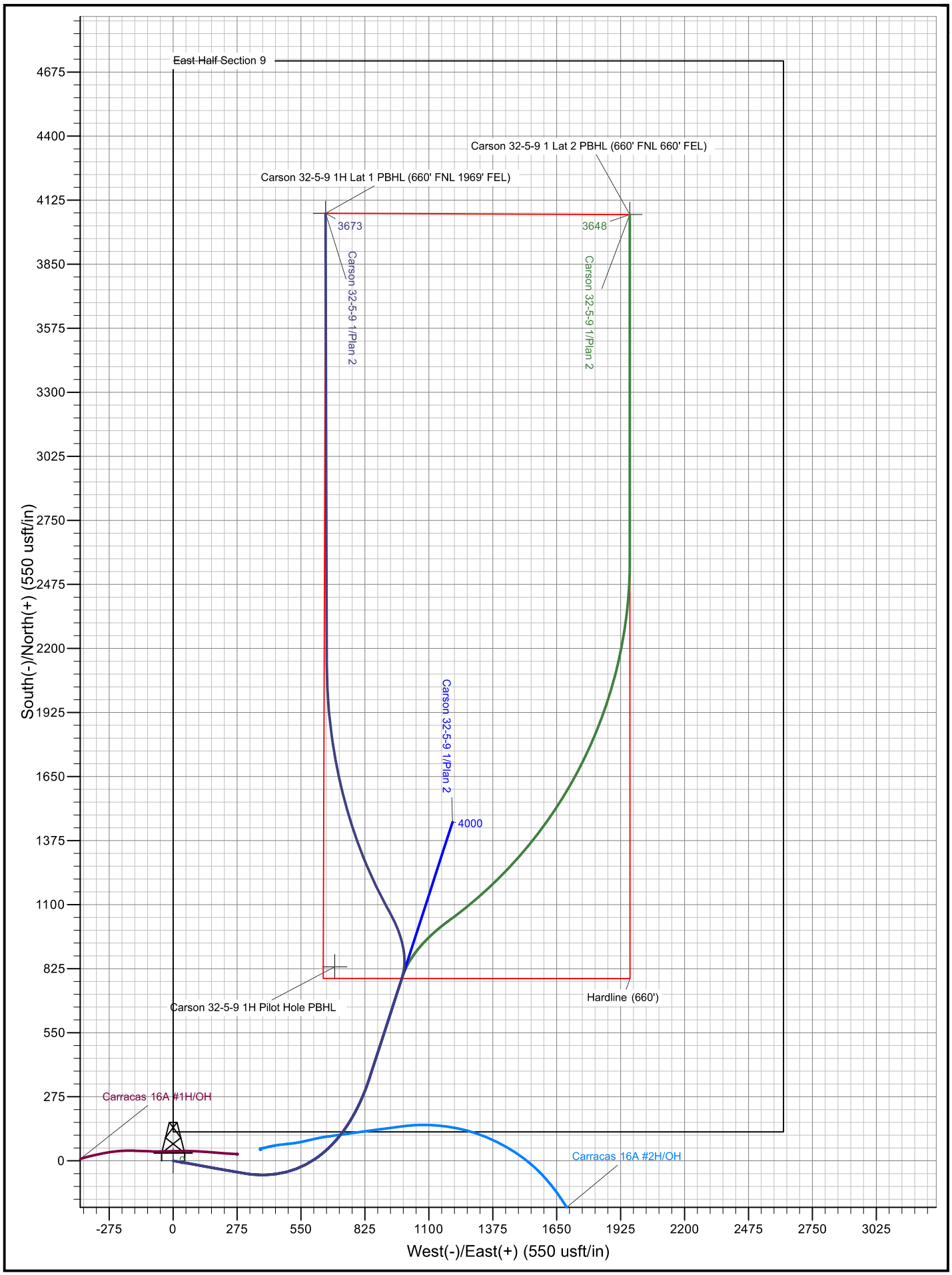
Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: New Mexico Central Zone
System Datum: Mean Sea Level

PLAN DETAILS

| MD | Inc | Azi | TVD | +N/-S | +E/-W | DIeg | TFace | VSect |
|---|---|---|---|---|---|---|---|---|
| 3590.00 | 40.00 | 18.000 | 3160.68 | 784.48 | 984.38 | 0.00 | 0.00 | 931.09 |
| 3959.07 | 68.92 | 330.572 | 3380.94 | 1063.10 | 933.54 | 12.75 | -69.83 | 1198.07 |
| 5106.89 | 88.20 | 359.849 | 3612.36 | 2135.62 | 660.66 | 3.00 | 59.81 | 2213.52 |
| 7040.73 | 88.20 | 359.849 | 3673.00 | 4068.50 | 655.56 | 0.00 | 0.00 | 4120.97 |




East Half Section 9
Carson 32-5-9 1 Lat 2 PBHL (660' FNL 660' FEL)
Carson 32-5-9 1H Lat 1 PBHL (660' FNL 1969' FEL)
3673
3648
Carson 32-5-9 1/Plan 2
Carson 32-5-9 1/Plan 2
Carson 32-5-9 1/Plan 2
4000
Carson 32-5-9 1H Pilot Hole PBHL
Hardline (660')
Carracas 16A #1H/OH
Carracas 16A #2H/OH
South(-)/North(+) (550 usft/in)
West(-)/East(+) (550 usft/in)
4675
4400
4125
3850
3575
3300
3025
2750
2475
2200
1925
1650
1375
1100
825
550
275
0
-275
0
275
550
825
1100
1375
1650
1925
2200
2475
2750
3025

# Coleman Oil & Gas Inc.

**Rio Arriba County, NM**
**Carson 32-5-9**
**Carson 32-5-9 1**

**Lateral 1**

**Plan: Plan 2**

# Standard Planning Report

**26 May, 2020**

Scientific Drilling

www.scientificdrilling.com

# Scientific Drilling, Intl
Planning Report

| | | | |
|---|---|---|---|
| **Database:** | Grand Junction | **Local Co-ordinate Reference:** | Well Carson 32-5-9 1 |
| **Company:** | Coleman Oil & Gas Inc. | **TVD Reference:** | GL 7230' & KB 15' @ 7245.00usft |
| **Project:** | Rio Arriba County, NM | **MD Reference:** | GL 7230' & KB 15' @ 7245.00usft |
| **Site:** | Carson 32-5-9 | **North Reference:** | True |
| **Well:** | Carson 32-5-9 1 | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | Lateral 1 | | |
| **Design:** | Plan 2 | | |

**Project** Rio Arriba County, NM

| | | | |
|---|---|---|---|
| **Map System:** | US State Plane 1983 | **System Datum:** | Mean Sea Level |
| **Geo Datum:** | North American Datum 1983 | | |
| **Map Zone:** | New Mexico Central Zone | | |

**Site** Carson 32-5-9, Site Center: Carson 32-5-9 1H

| | | | | | |
|---|---|---|---|---|---|
| **Site Position:** | | **Northing:** | 2,180,525.56 usft | **Latitude:** | 36.9871264 |
| **From:** | Lat/Long | **Easting:** | 1,313,970.64 usft | **Longitude:** | -107.3677452 |
| **Position Uncertainty:** | 0.00 usft | **Slot Radius:** | 13.20 in | **Grid Convergence:** | -0.67 ° |

**Well** Carson 32-5-9 1, 124' FNL 2626' FEL Sec 16 T32N R5W

| | | | | | | |
|---|---|---|---|---|---|---|
| **Well Position** | **+N/-S** | 0.00 usft | **Northing:** | 2,180,525.56 usft | **Latitude:** | 36.9871264 |
| | **+E/-W** | 0.00 usft | **Easting:** | 1,313,970.64 usft | **Longitude:** | -107.3677452 |
| **Position Uncertainty** | | 0.00 usft | **Wellhead Elevation:** | | **Ground Level:** | 7,230.00 usft |

**Wellbore** Lateral 1

| Magnetics | Model Name | Sample Date | Declination (°) | Dip Angle (°) | Field Strength (nT) |
|---|---|---|---|---|---|
| | HDGM_FILE | 4/16/2020 | 8.82 | 63.45 | 49,789.20000000 |

**Design** Plan 2

**Audit Notes:**

| | | | | | |
|---|---|---|---|---|---|
| **Version:** | | **Phase:** | PLAN | **Tie On Depth:** | 3,590.00 |

| Vertical Section: | Depth From (TVD) (usft) | +N/-S (usft) | +E/-W (usft) | Direction (°) |
|---|---|---|---|---|
| | 0.00 | 0.00 | 0.00 | 9.153 |

**Plan Sections**

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) | TFO (°) | Target |
|---|---|---|---|---|---|---|---|---|---|---|
| 3,590.00 | 40.00 | 18.000 | 3,160.68 | 784.48 | 984.38 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 3,959.07 | 68.92 | 330.572 | 3,380.94 | 1,063.10 | 933.54 | 12.75 | 7.84 | -12.85 | -69.83 | |
| 5,106.89 | 88.20 | 359.849 | 3,612.36 | 2,135.62 | 660.66 | 3.00 | 1.68 | 2.55 | 59.81 | |
| 7,040.73 | 88.20 | 359.849 | 3,673.00 | 4,068.50 | 655.56 | 0.00 | 0.00 | 0.00 | 0.00 | Carson 32-5-9 1H Lat |



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# Scientific Drilling, Intl

Planning Report

| | | | |
|---|---|---|---|
| **Database:** | Grand Junction | **Local Co-ordinate Reference:** | Well Carson 32-5-9 1 |
| **Company:** | Coleman Oil & Gas Inc. | **TVD Reference:** | GL 7230' & KB 15' @ 7245.00usft |
| **Project:** | Rio Arriba County, NM | **MD Reference:** | GL 7230' & KB 15' @ 7245.00usft |
| **Site:** | Carson 32-5-9 | **North Reference:** | True |
| **Well:** | Carson 32-5-9 1 | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | Lateral 1 | | |
| **Design:** | Plan 2 | | |

**Planned 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) |
|---|---|---|---|---|---|---|---|---|---|
| 3,590.00 | 40.00 | 18.000 | 3,160.68 | 784.48 | 984.38 | 931.09 | 0.00 | 0.00 | 0.00 |
| **Start DLS 12.75 TFO -69.83** | | | | | | | | | |
| 3,600.00 | 40.45 | 16.155 | 3,168.32 | 790.66 | 986.27 | 937.48 | 12.75 | 4.54 | -18.45 |
| 3,676.92 | 44.83 | 3.172 | 3,225.00 | 841.83 | 994.74 | 989.35 | 12.75 | 5.69 | -16.88 |
| **Kirtland** | | | | | | | | | |
| 3,700.00 | 46.41 | 359.694 | 3,241.14 | 858.31 | 995.14 | 1,005.69 | 12.75 | 6.83 | -15.07 |
| 3,800.00 | 54.26 | 346.603 | 3,305.09 | 934.32 | 985.51 | 1,079.19 | 12.75 | 7.85 | -13.09 |
| 3,900.00 | 63.27 | 336.018 | 3,357.00 | 1,014.93 | 957.84 | 1,154.38 | 12.75 | 9.00 | -10.58 |
| 3,959.07 | 68.92 | 330.572 | 3,380.94 | 1,063.10 | 933.54 | 1,198.07 | 12.75 | 9.57 | -9.22 |
| **Start DLS 3.00 TFO 59.81** | | | | | | | | | |
| 4,000.00 | 69.54 | 331.705 | 3,395.46 | 1,096.62 | 915.07 | 1,228.22 | 3.00 | 1.52 | 2.77 |
| 4,100.00 | 71.09 | 334.435 | 3,429.14 | 1,180.56 | 872.44 | 1,304.31 | 3.00 | 1.55 | 2.73 |
| 4,200.00 | 72.68 | 337.114 | 3,460.25 | 1,267.22 | 833.46 | 1,383.67 | 3.00 | 1.59 | 2.68 |
| 4,300.00 | 74.30 | 339.746 | 3,488.67 | 1,356.37 | 798.22 | 1,466.08 | 3.00 | 1.62 | 2.63 |
| 4,400.00 | 75.95 | 342.337 | 3,514.35 | 1,447.77 | 766.84 | 1,551.32 | 3.00 | 1.65 | 2.59 |
| 4,500.00 | 77.63 | 344.890 | 3,537.21 | 1,541.16 | 739.38 | 1,639.15 | 3.00 | 1.68 | 2.55 |
| 4,600.00 | 79.33 | 347.411 | 3,557.18 | 1,636.29 | 715.94 | 1,729.34 | 3.00 | 1.70 | 2.52 |
| 4,700.00 | 81.06 | 349.903 | 3,574.21 | 1,732.89 | 696.56 | 1,821.63 | 3.00 | 1.72 | 2.49 |
| 4,797.95 | 82.76 | 352.321 | 3,588.00 | 1,828.69 | 681.58 | 1,913.83 | 3.00 | 1.74 | 2.47 |
| **Fruitland** | | | | | | | | | |
| 4,800.00 | 82.80 | 352.371 | 3,588.26 | 1,830.71 | 681.31 | 1,915.78 | 3.00 | 1.75 | 2.46 |
| 4,900.00 | 84.55 | 354.821 | 3,599.28 | 1,929.47 | 670.23 | 2,011.51 | 3.00 | 1.75 | 2.45 |
| 5,000.00 | 86.31 | 357.256 | 3,607.25 | 2,028.90 | 663.35 | 2,108.59 | 3.00 | 1.76 | 2.44 |
| 5,100.00 | 88.08 | 359.682 | 3,612.14 | 2,128.73 | 660.68 | 2,206.72 | 3.00 | 1.77 | 2.43 |
| 5,106.89 | 88.20 | 359.849 | 3,612.36 | 2,135.62 | 660.66 | 2,213.52 | 3.00 | 1.77 | 2.42 |
| **Start 1933.84 hold at 5106.89 MD** | | | | | | | | | |
| 5,200.00 | 88.20 | 359.849 | 3,615.28 | 2,228.68 | 660.41 | 2,305.36 | 0.00 | 0.00 | 0.00 |
| 5,300.00 | 88.20 | 359.849 | 3,618.42 | 2,328.63 | 660.15 | 2,403.99 | 0.00 | 0.00 | 0.00 |
| 5,400.00 | 88.20 | 359.849 | 3,621.55 | 2,428.58 | 659.88 | 2,502.63 | 0.00 | 0.00 | 0.00 |
| 5,500.00 | 88.20 | 359.849 | 3,624.69 | 2,528.53 | 659.62 | 2,601.27 | 0.00 | 0.00 | 0.00 |
| 5,600.00 | 88.20 | 359.849 | 3,627.82 | 2,628.48 | 659.36 | 2,699.90 | 0.00 | 0.00 | 0.00 |
| 5,700.00 | 88.20 | 359.849 | 3,630.96 | 2,728.43 | 659.09 | 2,798.54 | 0.00 | 0.00 | 0.00 |
| 5,800.00 | 88.20 | 359.849 | 3,634.10 | 2,828.38 | 658.83 | 2,897.17 | 0.00 | 0.00 | 0.00 |
| 5,900.00 | 88.20 | 359.849 | 3,637.23 | 2,928.33 | 658.56 | 2,995.81 | 0.00 | 0.00 | 0.00 |
| 6,000.00 | 88.20 | 359.849 | 3,640.37 | 3,028.29 | 658.30 | 3,094.44 | 0.00 | 0.00 | 0.00 |
| 6,100.00 | 88.20 | 359.849 | 3,643.50 | 3,128.24 | 658.04 | 3,193.08 | 0.00 | 0.00 | 0.00 |
| 6,200.00 | 88.20 | 359.849 | 3,646.64 | 3,228.19 | 657.77 | 3,291.72 | 0.00 | 0.00 | 0.00 |
| 6,300.00 | 88.20 | 359.849 | 3,649.77 | 3,328.14 | 657.51 | 3,390.35 | 0.00 | 0.00 | 0.00 |
| 6,400.00 | 88.20 | 359.849 | 3,652.91 | 3,428.09 | 657.25 | 3,488.99 | 0.00 | 0.00 | 0.00 |
| 6,500.00 | 88.20 | 359.849 | 3,656.05 | 3,528.04 | 656.98 | 3,587.62 | 0.00 | 0.00 | 0.00 |
| 6,600.00 | 88.20 | 359.849 | 3,659.18 | 3,627.99 | 656.72 | 3,686.26 | 0.00 | 0.00 | 0.00 |
| 6,700.00 | 88.20 | 359.849 | 3,662.32 | 3,727.94 | 656.46 | 3,784.89 | 0.00 | 0.00 | 0.00 |
| 6,800.00 | 88.20 | 359.849 | 3,665.45 | 3,827.89 | 656.19 | 3,883.53 | 0.00 | 0.00 | 0.00 |
| 6,900.00 | 88.20 | 359.849 | 3,668.59 | 3,927.84 | 655.93 | 3,982.17 | 0.00 | 0.00 | 0.00 |
| 7,000.00 | 88.20 | 359.849 | 3,671.72 | 4,027.79 | 655.66 | 4,080.80 | 0.00 | 0.00 | 0.00 |
| 7,040.73 | 88.20 | 359.849 | 3,673.00 | 4,068.50 | 655.56 | 4,120.97 | 0.00 | 0.00 | 0.00 |
| **TD at 7040.73** | | | | | | | | | |

# Scientific Drilling, Intl

Planning Report

| | | | |
|---|---|---|---|
| **Database:** | Grand Junction | **Local Co-ordinate Reference:** | Well Carson 32-5-9 1 |
| **Company:** | Coleman Oil & Gas Inc. | **TVD Reference:** | GL 7230' & KB 15' @ 7245.00usft |
| **Project:** | Rio Arriba County, NM | **MD Reference:** | GL 7230' & KB 15' @ 7245.00usft |
| **Site:** | Carson 32-5-9 | **North Reference:** | True |
| **Well:** | Carson 32-5-9 1 | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | Lateral 1 | | |
| **Design:** | Plan 2 | | |

**Design Targets**

| Target Name - hit/miss target - Shape | Dip Angle (°) | Dip Dir. (°) | TVD (usft) | +N/-S (usft) | +E/-W (usft) | Northing (usft) | Easting (usft) | Latitude | Longitude |
|---|---|---|---|---|---|---|---|---|---|
| Carson 32-5-9 1H Lat 1<br>- plan hits target center<br>- Point | 0.00 | 0.000 | 3,673.00 | 4,068.50 | 655.56 | 2,184,586.08 | 1,314,673.91 | 36.9983003 | -107.3655005 |

**Formations**

| Measured Depth (usft) | Vertical Depth (usft) | Name | Lithology | Dip (°) | Dip Direction (°) |
|---|---|---|---|---|---|
| 0.00 | 0.00 | San Jose | | 0.00 | |
| 2,005.76 | 1,878.00 | Nacimiento | | 0.00 | |
| 3,482.06 | 3,078.00 | Ojo Alamo | | 0.00 | |
| 3,676.92 | 3,225.00 | Kirtland | | 0.00 | |
| 4,797.95 | 3,588.00 | Fruitland | | 0.00 | |

**Plan Annotations**

| Measured Depth (usft) | Vertical Depth (usft) | Local Coordinates +N/-S (usft) | Local Coordinates +E/-W (usft) | Comment |
|---|---|---|---|---|
| 3,590.00 | 3,160.68 | 784.48 | 984.38 | Start DLS 12.75 TFO -69.83 |
| 3,959.07 | 3,380.94 | 1,063.10 | 933.54 | Start DLS 3.00 TFO 59.81 |
| 5,106.89 | 3,612.36 | 2,135.62 | 660.66 | Start 1933.84 hold at 5106.89 MD |
| 7,040.73 | 3,673.00 | 4,068.50 | 655.56 | TD at 7040.73 |

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Received by OCD: 1/26/2021 8:05:50 AM

Carson 32-5-9 1 | Plan 2 | PROJECT DETAILS: Rio Arriba County, NM

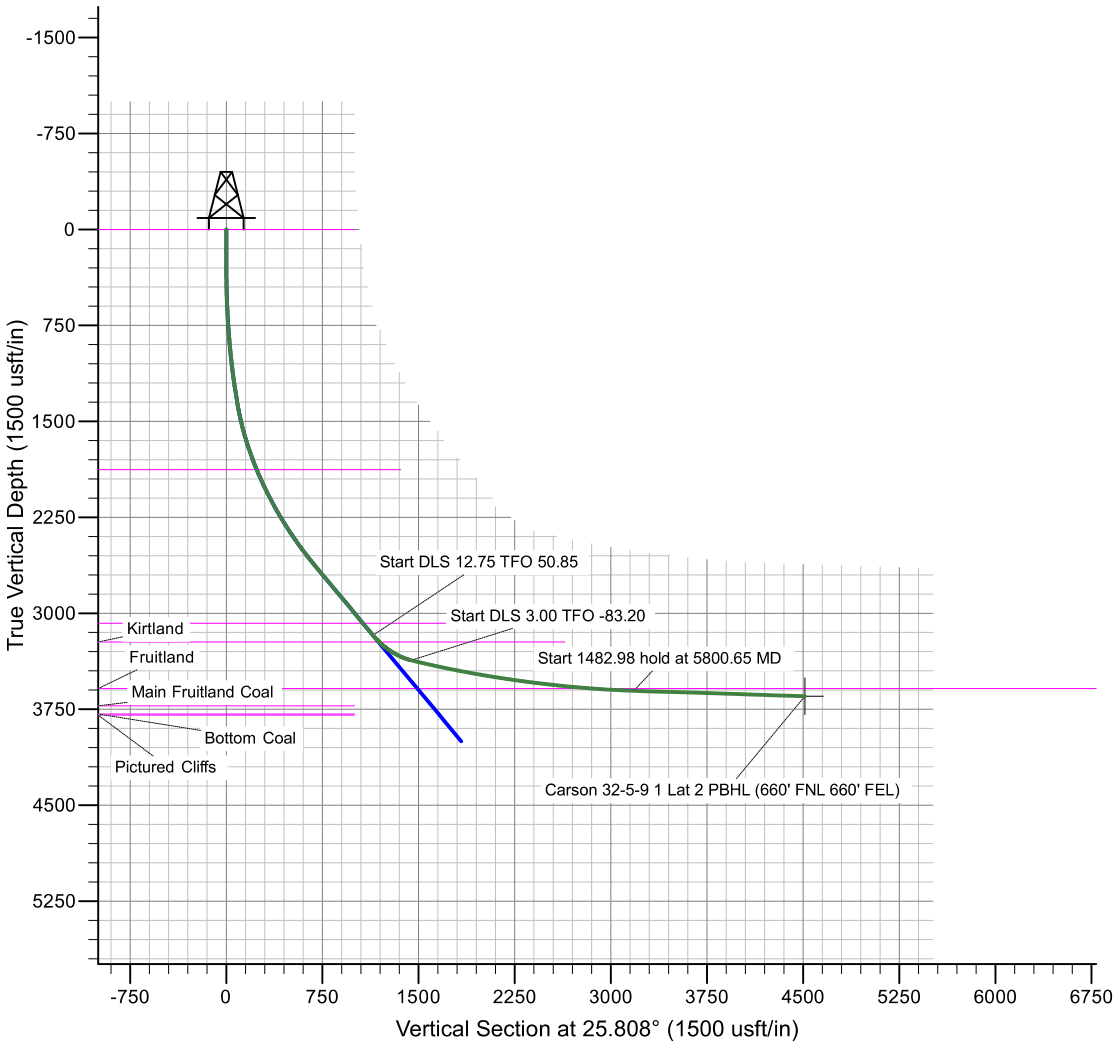
GL 7230' & KB 15' @ 7245.00usft

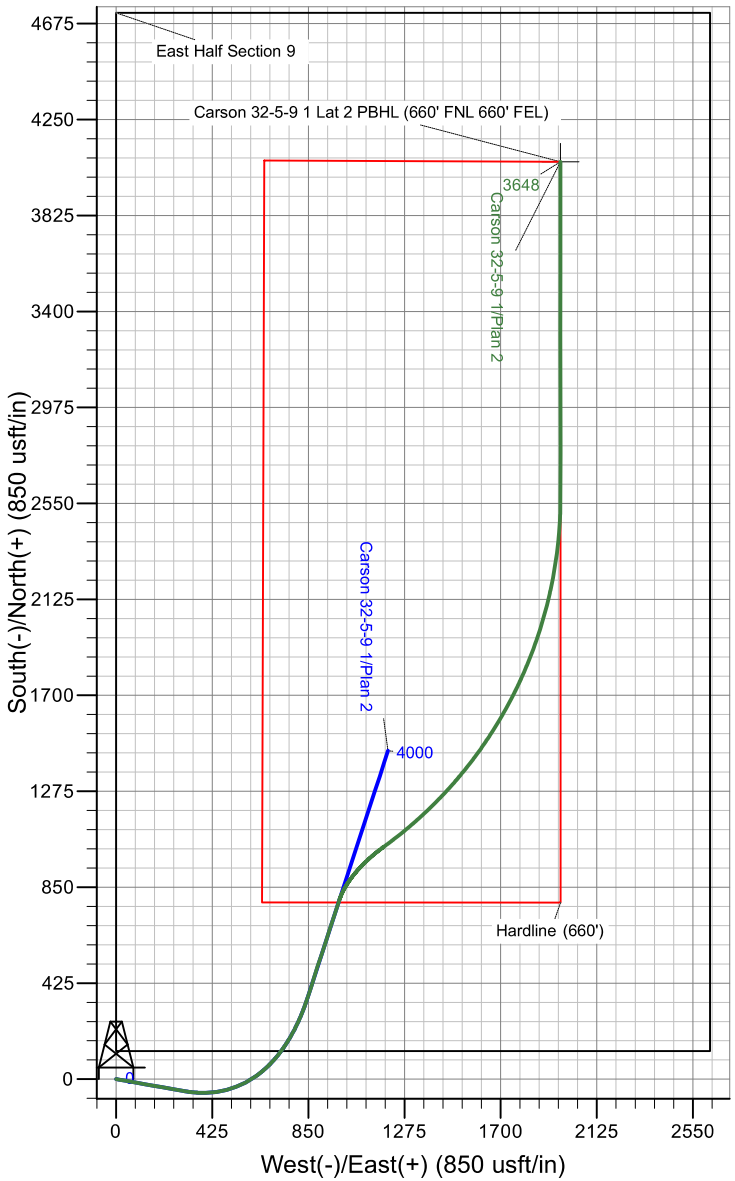
| Northing | Easting | Latitude | Longitude |
|---|---|---|---|
| 2180525.56 | 1313970.64 | 36.9871264 | -107.3677452 |

Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: New Mexico Central Zone
System Datum: Mean Sea Level

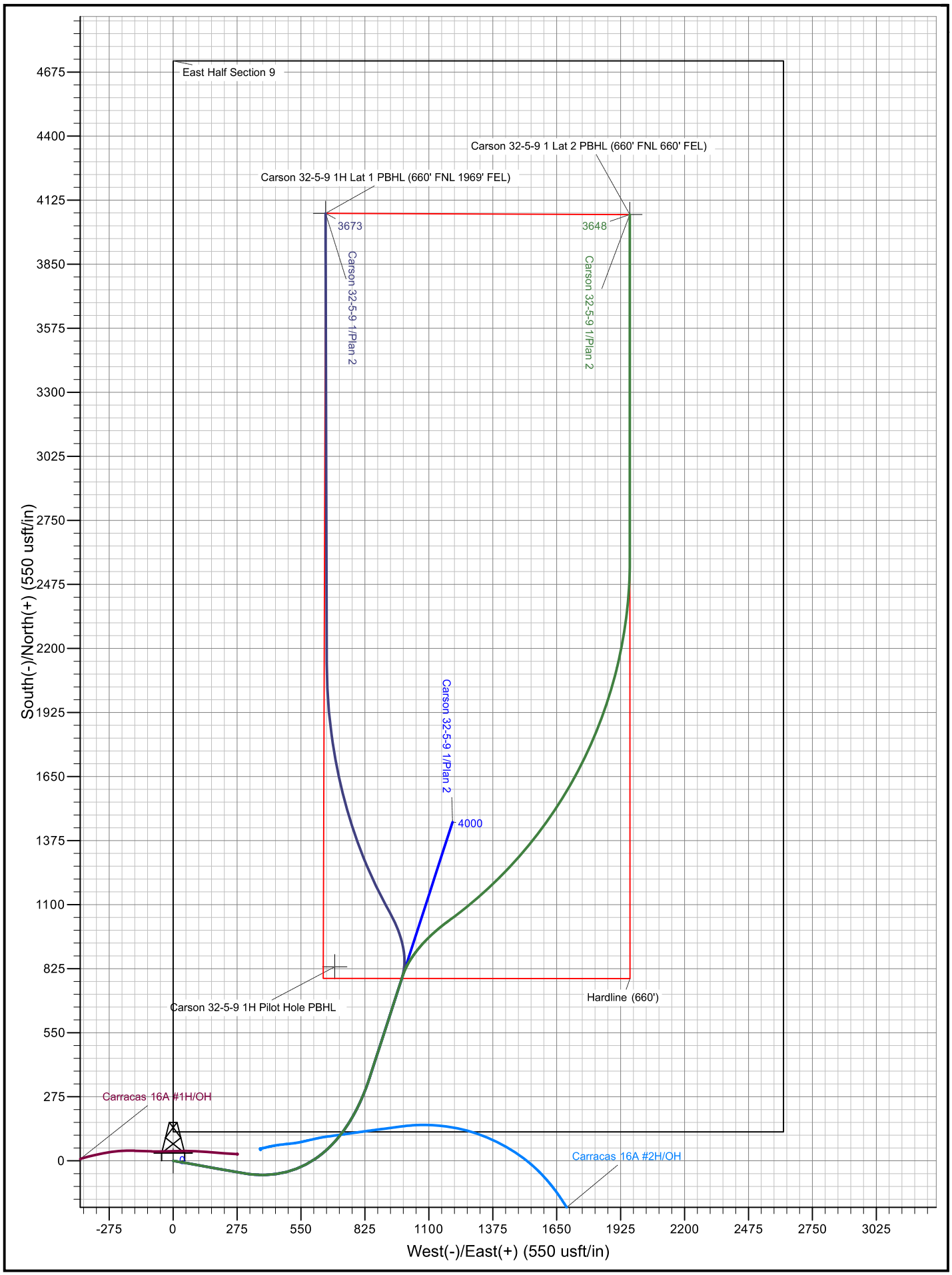
PLAN DETAILS

| MD | Inc | Azi | TVD | +N/-S | +E/-W | Dleg | TFace | VSect |
|---|---|---|---|---|---|---|---|---|
| 3605.00 | 40.00 | 18.000 | 3172.18 | 793.65 | 987.36 | 0.00 | 0.00 | 1144.34 |
| 3980.64 | 77.73 | 54.069 | 3367.48 | 1030.10 | 1184.91 | 12.75 | 50.85 | 1443.22 |
| 5800.65 | 88.35 | 360.000 | 3605.33 | 2580.69 | 1964.86 | 3.00 | -83.20 | 3178.70 |
| 7283.63 | 88.35 | 360.000 | 3648.00 | 4063.06 | 1964.85 | 0.00 | 0.00 | 4513.21 |




Page 20 of 37


East Half Section 9
Carson 32-5-9 1 Lat 2 PBHL (660' FNL 660' FEL)
Carson 32-5-9 1H Lat 1 PBHL (660' FNL 1969' FEL)
3673
3648
Carson 32-5-9 1/Plan 2
Carson 32-5-9 1/Plan 2
Carson 32-5-9 1/Plan 2
4000
Carson 32-5-9 1H Pilot Hole PBHL
Hardline (660')
Carracas 16A #1H/OH
Carracas 16A #2H/OH
South(-)/North(+) (550 usft/in)
West(-)/East(+) (550 usft/in)
4675
4400
4125
3850
3575
3300
3025
2750
2475
2200
1925
1650
1375
1100
825
550
275
0
-275
0
275
550
825
1100
1375
1650
1925
2200
2475
2750
3025

# Coleman Oil & Gas Inc.

**Rio Arriba County, NM**
**Carson 32-5-9**
**Carson 32-5-9 1**

**Lateral 2**

**Plan: Plan 2**

# Standard Planning Report

**26 May, 2020**

Scientific Drilling

www.scientificdrilling.com

# Scientific Drilling, Intl
Planning Report

| | | | |
|---|---|---|---|
| **Database:** | Grand Junction | **Local Co-ordinate Reference:** | Well Carson 32-5-9 1 |
| **Company:** | Coleman Oil & Gas Inc. | **TVD Reference:** | GL 7230' & KB 15' @ 7245.00usft |
| **Project:** | Rio Arriba County, NM | **MD Reference:** | GL 7230' & KB 15' @ 7245.00usft |
| **Site:** | Carson 32-5-9 | **North Reference:** | True |
| **Well:** | Carson 32-5-9 1 | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | Lateral 2 | | |
| **Design:** | Plan 2 | | |

**Project** Rio Arriba County, NM

| | | | |
|---|---|---|---|
| **Map System:** | US State Plane 1983 | **System Datum:** | Mean Sea Level |
| **Geo Datum:** | North American Datum 1983 | | |
| **Map Zone:** | New Mexico Central Zone | | |

**Site** Carson 32-5-9, Site Center: Carson 32-5-9 1H

| | | | | | |
|---|---|---|---|---|---|
| **Site Position:** | | **Northing:** | 2,180,525.56 usft | **Latitude:** | 36.9871264 |
| **From:** | Lat/Long | **Easting:** | 1,313,970.64 usft | **Longitude:** | -107.3677452 |
| **Position Uncertainty:** | 0.00 usft | **Slot Radius:** | 13.20 in | **Grid Convergence:** | -0.67 ° |

**Well** Carson 32-5-9 1, 124' FNL 2626' FEL Sec 16 T32N R5W

| | | | | | | |
|---|---|---|---|---|---|---|
| **Well Position** | **+N/-S** | 0.00 usft | **Northing:** | 2,180,525.56 usft | **Latitude:** | 36.9871264 |
| | **+E/-W** | 0.00 usft | **Easting:** | 1,313,970.64 usft | **Longitude:** | -107.3677452 |
| **Position Uncertainty** | | 0.00 usft | **Wellhead Elevation:** | | **Ground Level:** | 7,230.00 usft |

**Wellbore** Lateral 2

| Magnetics | Model Name | Sample Date | Declination (°) | Dip Angle (°) | Field Strength (nT) |
|---|---|---|---|---|---|
| | HDGM_FILE | 4/16/2020 | 8.82 | 63.45 | 49,789.20000000 |

**Design** Plan 2

**Audit Notes:**

| | | | | | |
|---|---|---|---|---|---|
| **Version:** | | **Phase:** | PLAN | **Tie On Depth:** | 3,605.00 |

| Vertical Section: | Depth From (TVD) (usft) | +N/-S (usft) | +E/-W (usft) | Direction (°) |
|---|---|---|---|---|
| | 0.00 | 0.00 | 0.00 | 25.808 |

**Plan Sections**

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) | TFO (°) | Target |
|---|---|---|---|---|---|---|---|---|---|---|
| 3,605.00 | 40.00 | 18.000 | 3,172.18 | 793.65 | 987.36 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 3,980.64 | 77.73 | 54.069 | 3,367.48 | 1,030.10 | 1,184.91 | 12.75 | 10.04 | 9.60 | 50.85 | |
| 5,800.65 | 88.35 | 360.000 | 3,605.33 | 2,580.69 | 1,964.86 | 3.00 | 0.58 | -2.97 | -83.20 | |
| 7,283.63 | 88.35 | 360.000 | 3,648.00 | 4,063.06 | 1,964.85 | 0.00 | 0.00 | 0.00 | 0.00 | Carson 32-5-9 1 Lat 2 |



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# Scientific Drilling, Intl

Planning Report

| | | | |
|---|---|---|---|
| **Database:** | Grand Junction | **Local Co-ordinate Reference:** | Well Carson 32-5-9 1 |
| **Company:** | Coleman Oil & Gas Inc. | **TVD Reference:** | GL 7230' & KB 15' @ 7245.00usft |
| **Project:** | Rio Arriba County, NM | **MD Reference:** | GL 7230' & KB 15' @ 7245.00usft |
| **Site:** | Carson 32-5-9 | **North Reference:** | True |
| **Well:** | Carson 32-5-9 1 | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | Lateral 2 | | |
| **Design:** | Plan 2 | | |

**Planned 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) |
|---|---|---|---|---|---|---|---|---|---|
| 3,605.00 | 40.00 | 18.000 | 3,172.18 | 793.65 | 987.36 | 1,144.34 | 0.00 | 0.00 | 0.00 |
| **Start DLS 12.75 TFO 50.85** | | | | | | | | | |
| 3,677.35 | 46.28 | 27.903 | 3,225.00 | 838.97 | 1,006.82 | 1,193.62 | 12.75 | 8.69 | 13.69 |
| **Kirtland** | | | | | | | | | |
| 3,700.00 | 48.41 | 30.566 | 3,240.35 | 853.50 | 1,014.96 | 1,210.24 | 12.75 | 9.37 | 11.76 |
| 3,800.00 | 58.37 | 40.514 | 3,300.01 | 918.33 | 1,061.83 | 1,289.01 | 12.75 | 9.96 | 9.95 |
| 3,900.00 | 68.95 | 48.471 | 3,344.37 | 981.90 | 1,124.68 | 1,373.60 | 12.75 | 10.58 | 7.96 |
| 3,980.64 | 77.73 | 54.069 | 3,367.48 | 1,030.10 | 1,184.91 | 1,443.22 | 12.75 | 10.88 | 6.94 |
| **Start DLS 3.00 TFO -83.20** | | | | | | | | | |
| 4,000.00 | 77.80 | 53.479 | 3,371.58 | 1,041.28 | 1,200.17 | 1,459.93 | 3.00 | 0.36 | -3.05 |
| 4,100.00 | 78.18 | 50.436 | 3,392.39 | 1,101.55 | 1,277.19 | 1,547.71 | 3.00 | 0.38 | -3.04 |
| 4,200.00 | 78.59 | 47.402 | 3,412.54 | 1,165.91 | 1,351.02 | 1,637.79 | 3.00 | 0.41 | -3.03 |
| 4,300.00 | 79.03 | 44.378 | 3,431.95 | 1,234.18 | 1,421.44 | 1,729.92 | 3.00 | 0.44 | -3.02 |
| 4,400.00 | 79.50 | 41.362 | 3,450.58 | 1,306.18 | 1,488.28 | 1,823.83 | 3.00 | 0.47 | -3.02 |
| 4,500.00 | 80.00 | 38.356 | 3,468.37 | 1,381.71 | 1,551.33 | 1,919.28 | 3.00 | 0.50 | -3.01 |
| 4,600.00 | 80.53 | 35.359 | 3,485.29 | 1,460.56 | 1,610.44 | 2,016.00 | 3.00 | 0.53 | -3.00 |
| 4,700.00 | 81.08 | 32.372 | 3,501.27 | 1,542.52 | 1,665.44 | 2,113.73 | 3.00 | 0.55 | -2.99 |
| 4,800.00 | 81.66 | 29.394 | 3,516.28 | 1,627.36 | 1,716.18 | 2,212.20 | 3.00 | 0.58 | -2.98 |
| 4,900.00 | 82.25 | 26.425 | 3,530.28 | 1,714.85 | 1,762.52 | 2,311.14 | 3.00 | 0.60 | -2.97 |
| 5,000.00 | 82.87 | 23.465 | 3,543.23 | 1,804.75 | 1,804.34 | 2,410.27 | 3.00 | 0.62 | -2.96 |
| 5,100.00 | 83.51 | 20.512 | 3,555.09 | 1,896.81 | 1,841.51 | 2,509.33 | 3.00 | 0.64 | -2.95 |
| 5,200.00 | 84.16 | 17.567 | 3,565.83 | 1,990.78 | 1,873.94 | 2,608.05 | 3.00 | 0.65 | -2.94 |
| 5,300.00 | 84.83 | 14.630 | 3,575.41 | 2,086.41 | 1,901.53 | 2,706.15 | 3.00 | 0.67 | -2.94 |
| 5,400.00 | 85.52 | 11.698 | 3,583.83 | 2,183.43 | 1,924.22 | 2,803.37 | 3.00 | 0.68 | -2.93 |
| 5,455.76 | 85.90 | 10.066 | 3,588.00 | 2,238.03 | 1,934.72 | 2,857.10 | 3.00 | 0.69 | -2.93 |
| **Fruitland** | | | | | | | | | |
| 5,500.00 | 86.21 | 8.772 | 3,591.04 | 2,281.57 | 1,941.94 | 2,899.44 | 3.00 | 0.70 | -2.92 |
| 5,600.00 | 86.92 | 5.850 | 3,597.04 | 2,380.56 | 1,954.64 | 2,994.09 | 3.00 | 0.70 | -2.92 |
| 5,700.00 | 87.63 | 2.933 | 3,601.80 | 2,480.15 | 1,962.29 | 3,087.07 | 3.00 | 0.71 | -2.92 |
| 5,800.00 | 88.35 | 0.019 | 3,605.31 | 2,580.04 | 1,964.86 | 3,178.12 | 3.00 | 0.72 | -2.91 |
| 5,800.65 | 88.35 | 360.000 | 3,605.33 | 2,580.69 | 1,964.86 | 3,178.70 | 3.00 | 0.72 | -2.91 |
| **Start 1482.98 hold at 5800.65 MD** | | | | | | | | | |
| 5,900.00 | 88.35 | 360.000 | 3,608.19 | 2,680.00 | 1,964.86 | 3,268.11 | 0.00 | 0.00 | 0.00 |
| 6,000.00 | 88.35 | 360.000 | 3,611.07 | 2,779.96 | 1,964.86 | 3,358.09 | 0.00 | 0.00 | 0.00 |
| 6,100.00 | 88.35 | 360.000 | 3,613.94 | 2,879.92 | 1,964.86 | 3,448.08 | 0.00 | 0.00 | 0.00 |
| 6,200.00 | 88.35 | 360.000 | 3,616.82 | 2,979.87 | 1,964.86 | 3,538.07 | 0.00 | 0.00 | 0.00 |
| 6,300.00 | 88.35 | 360.000 | 3,619.70 | 3,079.83 | 1,964.86 | 3,628.06 | 0.00 | 0.00 | 0.00 |
| 6,400.00 | 88.35 | 360.000 | 3,622.58 | 3,179.79 | 1,964.86 | 3,718.05 | 0.00 | 0.00 | 0.00 |
| 6,500.00 | 88.35 | 360.000 | 3,625.45 | 3,279.75 | 1,964.86 | 3,808.04 | 0.00 | 0.00 | 0.00 |
| 6,600.00 | 88.35 | 360.000 | 3,628.33 | 3,379.71 | 1,964.86 | 3,898.02 | 0.00 | 0.00 | 0.00 |
| 6,700.00 | 88.35 | 360.000 | 3,631.21 | 3,479.67 | 1,964.86 | 3,988.01 | 0.00 | 0.00 | 0.00 |
| 6,800.00 | 88.35 | 360.000 | 3,634.08 | 3,579.63 | 1,964.86 | 4,078.00 | 0.00 | 0.00 | 0.00 |
| 6,900.00 | 88.35 | 360.000 | 3,636.96 | 3,679.59 | 1,964.86 | 4,167.99 | 0.00 | 0.00 | 0.00 |
| 7,000.00 | 88.35 | 360.000 | 3,639.84 | 3,779.54 | 1,964.86 | 4,257.98 | 0.00 | 0.00 | 0.00 |
| 7,100.00 | 88.35 | 360.000 | 3,642.72 | 3,879.50 | 1,964.86 | 4,347.97 | 0.00 | 0.00 | 0.00 |
| 7,200.00 | 88.35 | 360.000 | 3,645.59 | 3,979.46 | 1,964.85 | 4,437.95 | 0.00 | 0.00 | 0.00 |
| 7,283.63 | 88.35 | 360.000 | 3,648.00 | 4,063.06 | 1,964.85 | 4,513.21 | 0.00 | 0.00 | 0.00 |
| **TD at 7283.63** | | | | | | | | | |

# Scientific Drilling, Intl

Planning Report

| | | | |
|---|---|---|---|
| **Database:** | Grand Junction | **Local Co-ordinate Reference:** | Well Carson 32-5-9 1 |
| **Company:** | Coleman Oil & Gas Inc. | **TVD Reference:** | GL 7230' & KB 15' @ 7245.00usft |
| **Project:** | Rio Arriba County, NM | **MD Reference:** | GL 7230' & KB 15' @ 7245.00usft |
| **Site:** | Carson 32-5-9 | **North Reference:** | True |
| **Well:** | Carson 32-5-9 1 | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | Lateral 2 | | |
| **Design:** | Plan 2 | | |

**Design Targets**

| Target Name - hit/miss target - Shape | Dip Angle (°) | Dip Dir. (°) | TVD (usft) | +N/-S (usft) | +E/-W (usft) | Northing (usft) | Easting (usft) | Latitude | Longitude |
|---|---|---|---|---|---|---|---|---|---|
| Carson 32-5-9 1 Lat 2 P<br>- plan hits target center<br>- Point | 0.00 | 0.000 | 3,648.00 | 4,063.06 | 1,964.85 | 2,184,565.27 | 1,315,983.05 | 36.9982852 | -107.3610173 |

**Formations**

| Measured Depth (usft) | Vertical Depth (usft) | Name | Lithology | Dip (°) | Dip Direction (°) |
|---|---|---|---|---|---|
| 0.00 | 0.00 | San Jose | | 0.00 | |
| 2,005.76 | 1,878.00 | Nacimiento | | 0.00 | |
| 3,482.06 | 3,078.00 | Ojo Alamo | | 0.00 | |
| 3,677.35 | 3,225.00 | Kirtland | | 0.00 | |
| 5,455.76 | 3,588.00 | Fruitland | | 0.00 | |

**Plan Annotations**

| Measured Depth (usft) | Vertical Depth (usft) | Local Coordinates +N/-S (usft) | Local Coordinates +E/-W (usft) | Comment |
|---|---|---|---|---|
| 3,605.00 | 3,172.18 | 793.65 | 987.36 | Start DLS 12.75 TFO 50.85 |
| 3,980.64 | 3,367.48 | 1,030.10 | 1,184.91 | Start DLS 3.00 TFO -83.20 |
| 5,800.65 | 3,605.33 | 2,580.69 | 1,964.86 | Start 1482.98 hold at 5800.65 MD |
| 7,283.63 | 3,648.00 | 4,063.06 | 1,964.85 | TD at 7283.63 |

Released to Imaging: 1/26/2022 8:21:48 AM
Received by OCD: 2/26/2021 9:50:50 AM

Company: Coleman Oil & Gas Inc.
Project: Rio Arriba County, NM
Site: Carson 32-5-21
Well: Carson 32-5-21 #1
Wellbore: Lateral #1
Design: Plan #2

**PROJECT DETAILS: Rio Arriba County, NM**

Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: New Mexico Central Zone
System Datum: Mean Sea Level
Local North: True

Scientific Drilling

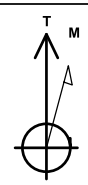
**WELL DETAILS: Carson 32-5-21 #1**

GL 6981' & KB 15' @ 6996.00usft

| +N/-S | +E/-W | Northing | Easting | Latitude | Longitude |
|---|---|---|---|---|---|
| 0.00 | 0.00 | 2171056.61 | 1312742.59 | 36.9610825 | -107.3715676 |

Plan: Plan #2 (Carson 32-5-21 #1/Lateral #1)

Created By: Janie Collins Date: 13:26, July 20 2020




Azimuths to True North
Magnetic North: 8.39°
Magnetic Field
Strength: 50062.6nT
Dip Angle: 63.1°
Date: 12/31/2017
Model: BGGM2016

DESIGN TARGET DETAILS

| e | TVD | +N/-S | +E/-W | Northing | Easting | Latitude | Longitude |
|---|---|---|---|---|---|---|---|
| arson 32-5-21 1H PBHL | 3595.00 | 3633.01 | 393.88 | 2174684.73 | 1313179.20 | 36.9710604 | -107.3702194 |

SECTION DETAILS

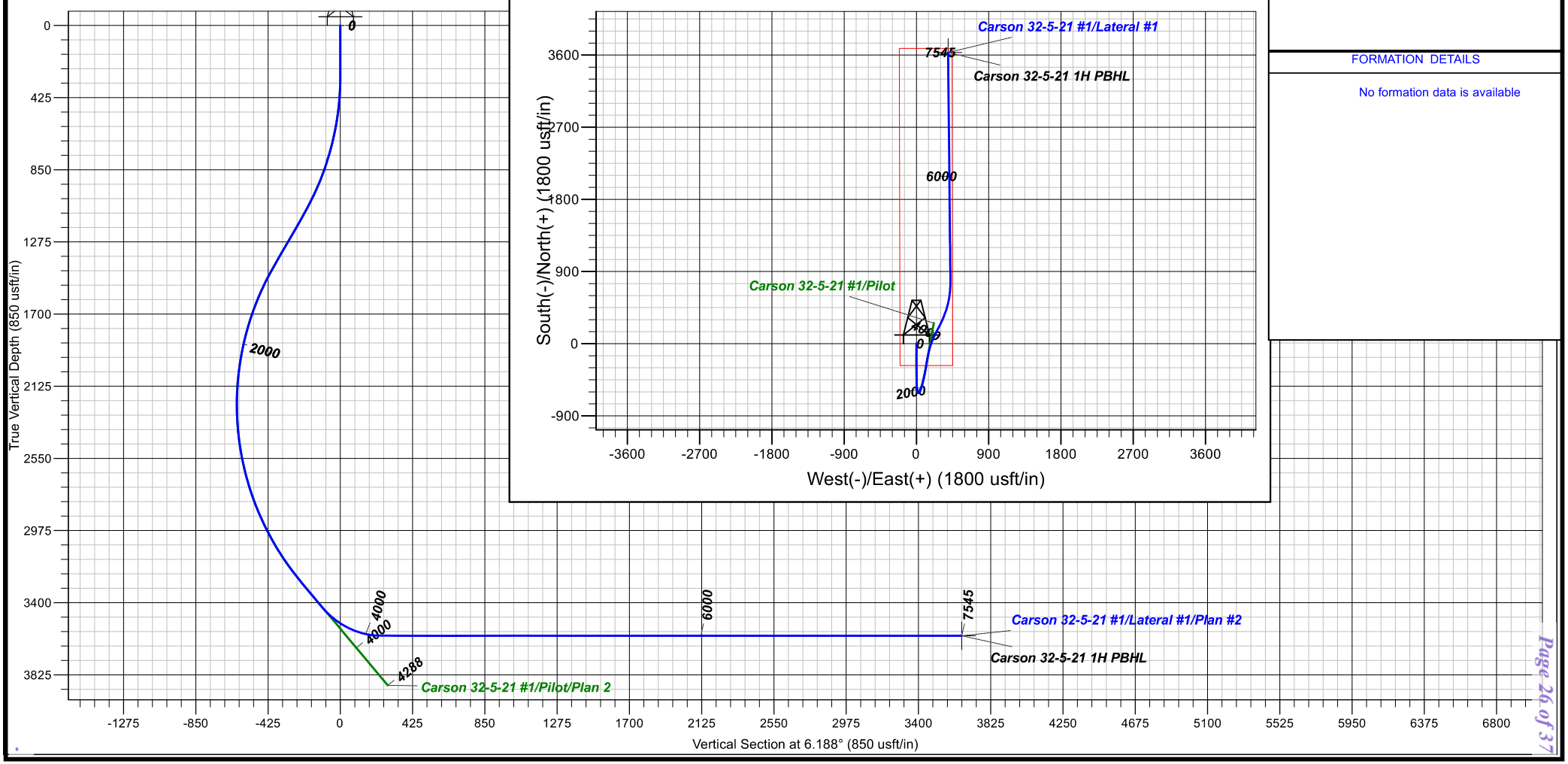
| MD | Inc | Azi | TVD | +N/-S | +E/-W | Dleg | TFace | VSect | Target |
|---|---|---|---|---|---|---|---|---|---|
| 3685.32 | 40.00 | 10.000 | 3425.07 | -124.50 | 148.08 | 0.00 | 0.00 | -107.82 | |
| 4097.44 | 90.00 | 28.900 | 3595.00 | 210.12 | 280.04 | 12.75 | 24.08 | 239.08 | |
| 4687.00 | 90.00 | 359.422 | 3595.00 | 775.48 | 422.69 | 5.00 | -90.00 | 816.52 | |
| 7544.67 | 90.00 | 359.422 | 3595.00 | 3633.01 | 393.88 | 0.00 | 0.00 | 3654.30 | Carson 32-5-21 1H PBHL |

CASING DETAILS

No casing data is available

FORMATION DETAILS

No formation data is available



Released to Imaging: 1/26/2021 8:21:48 AM

Received by OCD: 1/26/2021 8:05:50 AM

Carson 32-5-9 1 | Plan 2

GL 7230' & KB 15' @ 7245.00usft

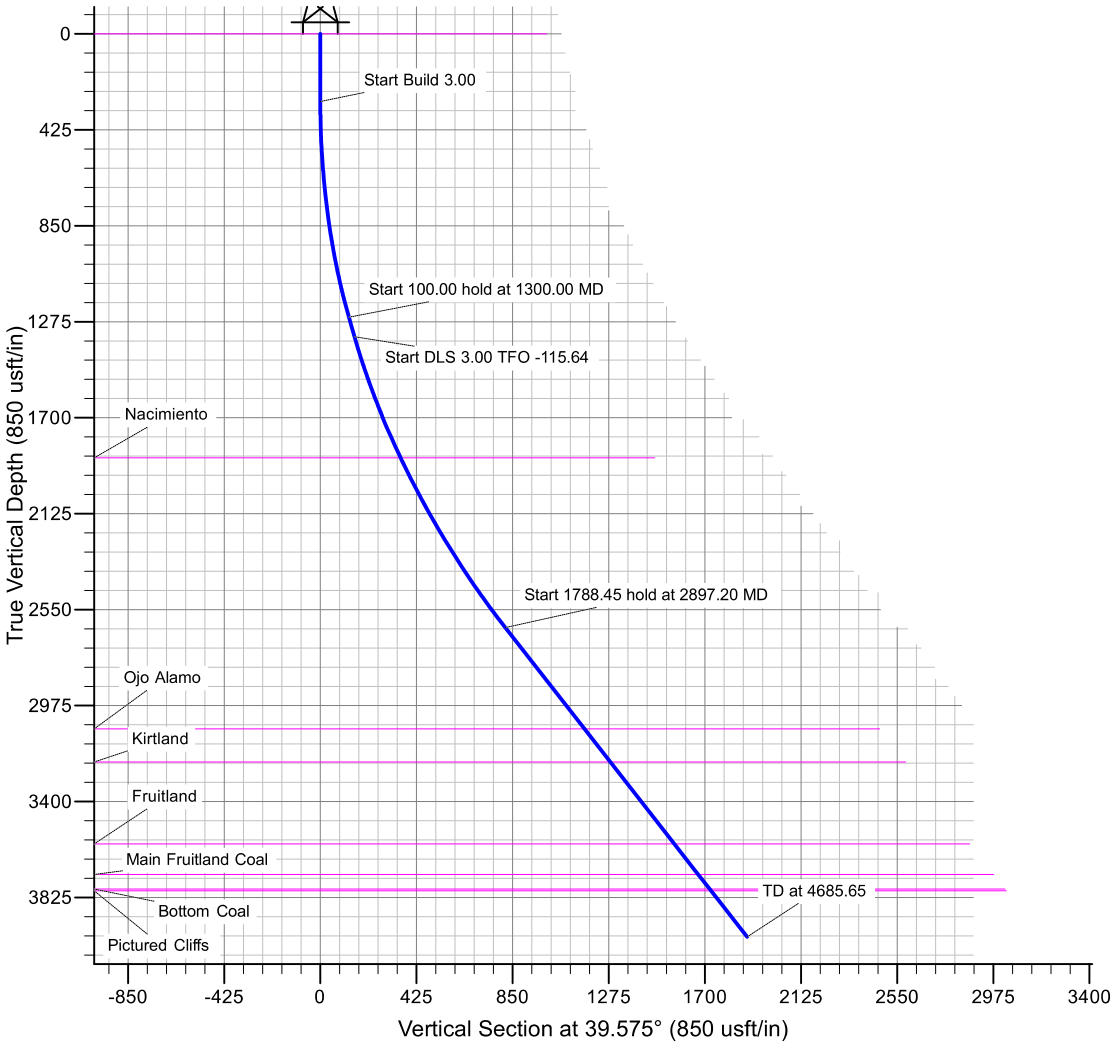
| Northing | Easting | Latitude | Longitude |
|---|---|---|---|
| 2180525.56 | 1313970.64 | 36.9871264 | -107.3677452 |

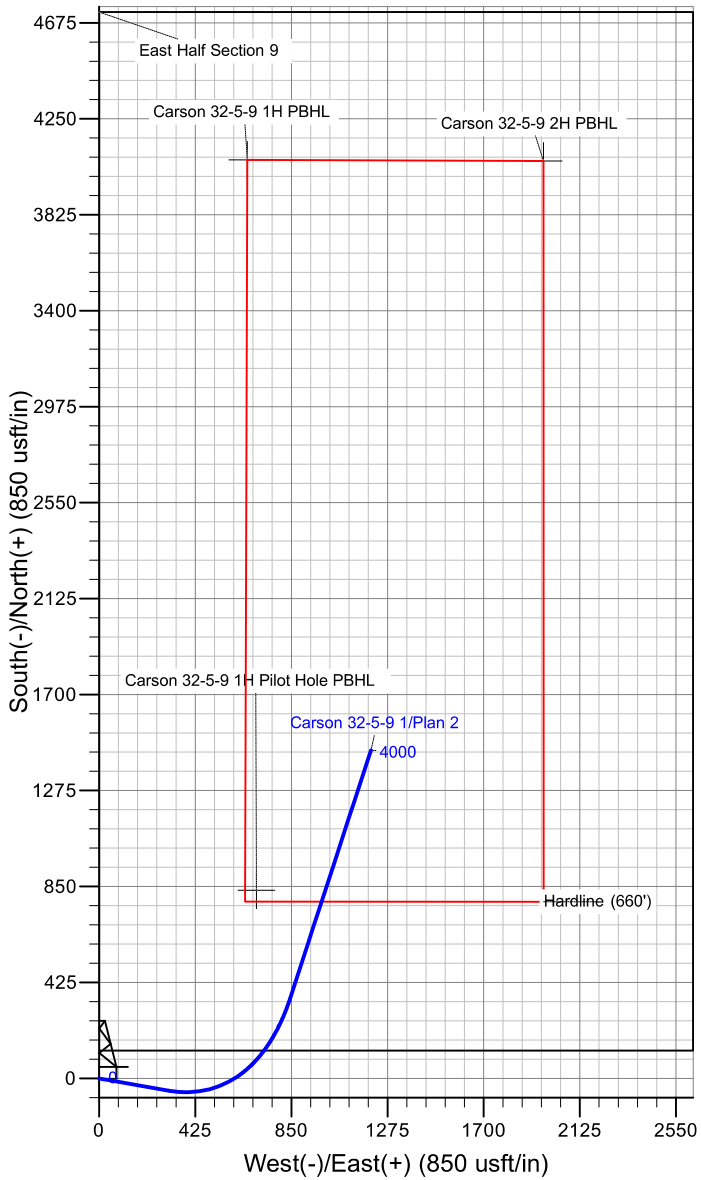
PROJECT DETAILS: Rio Arriba County, NM

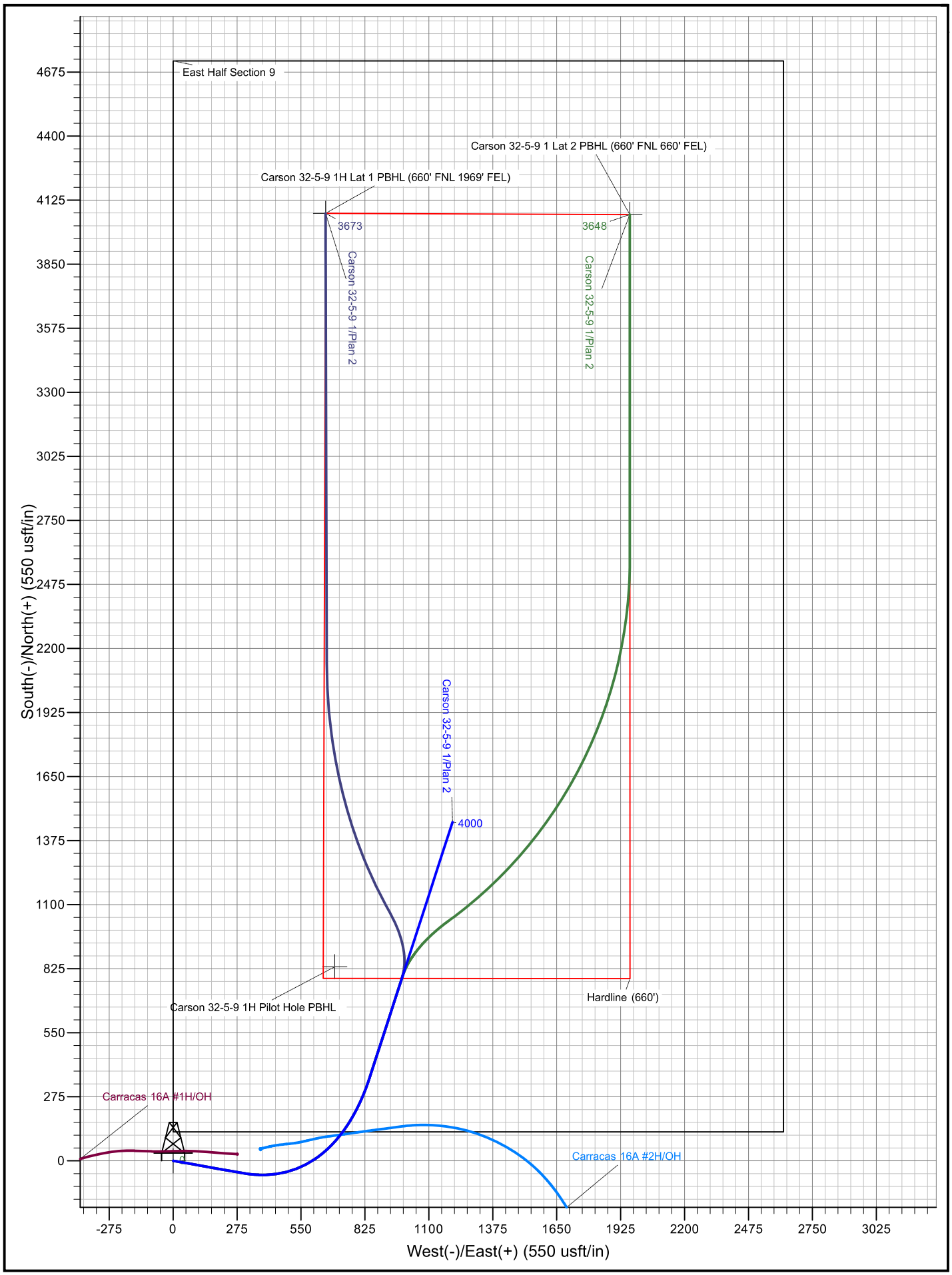
Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: New Mexico Central Zone
System Datum: Mean Sea Level

PLAN DETAILS

| MD | Inc | Azi | TVD | +N/-S | +E/-W | Dleg | TFace | VSect |
|---|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 300.00 | 0.00 | 0.000 | 300.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1300.00 | 30.00 | 100.000 | 1254.93 | -44.43 | 251.99 | 3.00 | 100.00 | 126.29 |
| 1400.00 | 30.00 | 100.000 | 1341.53 | -53.11 | 301.23 | 0.00 | 0.00 | 150.97 |
| 2897.20 | 40.00 | 18.000 | 2629.97 | 360.95 | 846.76 | 3.00 | -115.64 | 817.68 |
| 4685.65 | 40.00 | 18.000 | 4000.00 | 1454.28 | 1202.01 | 0.00 | 0.00 | 1886.73 |




East Half Section 9
Carson 32-5-9 1 Lat 2 PBHL (660' FNL 660' FEL)
Carson 32-5-9 1H Lat 1 PBHL (660' FNL 1969' FEL)
3673
3648
Carson 32-5-9 1/Plan 2
Carson 32-5-9 1/Plan 2
Carson 32-5-9 1/Plan 2
4000
Carson 32-5-9 1H Pilot Hole PBHL
Hardline (660')
Carracas 16A #1H/OH
Carracas 16A #2H/OH
South(-)/North(+) (550 usft/in)
West(-)/East(+) (550 usft/in)
4675
4400
4125
3850
3575
3300
3025
2750
2475
2200
1925
1650
1375
1100
825
550
275
0
-275
0
275
550
825
1100
1375
1650
1925
2200
2475
2750
3025

# Coleman Oil & Gas Inc.

**Rio Arriba County, NM**
**Carson 32-5-9**
**Carson 32-5-9 1**

**Pilot**

**Plan: Plan 2**

# Standard Planning Report

**26 May, 2020**

Scientific Drilling

www.scientificdrilling.com

# Scientific Drilling, Intl

## Planning Report

| | | | |
|---|---|---|---|
| **Database:** | Grand Junction | **Local Co-ordinate Reference:** | Well Carson 32-5-9 1 |
| **Company:** | Coleman Oil & Gas Inc. | **TVD Reference:** | GL 7230' & KB 15' @ 7245.00usft |
| **Project:** | Rio Arriba County, NM | **MD Reference:** | GL 7230' & KB 15' @ 7245.00usft |
| **Site:** | Carson 32-5-9 | **North Reference:** | True |
| **Well:** | Carson 32-5-9 1 | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | Pilot | | |
| **Design:** | Plan 2 | | |

**Project** Rio Arriba County, NM

| | | | |
|---|---|---|---|
| **Map System:** | US State Plane 1983 | **System Datum:** | Mean Sea Level |
| **Geo Datum:** | North American Datum 1983 | | |
| **Map Zone:** | New Mexico Central Zone | | |

**Site** Carson 32-5-9, Site Center: Carson 32-5-9 1H

| | | | | | |
|---|---|---|---|---|---|
| **Site Position:** | | **Northing:** | 2,180,525.56 usft | **Latitude:** | 36.9871264 |
| **From:** | Lat/Long | **Easting:** | 1,313,970.64 usft | **Longitude:** | -107.3677452 |
| **Position Uncertainty:** | 0.00 usft | **Slot Radius:** | 13.20 in | **Grid Convergence:** | -0.67 ° |

**Well** Carson 32-5-9 1, 124' FNL 2626' FEL Sec 16 T32N R5W

| | | | | | | |
|---|---|---|---|---|---|---|
| **Well Position** | **+N/-S** | 0.00 usft | **Northing:** | 2,180,525.56 usft | **Latitude:** | 36.9871264 |
| | **+E/-W** | 0.00 usft | **Easting:** | 1,313,970.64 usft | **Longitude:** | -107.3677452 |
| **Position Uncertainty** | | 0.00 usft | **Wellhead Elevation:** | | **Ground Level:** | 7,230.00 usft |

**Wellbore** Pilot

| Magnetics | Model Name | Sample Date | Declination (°) | Dip Angle (°) | Field Strength (nT) |
|---|---|---|---|---|---|
| | HDGM_FILE | 4/16/2020 | 8.82 | 63.45 | 49,789.20000000 |

**Design** Plan 2

**Audit Notes:**

| | | | | | |
|---|---|---|---|---|---|
| **Version:** | | **Phase:** | PLAN | **Tie On Depth:** | 0.00 |

| Vertical Section: | Depth From (TVD) (usft) | +N/-S (usft) | +E/-W (usft) | Direction (°) |
|---|---|---|---|---|
| | 0.00 | 0.00 | 0.00 | 39.575 |

**Plan Sections**

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) | TFO (°) | Target |
|---|---|---|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 300.00 | 0.00 | 0.000 | 300.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 1,300.00 | 30.00 | 100.000 | 1,254.93 | -44.43 | 251.99 | 3.00 | 3.00 | 0.00 | 100.00 | |
| 1,400.00 | 30.00 | 100.000 | 1,341.53 | -53.11 | 301.23 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 2,897.20 | 40.00 | 18.000 | 2,629.97 | 360.95 | 846.76 | 3.00 | 0.67 | -5.48 | -115.64 | |
| 4,685.65 | 40.00 | 18.000 | 4,000.00 | 1,454.28 | 1,202.01 | 0.00 | 0.00 | 0.00 | 0.00 | |

# Scientific Drilling, Intl

Planning Report

| | | | |
|---|---|---|---|
| **Database:** | Grand Junction | **Local Co-ordinate Reference:** | Well Carson 32-5-9 1 |
| **Company:** | Coleman Oil & Gas Inc. | **TVD Reference:** | GL 7230' & KB 15' @ 7245.00usft |
| **Project:** | Rio Arriba County, NM | **MD Reference:** | GL 7230' & KB 15' @ 7245.00usft |
| **Site:** | Carson 32-5-9 | **North Reference:** | True |
| **Well:** | Carson 32-5-9 1 | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | Pilot | | |
| **Design:** | Plan 2 | | |

**Planned 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) |
|---|---|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **San Jose** | | | | | | | | | |
| 100.00 | 0.00 | 0.000 | 100.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 200.00 | 0.00 | 0.000 | 200.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 300.00 | 0.00 | 0.000 | 300.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Start Build 3.00** | | | | | | | | | |
| 400.00 | 3.00 | 100.000 | 399.95 | -0.45 | 2.58 | 1.29 | 3.00 | 3.00 | 0.00 |
| 500.00 | 6.00 | 100.000 | 499.63 | -1.82 | 10.30 | 5.16 | 3.00 | 3.00 | 0.00 |
| 600.00 | 9.00 | 100.000 | 598.77 | -4.08 | 23.16 | 11.61 | 3.00 | 3.00 | 0.00 |
| 700.00 | 12.00 | 100.000 | 697.08 | -7.25 | 41.10 | 20.60 | 3.00 | 3.00 | 0.00 |
| 800.00 | 15.00 | 100.000 | 794.31 | -11.30 | 64.09 | 32.12 | 3.00 | 3.00 | 0.00 |
| 900.00 | 18.00 | 100.000 | 890.18 | -16.23 | 92.06 | 46.14 | 3.00 | 3.00 | 0.00 |
| 1,000.00 | 21.00 | 100.000 | 984.43 | -22.03 | 124.92 | 62.61 | 3.00 | 3.00 | 0.00 |
| 1,100.00 | 24.00 | 100.000 | 1,076.81 | -28.67 | 162.61 | 81.49 | 3.00 | 3.00 | 0.00 |
| 1,200.00 | 27.00 | 100.000 | 1,167.06 | -36.15 | 205.00 | 102.74 | 3.00 | 3.00 | 0.00 |
| 1,300.00 | 30.00 | 100.000 | 1,254.93 | -44.43 | 251.99 | 126.29 | 3.00 | 3.00 | 0.00 |
| **Start 100.00 hold at 1300.00 MD** | | | | | | | | | |
| 1,400.00 | 30.00 | 100.000 | 1,341.53 | -53.11 | 301.23 | 150.97 | 0.00 | 0.00 | 0.00 |
| **Start DLS 3.00 TFO -115.64** | | | | | | | | | |
| 1,500.00 | 28.82 | 94.383 | 1,428.66 | -59.30 | 349.89 | 177.20 | 3.00 | -1.18 | -5.62 |
| 1,600.00 | 27.88 | 88.376 | 1,516.68 | -60.48 | 397.30 | 206.50 | 3.00 | -0.93 | -6.01 |
| 1,700.00 | 27.23 | 82.046 | 1,605.36 | -56.65 | 443.34 | 238.78 | 3.00 | -0.66 | -6.33 |
| 1,800.00 | 26.86 | 75.493 | 1,694.45 | -47.82 | 487.88 | 273.96 | 3.00 | -0.36 | -6.55 |
| 1,900.00 | 26.81 | 68.846 | 1,783.70 | -34.02 | 530.79 | 311.94 | 3.00 | -0.05 | -6.65 |
| 2,000.00 | 27.06 | 62.244 | 1,872.87 | -15.28 | 571.97 | 352.61 | 3.00 | 0.25 | -6.60 |
| 2,005.76 | 27.09 | 61.868 | 1,878.00 | -14.05 | 574.28 | 355.03 | 3.00 | 0.42 | -6.53 |
| **Nacimiento** | | | | | | | | | |
| 2,100.00 | 27.62 | 55.822 | 1,961.72 | 8.34 | 611.28 | 395.87 | 3.00 | 0.56 | -6.42 |
| 2,200.00 | 28.46 | 49.692 | 2,050.00 | 36.78 | 648.64 | 441.59 | 3.00 | 0.84 | -6.13 |
| 2,300.00 | 29.56 | 43.932 | 2,137.47 | 69.96 | 683.93 | 489.65 | 3.00 | 1.10 | -5.76 |
| 2,400.00 | 30.89 | 38.587 | 2,223.89 | 107.80 | 717.06 | 539.91 | 3.00 | 1.33 | -5.35 |
| 2,500.00 | 32.42 | 33.669 | 2,309.03 | 150.18 | 747.93 | 592.25 | 3.00 | 1.53 | -4.92 |
| 2,600.00 | 34.13 | 29.171 | 2,392.64 | 196.99 | 776.47 | 646.52 | 3.00 | 1.71 | -4.50 |
| 2,700.00 | 35.98 | 25.066 | 2,474.51 | 248.10 | 802.60 | 702.56 | 3.00 | 1.86 | -4.10 |
| 2,800.00 | 37.97 | 21.324 | 2,554.41 | 303.38 | 826.23 | 760.22 | 3.00 | 1.98 | -3.74 |
| 2,897.20 | 40.00 | 18.000 | 2,629.97 | 360.95 | 846.76 | 817.68 | 3.00 | 2.09 | -3.42 |
| **Start 1788.45 hold at 2897.20 MD** | | | | | | | | | |
| 2,900.00 | 40.00 | 18.000 | 2,632.11 | 362.67 | 847.32 | 819.36 | 0.00 | 0.00 | 0.00 |
| 3,000.00 | 40.00 | 18.000 | 2,708.72 | 423.80 | 867.18 | 879.13 | 0.00 | 0.00 | 0.00 |
| 3,100.00 | 40.00 | 18.000 | 2,785.32 | 484.93 | 887.05 | 938.91 | 0.00 | 0.00 | 0.00 |
| 3,200.00 | 40.00 | 18.000 | 2,861.93 | 546.07 | 906.91 | 998.68 | 0.00 | 0.00 | 0.00 |
| 3,300.00 | 40.00 | 18.000 | 2,938.53 | 607.20 | 926.77 | 1,058.46 | 0.00 | 0.00 | 0.00 |
| 3,400.00 | 40.00 | 18.000 | 3,015.14 | 668.33 | 946.64 | 1,118.23 | 0.00 | 0.00 | 0.00 |
| 3,482.06 | 40.00 | 18.000 | 3,078.00 | 718.50 | 962.94 | 1,167.29 | 0.00 | 0.00 | 0.00 |
| **Ojo Alamo** | | | | | | | | | |
| 3,500.00 | 40.00 | 18.000 | 3,091.74 | 729.46 | 966.50 | 1,178.01 | 0.00 | 0.00 | 0.00 |
| 3,600.00 | 40.00 | 18.000 | 3,168.35 | 790.60 | 986.36 | 1,237.78 | 0.00 | 0.00 | 0.00 |
| 3,673.96 | 40.00 | 18.000 | 3,225.00 | 835.81 | 1,001.05 | 1,281.99 | 0.00 | 0.00 | 0.00 |
| **Kirtland** | | | | | | | | | |
| 3,700.00 | 40.00 | 18.000 | 3,244.95 | 851.73 | 1,006.23 | 1,297.56 | 0.00 | 0.00 | 0.00 |
| 3,800.00 | 40.00 | 18.000 | 3,321.55 | 912.86 | 1,026.09 | 1,357.33 | 0.00 | 0.00 | 0.00 |
| 3,900.00 | 40.00 | 18.000 | 3,398.16 | 973.99 | 1,045.95 | 1,417.11 | 0.00 | 0.00 | 0.00 |
| 4,000.00 | 40.00 | 18.000 | 3,474.76 | 1,035.13 | 1,065.82 | 1,476.88 | 0.00 | 0.00 | 0.00 |

# Scientific Drilling, Intl
Planning Report

| | | | |
|---|---|---|---|
| **Database:** | Grand Junction | **Local Co-ordinate Reference:** | Well Carson 32-5-9 1 |
| **Company:** | Coleman Oil & Gas Inc. | **TVD Reference:** | GL 7230' & KB 15' @ 7245.00usft |
| **Project:** | Rio Arriba County, NM | **MD Reference:** | GL 7230' & KB 15' @ 7245.00usft |
| **Site:** | Carson 32-5-9 | **North Reference:** | True |
| **Well:** | Carson 32-5-9 1 | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | Pilot | | |
| **Design:** | Plan 2 | | |

**Planned 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) |
|---|---|---|---|---|---|---|---|---|---|
| 4,100.00 | 40.00 | 18.000 | 3,551.37 | 1,096.26 | 1,085.68 | 1,536.66 | 0.00 | 0.00 | 0.00 |
| 4,147.82 | 40.00 | 18.000 | 3,588.00 | 1,125.49 | 1,095.18 | 1,565.24 | 0.00 | 0.00 | 0.00 |
| **Fruitland** | | | | | | | | | |
| 4,200.00 | 40.00 | 18.000 | 3,627.97 | 1,157.39 | 1,105.54 | 1,596.43 | 0.00 | 0.00 | 0.00 |
| 4,300.00 | 40.00 | 18.000 | 3,704.58 | 1,218.53 | 1,125.41 | 1,656.21 | 0.00 | 0.00 | 0.00 |
| 4,324.05 | 40.00 | 18.000 | 3,723.00 | 1,233.23 | 1,130.18 | 1,670.59 | 0.00 | 0.00 | 0.00 |
| **Main Fruitland Coal** | | | | | | | | | |
| 4,400.00 | 40.00 | 18.000 | 3,781.18 | 1,279.66 | 1,145.27 | 1,715.99 | 0.00 | 0.00 | 0.00 |
| 4,408.90 | 40.00 | 18.000 | 3,788.00 | 1,285.10 | 1,147.04 | 1,721.31 | 0.00 | 0.00 | 0.00 |
| **Bottom Coal** | | | | | | | | | |
| 4,419.35 | 40.00 | 18.000 | 3,796.00 | 1,291.48 | 1,149.11 | 1,727.55 | 0.00 | 0.00 | 0.00 |
| **Pictured Cliffs** | | | | | | | | | |
| 4,500.00 | 40.00 | 18.000 | 3,857.79 | 1,340.79 | 1,165.13 | 1,775.76 | 0.00 | 0.00 | 0.00 |
| 4,600.00 | 40.00 | 18.000 | 3,934.39 | 1,401.92 | 1,184.99 | 1,835.54 | 0.00 | 0.00 | 0.00 |
| 4,685.65 | 40.00 | 18.000 | 4,000.00 | 1,454.28 | 1,202.01 | 1,886.73 | 0.00 | 0.00 | 0.00 |
| **TD at 4685.65** | | | | | | | | | |

**Design Targets**

| Target Name - hit/miss target - Shape | Dip Angle (°) | Dip Dir. (°) | TVD (usft) | +N/-S (usft) | +E/-W (usft) | Northing (usft) | Easting (usft) | Latitude | Longitude |
|---|---|---|---|---|---|---|---|---|---|
| Carson 32-5-9 1H Surfa<br>- plan hits target center<br>- Point | 0.00 | 0.000 | 0.00 | 0.00 | 0.00 | 2,180,525.56 | 1,313,970.64 | 36.9871264 | -107.3677452 |
| Carson 32-5-9 2H PBHL<br>- plan misses target center by 2740.72usft at 4685.65usft MD (4000.00 TVD, 1454.28 N, 1202.01 E)<br>- Point | 0.00 | 0.000 | 3,648.00 | 4,063.06 | 1,964.85 | 2,184,565.27 | 1,315,983.05 | 36.9982852 | -107.3610173 |
| Carson 32-5-9 1H PBHL<br>- plan misses target center by 2690.66usft at 4685.65usft MD (4000.00 TVD, 1454.28 N, 1202.01 E)<br>- Point | 0.00 | 0.000 | 3,673.00 | 4,068.50 | 655.56 | 2,184,586.08 | 1,314,673.91 | 36.9983003 | -107.3655005 |
| Carson 32-5-9 1H Pilot H<br>- plan misses target center by 641.70usft at 4205.26usft MD (3632.00 TVD, 1160.61 N, 1106.59 E)<br>- Point | 0.00 | 0.000 | 4,000.00 | 833.08 | 695.38 | 2,181,350.42 | 1,314,675.75 | 36.9894144 | -107.3653644 |

**Formations**

| Measured Depth (usft) | Vertical Depth (usft) | Name | Lithology | Dip (°) | Dip Direction (°) |
|---|---|---|---|---|---|
| 0.00 | 0.00 | San Jose | | 0.00 | |
| 2,005.76 | 1,878.00 | Nacimiento | | 0.00 | |
| 3,482.06 | 3,078.00 | Ojo Alamo | | 0.00 | |
| 3,673.96 | 3,225.00 | Kirtland | | 0.00 | |
| 4,147.82 | 3,588.00 | Fruitland | | 0.00 | |
| 4,324.05 | 3,723.00 | Main Fruitland Coal | | 0.00 | |
| 4,408.90 | 3,788.00 | Bottom Coal | | 0.00 | |
| 4,419.35 | 3,796.00 | Pictured Cliffs | | 0.00 | |

# Scientific Drilling, Intl
Planning Report

| | | | |
|---|---|---|---|
| **Database:** | Grand Junction | **Local Co-ordinate Reference:** | Well Carson 32-5-9 1 |
| **Company:** | Coleman Oil & Gas Inc. | **TVD Reference:** | GL 7230' & KB 15' @ 7245.00usft |
| **Project:** | Rio Arriba County, NM | **MD Reference:** | GL 7230' & KB 15' @ 7245.00usft |
| **Site:** | Carson 32-5-9 | **North Reference:** | True |
| **Well:** | Carson 32-5-9 1 | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | Pilot | | |
| **Design:** | Plan 2 | | |

**Plan Annotations**

| Measured Depth (usft) | Vertical Depth (usft) | Local Coordinates +N/-S (usft) | Local Coordinates +E/-W (usft) | Comment |
|---|---|---|---|---|
| 300.00 | 300.00 | 0.00 | 0.00 | Start Build 3.00 |
| 1,300.00 | 1,254.93 | -44.43 | 251.99 | Start 100.00 hold at 1300.00 MD |
| 1,400.00 | 1,341.53 | -53.11 | 301.23 | Start DLS 3.00 TFO -115.64 |
| 2,897.20 | 2,629.97 | 360.95 | 846.76 | Start 1788.45 hold at 2897.20 MD |
| 4,685.65 | 4,000.00 | 1,454.28 | 1,202.01 | TD at 4685.65 |

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources Department

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Submit Original
to Appropriate
District Office

# GAS CAPTURE PLAN

Date: 08-24-20
X Original
☐ Amended - Reason for Amendment:

Operator & OGRID No.: Coleman Oil & Gas, Inc., 4838

This Gas Capture Plan outlines actions to be taken by the Operator to reduce well/production facility flaring/venting for new completion (new drill, recomplete to new zone, re-frac) activity.

*Note: A C-129 must be submitted and approved prior to exceeding 60 days allowed by Rule 19.15.18.12.A*

## Well(s)/Production Facility – Name of facility

The well(s) that will be located at the production facility are shown in the table below.

| Well Name | API (30-025 | Well Location (ULSTR) | Footages | Expected MCF/D | Flared or Vented | Comments |
|---|---|---|---|---|---|---|
| Carson 32-5-9 #1 | | B-16-32N-5W | 124 FNL 2626 FEL | 1000 | Flared | Flare ~30 days on flowback before connecting to pipe |
| | | | | | | |

## Gathering System and Pipeline Notification

The Carson 32-5-9 #1 will be connected to a production facility after flowback operations are complete, if gas transporter system is in place. The gas produced from production facility will be connected to Harvest Energy low/high pressure gathering system located in M-9-32N-5W Rio Arriba County, New Mexico. It will require 414' of pipeline to connect the Harvest Energy low/high pressure gathering system. Coleman Oil & Gas, Inc. provides (semiannually) to Harvest Energy a drilling, completion and estimated first production date for wells that are scheduled to be drilled in the foreseeable future. Gas from these wells will be processed at Milagro Processing Plant located in Sec. 12, Twn. 29N, Rng. 11W, San Juan County, New Mexico. The actual flow of the gas will be based on compression operating parameters and gathering system pressures.

## Flowback Strategy

After the completion operations, well(s) will be produced to temporary production tanks and gas will be flared or vented. During flowback, the fluids and sand/coal content will be monitored. When the produced fluids contain minimal sand/coal, the wells will be turned to production facilities. Gas sales should start as soon as the wells start flowing through the production facilities, unless there are operational issues on Harvest Energy system at that time. Based on current information, it is Coleman's belief the system can take this gas upon completion of the well(s).

Safety requirements during cleanout operations from the use of underbalanced air cleanout systems may necessitate that sand/coal and non-pipeline quality gas be vented and/or flared rather than sold on a temporary basis.

## Alternatives to Reduce Flaring

Below are alternatives considered from a conceptual standpoint to reduce the amount of gas flared.

- Power Generation – On lease
  - Only a portion of gas is consumed operating natural gas engines, remainder of gas will be flared
- Wellsite Compression – On lease
  - Gas flared would be minimal, but might be uneconomical to operate when gas volume declines

**Coleman Oil &Gas, Inc.:**

**Gas Capture Plan: Gas Transporter & Processing Plant Information**

Gas from this location will be gathered and transported by Coleman through flowline to the Harvest Energy Sales Meter.

1. **Coleman Oil & Gas, Inc.**
   Gas from the wellsite / pad into the Coleman Gathering system at the site:
   Sec. 16, T32N, R5W
   Rio Arriba County, New Mexico

2. **Harvest Energy**
   Coleman will deliver the gas to the **Harvest System**:
   Sec. 9, T32N, R5W
   Rio Arriba County, New Mexico

3. **Harvest Energy**
   Harvest will deliver the gas to the **Harvest Processing Plant** located:
   Sec. 12, T 29 N, R 11 W
   San Juan County, New Mexico

**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 Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
**District IV**
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

# State of New Mexico
# Energy, Minerals and Natural Resources
# Oil Conservation Division
# 1220 S. St Francis Dr.
# Santa Fe, NM 87505

COMMENTS

Action 15632

## COMMENTS

| Operator: | OGRID: | Action Number: | Action Type: |
|---|---|---|---|
| COLEMAN OIL & GAS INC P.O. Drawer 3337 Farmington, NM87499 | 4838 | 15632 | FORM 3160-3 |

| Created By | Comment | Comment Date |
|---|---|---|
| ahvermersch | See BLM cover letter for OCD COA's. | 01/26/2021 |

**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 Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
**District IV**
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

# State of New Mexico
# Energy, Minerals and Natural Resources
# Oil Conservation Division
# 1220 S. St Francis Dr.
# Santa Fe, NM 87505

CONDITIONS

Action 15632

## CONDITIONS OF APPROVAL

| Operator: | OGRID: | Action Number: | Action Type: |
|---|---|---|---|
| COLEMAN OIL & GAS INC P.O. Drawer 3337 Farmington, NM87499 | 4838 | 15632 | FORM 3160-3 |

| OCD Reviewer | Condition |
|---|---|
| ahvermersch | None |