

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**

1a. Type of work: <input type="checkbox"/> DRILL <input type="checkbox"/> REENTER 1b. Type of Well: <input type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other 1c. Type of Completion: <input type="checkbox"/> Hydraulic Fracturing <input type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone		5. Lease Serial No.  6. If Indian, Allottee or Tribe Name  7. If Unit or CA Agreement, Name and No.  8. Lease Name and Well No.
2. Name of Operator		9. API Well No. <b>30 015 48000</b>
3a. Address	3b. Phone No. (include area code)	10. Field and Pool, or Exploratory
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At surface At proposed prod. zone		11. Sec., T. R. M. or Blk. and Survey or Area
14. Distance in miles and direction from nearest town or post office*		12. County or Parish
13. State		
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any)	16. No of acres in lease	17. Spacing Unit dedicated to this well
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.	19. Proposed Depth	20. BLM/BIA Bond No. in file
21. Elevations (Show whether DF, KDB, RT, GL, etc.)	22. Approximate date work will start*	23. Estimated duration
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.<br>2. A Drilling Plan.<br>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).<br>5. Operator certification.<br>6. Such other site specific information and/or plans as may be requested by the BLM. |
|---|---|

25. Signature	Name (Printed/Typed)	Date
Title		
Approved by (Signature)	Name (Printed/Typed)	Date
Title		
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.



(Continued on page 2)

\*(Instructions on page 2)

## INSTRUCTIONS

**GENERAL:** This form is designed for submitting proposals to perform certain well operations, as indicated on Federal and Indian lands and leases for action by appropriate Federal agencies, pursuant to applicable Federal laws and regulations. Any necessary special instructions concerning the use of this form and the number of copies to be submitted, particularly with regard to local, area, or regional procedures and practices, either are shown below or will be issued by, or may be obtained from local Federal offices.

**ITEM I:** If the proposal is to redrill to the same reservoir at a different subsurface location or to a new reservoir, use this form with appropriate notations. Consult applicable Federal regulations concerning subsequent work proposals or reports on the well.

**ITEM 4:** Locations on Federal or Indian land should be described in accordance with Federal requirements. Consult local Federal offices for specific instructions.

**ITEM 14:** Needed only when location of well cannot readily be found by road from the land or lease description. A plat, or plats, separate or on the reverse side, showing the roads to, and the surveyed location of, the well, and any other required information, should be furnished when required by Federal agency offices.

**ITEMS 15 AND 18:** If well is to be, or has been directionally drilled, give distances for subsurface location of hole in any present or objective productive zone.

**ITEM 22:** Consult applicable Federal regulations, or appropriate officials, concerning approval of the proposal before operations are started.

**ITEM 24:** If the proposal will involve hydraulic fracturing operations, you must comply with 43 CFR 3162.3-3, including providing information about the protection of usable water. Operators should provide the best available information about all formations containing water and their depths. This information could include data and interpretation of resistivity logs run on nearby wells. Information may also be obtained from state or tribal regulatory agencies and from local BLM offices.

## NOTICES

The Privacy Act of 1974 and regulation in 43 CFR 2.48( d) provide that you be furnished the following information in connection with information required by this application.

**AUTHORITY:** 30 U.S.C. 181 et seq., 25 U.S.C. 396; 43 CFR 3160

**PRINCIPAL PURPOSES:** The information will be used to: (1) process and evaluate your application for a permit to drill a new oil, gas, or service well or to reenter a plugged and abandoned well; and (2) document, for administrative use, information for the management, disposal and use of National Resource Lands and resources including (a) analyzing your proposal to discover and extract the Federal or Indian resources encountered; (b) reviewing procedures and equipment and the projected impact on the land involved; and (c) evaluating the effects of the proposed operation on the surface and subsurface water and other environmental impacts.

**ROUTINE USE:** Information from the record and/or the record will be transferred to appropriate Federal, State, and local or foreign agencies, when relevant to civil, criminal or regulatory investigations or prosecution, in connection with congressional inquiries and for regulatory responsibilities.

**EFFECT OF NOT PROVIDING INFORMATION:** Filing of this application and disclosure of the information is mandatory only if you elect to initiate a drilling or reentry operation on an oil and gas lease.

The Paperwork Reduction Act of 1995 requires us to inform you that:

The BLM connects this information to an evaluation of the technical, safety, and environmental factors involved with drilling for oil and/or gas on Federal and Indian oil and gas leases. This information will be used to analyze and approve applications. Response to this request is mandatory only if the operator elects to initiate drilling or reentry operations on an oil and gas lease. The BLM would like you to know that you do not have to respond to this or any other Federal agency-sponsored information collection unless it displays a currently valid OMB control number.

**BURDEN HOURS STATEMENT:** Public reporting burden for this form is estimated to average 8 hours per response, including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding the burden estimate or any other aspect of this form to U.S. Department of the Interior, Bureau of Land Management (1004-0137), Bureau Information Connection Clearance Officer (WO-630), 1849 C Street, N.W., Mail Stop 401 LS, Washington, D.C. 20240.

## Additional Operator Remarks

### Location of Well

0. SHL: SWSW / 1303 FSL / 190 FWL / TWSP: 19S / RANGE: 30E / SECTION: 32 / LAT: 32.6132536 / LONG: -104.0021411 ( TVD: 0 feet, MD: 0 feet )

PPP: NWSW / 1980 FSL / 0 FWL / TWSP: 19S / RANGE: 30E / SECTION: 33 / LAT: 32.6150856 / LONG: -103.9855775 ( TVD: 9466 feet, MD: 14442 feet )

PPP: NWSW / 1980 FSL / 100 FWL / TWSP: 19S / RANGE: 30E / SECTION: 32 / LAT: 32.6151156 / LONG: -104.0024326 ( TVD: 9247 feet, MD: 9350 feet )

BHL: NESE / 1980 FSL / 10 FEL / TWSP: 19S / RANGE: 30E / SECTION: 33 / LAT: 32.6150529 / LONG: -103.9684378 ( TVD: 9577 feet, MD: 19721 feet )

### BLM Point of Contact

Name: Gavin Mickwee

Title: Land Law Examiner

Phone: (575) 234-5972

Email: gmickwee@blm.gov

### **Review and Appeal Rights**

A person contesting a decision shall request a State Director review. This request must be filed within 20 working days of receipt of the Notice with the appropriate State Director (see 43 CFR 3165.3). The State Director review decision may be appealed to the Interior Board of Land Appeals, 801 North Quincy Street, Suite 300, Arlington, VA 22203 (see 43 CFR 3165.4). Contact the above listed Bureau of Land Management office for further information.

**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) 476-3462State 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

<sup>1</sup> API Number <b>30-015- 48000</b>	<sup>2</sup> Pool Code <b>49622</b>	<sup>3</sup> Pool Name <b>Parkway; Bone Spring</b>
<sup>4</sup> Property Code <b>330007</b>	<sup>6</sup> Property Name <b>Crazy Horse 32 State Fed Com</b>	<sup>5</sup> Well Number <b>133H</b>
<sup>7</sup> GRID No. <b>371449</b>	<sup>8</sup> Operator Name <b>Colgate Operating, LLC</b>	<sup>9</sup> Elevation <b>3264</b>

<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
<b>M</b>	<b>32</b>	<b>19 S</b>	<b>30 E</b>		<b>1303</b>	<b>South</b>	<b>190</b>	<b>West</b>	<b>Eddy</b>

<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
<b>I</b>	<b>33</b>	<b>19 S</b>	<b>30 E</b>		<b>1980</b>	<b>South</b>	<b>10</b>	<b>East</b>	<b>Eddy</b>

<sup>12</sup> Dedicated Acres <b>320</b>	<sup>13</sup> Joint or Infill	<sup>14</sup> Consolidation Code	<sup>15</sup> Order No.
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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**

**Legend:**

- = Surface Location
- = Bottom Hole Location
- △ = First Take Point (FTP)
- = Last Take Point (LTP)
- ⊕ = Found 1916 USGLO Brass Cap
- ⊙ = Found Monument

**BOTTOM HOLE LOCATION**  
 NAD 83 NMSPC ZONE 3001  
 Y= 587679.87 N  
 X= 653689.49 E  
 LAT.= 32.6150529° N  
 LONG.= 103.9684378° W

**SURFACE LOCATION**  
 NAD 83 NMSPC ZONE 3001  
 Y= 586991.30 N  
 X= 643314.17 E  
 LAT.= 32.6132536° N  
 LONG.= 104.0021411° W

**FIRST TAKE POINT**  
 NAD 83 NMSPC ZONE 3001  
 1980' FSL, 100' FWL  
 SEC. 32, T19S, R30E  
 Y= 587668.43 N  
 X= 643222.31 E  
 LAT.= 32.6151156° N  
 LONG.= 104.0024326° W

**LAST TAKE POINT**  
 NAD 83 NMSPC ZONE 3001  
 1980' FSL, 100' FEL  
 SEC. 33, T19S, R30E  
 Y= 587679.68 N  
 X= 653599.49 E  
 LAT.= 32.6150532° N  
 LONG.= 103.9687301° W

**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.

*Mikah Thomas* 10/14/2020  
 Signature Date

Mikah Thomas  
 Printed Name

mthomas@colgateenergy.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.

9/03/20  
 Date of Survey

Signature and Seal of Professional Surveyor

17078  
 Certificate Number



District I  
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District II  
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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: 08/25/2020

☒ Original Operator & OGRID No.: Colgate Operating, LLC (371449)  
☐ Amended - Reason for Amendment: \_\_\_\_\_

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

*Note: Form C-129 must be submitted and approved prior to exceeding 60 days allowed by Rule (Subsection A of 19.15.18.12 NMAC).*

### 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	Well Location (ULSTR)	Footages	Expected MCF/D	Flared or Vented	Comments
Crazy Horse 32 State Fed Com 133H	30-015					

### Gathering System and Pipeline Notification

Well(s) 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 is dedicated to LM Touchdown, LLC and will be connected to LM Touchdown, LLC low/high pressure gathering system located in Eddy County, New Mexico. It will require 10' of pipeline to connect the facility to low/high pressure gathering system. Colgate Operating, LLC provides (periodically) to LM Touchdown, LLC a drilling, completion and estimated first production date for wells that are scheduled to be drilled in the foreseeable future. In addition, Colgate Operating, LLC and LM Touchdown, LLC have periodic conference calls to discuss changes to drilling and completion schedules. Gas from these wells will be processed at LM Touchdown, LLC Processing Plant located in Sec. 22, Twn. 19S Rng. 28E Eddy County, New Mexico. The actual flow of the gas will be based on compression operating parameters and gathering system pressures.

### Flowback Strategy

After the fracture treatment/completion operations, well(s) will be produced to production facilities. During flowback, the fluids and sand content will be monitored. Gas sales should start as soon as the wells start flowing through the production facilities, unless there are operational issues on LM Touchdown, LLC system at that time. Based on current information, it is Colgate Operating, LLC 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 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 the generator, remainder of gas will be flared
- Compressed Natural Gas – On lease
  - Gas flared would be minimal, but might be uneconomical to operate when gas volume declines

- NGL Removal – On lease
  - Plants are expensive, residue gas is still flared, and uneconomical to operate when gas volume declines

**Drilling Program****Colgate Energy**

Crazy Horse 32 State Fed Com 133H

1,303' FSL &amp; 190' FWL (SHL)

Sec 32-T19S-R30E

Eddy County, New Mexico

**The estimated tops of geologic formations are as follows:**

<b>Formation:</b>	<b>TVD</b>	<b>Subsea</b>
Rustler	140	3150
Top of Salt	380	2910
Base of Salt	1295	1995
Yates	1465	1825
Capitan	1825	1465
Delaware Mountain Group	3390	-100
Lower Brushy Canyon*	5865	-2575
Bone Spring Lime	6150	-2860
1st Bone Spring Sand*	7475	-4185
2nd Bone Spring Sand*	8205	-4915
3rd Bone Spring Sand*	9125	-5835
Wolfcamp A*	9610	-6320

**Formations anticipated to contain fresh water, oil or gas are as follows:**

Water	Fresh water is anticipated at 65' and will be protected by setting a water protection string at 330' and cementing to surface.
Water	The Capitan Reef is anticipated to contain usable water and will be protected by setting an intermediate casing string at 3315' and cementing to surface using a stage tool and external casing packer.
Hydrocarbons	Oil and gas are anticipated in the above (*) formations. These zones will be protected by casing as necessary.

**Proposed casing program is as follows:**

<b>Name</b>	<b>Hole Size</b>	<b>Casing Size</b>	<b>Weight &amp; Grade</b>	<b>Thread Collar</b>	<b>Top Csg</b>	<b>Setting Depth</b>	<b>Collapse</b>	<b>Burst</b>	<b>Tension</b>
Surface	24	18.625	87.5# J-55 (new)	BTC	0	330'	1.125	1.2	1.6
Intermediate I	17 1/2	13 3/8	54.5# J-55 (new)	BTC	0	1,670'	1.125	1.2	1.6
Intermediate II	12 1/4	9 5/8	36# J-55 (new)	BTC	0	3,315'	1.125	1.2	1.6
Production	8 3/4	5 1/2	20# HCP-110 (new)	CDC HTQ	0	19,720'	1.125	1.2	1.6

SF Values will meet or exceed

**Proposed cementing program is as follows:**

<b>Name</b>	<b>Slurry</b>	<b>Sacks</b>	<b>Yield</b>	<b>Weight</b>	<b>Excess</b>	<b>Top Cement</b>	<b>Blend</b>
Surface	Tail	418	1.8	13.5	100%	0'	Class C w/ salt, accelerator, extender and LCM additives
Intermediate I	Lead	750	2.19	12.7	100%	0'	Class C w/ salt, extender and LCM additives
	Tail	218	1.33	14.8	25%	1,336'	Class C w/ accelerator & LCM additives
Intermediate II	Lead	129	4.41	10.6	100%	1,745'	Class C w/ accelerator, extender and LCM additives
	Tail	195	1.33	14.8	25%	2,652'	Class C w/ accelerator & LCM additives
2nd Stage	Lead	101	4.41	10.6	100%	0'	Class C w/ accelerator, extender and LCM additives
	Tail	98	1.33	14.8	25%	1,082'	Class C w/ accelerator & LCM additives
Production	Tail	4277	1.24	14.2	20%	2,050'	Class H w/ Fluid Loss, Dispersant, Retarder & LCM additives

**Proposed casing and cementing accessories are as follows:** (Casing will be centralized per Onshore Order 2.III.B.1.f)

Surface:	1 centralizer 5' above shoe held in place with stop ring; 1 centralizer per joint for following 2 joints then every other joint to surface
Intermediate I:	2 centralizers on 1st joint, 1 centralizer on 2nd joint, 1 centralizer every 4th joint to surface
Intermediate II:	2 centralizers on 1st joint, 1 centralizer on 2nd joint, 1 centralizer every 4th joint to surface
	Stage tool and external casing packer will be placed at approximately 1745' to ensure intermediate casing string is adequately cemented.
Production:	2 centralizers on bottom joint, 1 centralizer on 2nd joint, 1 centralizer every 3rd joint to 2815'



**Proposed pressure control equipment is as follows (see schematics below):**

Well control equipment with working pressure ratings in excess of anticipated maximum surface pressure will be utilized for well control from drill out of surface casing to TMD. A diverter system will be installed on 18-5/8" casing once set & cemented. A 13-5/8" multi-bowl wellhead will be SOW installed to 13-3/8" casing once set & cemented. A 13-5/8" 10M BOP will be nipped up to the 13-5/8" multi-bowl wellhead through the completion of the drilling operation. A rotating head will also be installed and utilized as needed. All BOPE connections shall be flanged, welded or clamped. All choke lines shall be straight unless targeted with running tees or tee blocks are used, and choke lines shall be anchored to prevent whip and reduce vibrations. All valves in the choke line & the choke manifold shall be full opening as to not cause restrictions and to allow for straight fluid paths to minimize potential erosion. All gauges utilized in the well control system shall be of a type designed for drilling fluid service. A top drive inside BOP valve will be utilized at all times. Subs equipped with full opening valves sized to fit the drill pipe and collars will be available on the rig floor in the open position. The key to operate said valve equipped subs will be on the rig floor at all times. The accumulator system will have sufficient capacity to open the HCR and close all three sets of rams plus the annular preventer while retaining at least 300 psi above precharge on the closing manifold (accumulator system shall be capable of doing so without using the closing unit pumps). The fluid reservoir capacity will be double the usable fluid volume of the accumulator system capacity, and the fluid level will be maintained at the manufacturer's recommended level. Prior to connecting the closing unit to the BOP stack, an accumulator precharge pressure test shall be performed to ensure the precharge pressure is within 100 psi of the desired precharge pressure (only nitrogen gas will be used to precharge). Two independent power sources will be made available at all times to power the closing unit pumps so that the pumps can automatically start when the closing valve manifold pressure has decreased to the pre-set level. Closing unit pumps will be sized to allow opening of HCR and closing of annular preventer on 5" drill pipe achieving at least 200 psi above precharge pressure with the accumulator system isolated from service in less than two minutes. A valve shall be installed in the closing line as close to the annular preventer as possible to act as a locking device; the valve shall be maintained in the open position and shall be closed only when the power source for the accumulator system is inoperative. Remote controls capable of opening and closing all preventers & the HCR shall be readily accessible to the driller; master controls with the same capability will be operable at the accumulator. The wellhead will be a multi-bowl speed head allowing for hang-off of intermediate I casing & isolation of the 13-3/8" x 9-5/8" annulus without breaking the connection between the BOP & wellhead to install an additional casing head. A wear bushing will be installed & inspected frequently to guard against internal wear to wellhead.

**A request for variance of pressure control equipment as follows:**

1. Colgate Energy requests a variance to drill this well using a co-flex line between the BOP and choke manifold. Certification for proposed co-flex hose is attached. The hose is not required by the manufacturer to be anchored. In the event the specific hose is not available, one of equal or higher rating will be used.
2. Colgate Energy requests a variance to Onshore Order #2's requirement that a 2M system with annular preventer be installed prior to drilling of the surface casing shoe due to the shallow setting depth of the surface casing. The diverter system adequately meets the requirements for the preferred method for handling a well control event in a situation where the existing casing shoe is not adequate for a hard shut-in due to the likelihood of an underground blowout with the potential to breach surface.

**BOPE will be tested per the following procedure:**

Once surface casing is set and diverter system installed on 18-5/8" casing, pressure tests will be performed by a third party tester to 600 psi. After intermediate I casing is set and the BOPE installed, pressure tests of BOPE will be performed by a third party tester utilizing water and a test plug to 250 psi low and 10,000 psi high. To deem a pressure test successful, pressure must be maintained for ten minutes without any bleed-off. A valve on the wellhead below seat of test plug will be open at all time during BOPE tests to guard against damage to casing. The BOPE will be re-tested in this manner after any connection breaks or passage of allotted time (25 days). Any BOPE which fails to pass pressure tests after initial install will be replaced prior to drilling out of intermediate I casing shoe. If at any time a BOPE component cannot function to secure the hole, the hole shall be secured utilizing a retrievable packer, and the non-functioning BOPE component shall be repair or replaced. After repair or replacement, a pressure test of the repaired or replaced component and any connections broken to repair or replace the non-functioning component will be tested in the same manner as described for initial install of BOPE. The annular preventer will be function tested at least weekly, and the ram-type preventers will be function tested on each trip. BOPE pit level drills will be conducted weekly with each drilling crews. All pressure tests performed on BOPE and BOPE pit level drills will be logged in the drilling log. Isolation of 13-3/8" x 9-5/8" casing annulus shall be confirmed by pressure testing of wellhead sealing component after said sealing component is installed.

**Each casing string will be tested once installed in the wellbore per the following procedure:**

After cement has been allowed to sit undisturbed for eighteen hours and has reached a compressive strength of 500 psi, the 18-5/8" surface casing will be pressured to 1,500 psi and held for 30 minutes. Lab reports with the 500 psi compressive strength time for the cement will be onsite for review. A casing test will be deemed successful if test pressure does not decline more than 10% over the thirty minute period. The casing pressure test will be completed against the cement head. After cement has been allowed to sit undisturbed for eighteen hours and has reached a compressive strength of 500 psi, the 13-3/8" intermediate I casing will be pressured to 1,500 psi and held for 30 minutes. Lab reports with the 500 psi compressive strength time for the cement will be onsite for review. A casing test will be deemed successful if test pressure does not decline more than 10% over the thirty minute period. The casing pressure test will be completed against the blind rams of 13-5/8" 10M BOPE prior to PU tools to drill out. After cement has been allowed to sit undisturbed for eighteen hours and has reached a compressive strength of 500 psi, the 9-5/8" intermediate II casing will be pressured to 2,500 psi and held for 30 minutes. Lab reports with the 500 psi compressive strength time for the cement will be onsite for review. A casing test will be deemed successful if test pressure does not decline more than 10% over the thirty minute period. Casing pressure test will be completed against the lower pipe rams of 13-5/8" 10M BOPE immediately prior to drilling out float equipment. Casing pressure test on 5-1/2" production casing will occur more than 72 hours after cement is placed and reached ultimate compressive strength. Lab reports with the 500 psi compressive strength time for the cement will be onsite for review. A casing test will be deemed successful if test pressure does not decline more than 10% over the thirty minute period. Casing will be tested by pressuring up to 10,000 psi and holding pressure for 30 minutes prior to the beginning of perforating & stimulating operations.

**Each casing string will be cemented per the following cementing procedure:**

Cement will be placed on all casing strings utilizing the pump and plug method. A float will be installed in the casing shoe and float collar on all casing strings to hold cement in place once pumping is completed. A top plug will be utilized on all casing strings to prevent contamination of the cement by the displacement fluid. A preflush fluid will be pumped prior to cement to aid in removal of drilling mud from the wellbore, eliminate drilling mud contamination of the cement slurry and prepare the surface of both the wellbore and casing for cement.

**Proposed mud system is as follows:**

<u>Name</u>	<u>Hole Size</u>	<u>Mud Weight</u>	<u>Viscosity</u>	<u>Fluid Loss</u>	<u>Type Mud</u>
Surface	24"	8.6 - 9.0	28 - 34	NC	FW Spud Mud
Intermediate I	17-1/2"	10.0 - 10.2	30 - 32	NC	Brine Water
Intermediate II	12-1/4"	8.4 - 8.9	28 - 30	NC	Aerated Fresh Water
Production	8-3/4"	9.0 - 10.0	32 - 35	NC	Cut-brine poly-oil mud

All necessary mud products for weight addition and fluid loss control will be on location at all times. Mud program is subject to change due to hole conditions. The mud monitoring system is an electronic Pason system satisfying requirements of Onshore Order #1. Both visual and electronic mud monitoring equipment will be utilized to detect volume changes indicating loss or gain of circulating system fluid volume. Slow pump rates will be taken & recorded hourly in the drilling log. Mud engineer will perform tests and provide written report at least every 12 hours while circulating. A trip tank will be utilized and trip sheet will be recorded to ensure wellbore is taking proper fill or displacing proper fluid volume during all tripping operations. Gas detecting equipment will be utilized to monitor for hydrocarbon gas at the shakers while drilling and/or circulating. H2S monitoring equipment with both visual & auditory alarms will be installed and operational at the shakers, rig floor and cellar while drilling and/or circulating. A flare system with an effective method for ignition & discharge more than 100 feet from the wellbore will be utilized to gather and burn all gas; lines will be straight unless targeted with running tees. A mud gas separator will be installed and operable prior to drill out of surface casing.

**Proposed testing, surveying, logging and coring program is as follows:**

No open-hole logs are planned at this time. Directional surveys will be collected at no greater than 200' intervals while drilling through the MWD tools. A GR log will be collected while drilling through the MWD tools from intermediate casing to TD. No DSTs or cores are planned at this time. No CBL or temperature logs planned at this time. A formation integrity test (FIT) will be performed on all casing strings after BOPE is installed to at least 1 ppge over planned section mud weight after drilling ten feet of new hole.

**Anticipated potential hazards are as follows:**

No abnormal pressures or temperatures are expected. In accordance with Onshore Order No. 6, Colgate Energy does not anticipate that there will be enough H<sub>2</sub>S from the surface to the Wolfcamp formations to meet the BLM's minimum requirements for the submission of an "H<sub>2</sub>S Drilling Operation Plan" or "Public Protection Plan" for the drilling and completion of this well. Since we have an H<sub>2</sub>S safety package on all wells, attached is an "H<sub>2</sub>S Drilling Operations Plan". Adequate flare lines will be installed off the mud/gas separator where gas may be flared safely. All personnel will be familiar with all aspects of safe operation of equipment being used.

Estimated BHP: 8.3 lbs/gal gradient or less

Estimated BHT: 120° F

**Aerate drilling well control plan is as follows:**

Should a formation influx occur while aerate drilling, Colgate Energy's protocol will be to immediately remove the air supply from the stand pipe using the air manifold at the rig floor. This would allow the mud pumps to quickly fill the annulus of the wellbore with non-aerated drilling mud in order to significantly increase the hydrostatic barrier between the formation of influx and surface. In the event an additional influx is observed once a full hydrostatic column of drilling mud is in place, all well control practices and procedures will be identical to mud drilling, well control protocols. During BOP drills performed weekly with each rig crew, emphasis will be placed on well control situations occurring while aerate drilling (specifically identifying the steps at the air manifold required to remove the air injection from the standpipe to allow the mud pumps to fill the wellbore with non-aerated drilling mud in order to regain a full hydrostatic column).

**Planned commencement of operations is as follows:**

Road and location construction will begin after BLM approval of APD. Anticipated spud date as soon as approved. Drilling expected to take 30 days. If production casing is run an additional 60 days will be required to complete and construct surface facilities.



## **Colgate Energy**

**Eddy County, NM (N83-NME)**

**Crazy Horse 32 State Fed Com**

**Crazy Horse 32 State Fed Com 133H**

**Permit**

**Plan: ADP-Rev2 v3**

## **Standard Planning Report**

**19 October, 2020**



## Planning Report

<b>Database:</b>	EDM 5000.14 Single User Db	<b>Local Co-ordinate Reference:</b>	Well Crazy Horse 32 State Fed Com 133H
<b>Company:</b>	Colgate Energy	<b>TVD Reference:</b>	3264+25 @ 3289.00usft
<b>Project:</b>	Eddy County, NM (N83-NME)	<b>MD Reference:</b>	3264+25 @ 3289.00usft
<b>Site:</b>	Crazy Horse 32 State Fed Com	<b>North Reference:</b>	Grid
<b>Well:</b>	Crazy Horse 32 State Fed Com 133H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Permit		
<b>Design:</b>	ADP-Rev2 v3		

<b>Project</b>	Eddy County, NM (N83-NME)		
<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 Eastern Zone		

Site		Crazy Horse 32 State Fed Com			
Site Position:		Northing:	586,991.40 usft	Latitude:	32.61325351
From:	Map	Easting:	643,359.01 usft	Longitude:	-104.00199549
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.18

Well	Crazy Horse 32 State Fed Com 133H					
Well Position	+N/-S	-0.10 usft	Northing:	586,991.30 usft	Latitude:	32.61325362
	+E/-W	-44.84 usft	Easting:	643,314.17 usft	Longitude:	-104.00214112
Position Uncertainty		0.00 usft	Wellhead Elevation:		Ground Level:	3,264.00 usft

<b>Wellbore</b>	Permit				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2020	9/27/2020	6.86	60.21	47,755.13615062

<b>Design</b>	ADP-Rev2 v3				
<b>Audit Notes:</b>	Rev2 r3 -Formation change no charge 10/19/2020				
<b>Version:</b>		<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>	
	0.00	0.00	0.00	89.94	

<b>Plan Survey Tool Program</b>	<b>Date</b>	10/19/2020			
<b>Depth From (usft)</b>	<b>Depth To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Remarks</b>	
1	0.00	19,720.85	ADP-Rev2 v3 (Permit)	OWSG MWD Rev 4	
				OWSG MWD - Standard	



## Planning Report

<b>Database:</b>	EDM 5000.14 Single User Db	<b>Local Co-ordinate Reference:</b>	Well Crazy Horse 32 State Fed Com 133H
<b>Company:</b>	Colgate Energy	<b>TVD Reference:</b>	3264+25 @ 3289.00usft
<b>Project:</b>	Eddy County, NM (N83-NME)	<b>MD Reference:</b>	3264+25 @ 3289.00usft
<b>Site:</b>	Crazy Horse 32 State Fed Com	<b>North Reference:</b>	Grid
<b>Well:</b>	Crazy Horse 32 State Fed Com 133H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Permit		
<b>Design:</b>	ADP-Rev2 v3		

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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,480.35	8.71	348.17	2,478.12	43.07	-9.02	1.50	1.50	0.00	348.17	
6,470.07	8.71	348.17	6,421.88	634.09	-132.82	0.00	0.00	0.00	0.00	
7,050.42	0.00	0.00	7,000.00	677.16	-141.84	1.50	-1.50	0.00	180.00	00-EON-CH133H
8,874.92	0.00	0.00	8,824.50	677.16	-141.84	0.00	0.00	0.00	0.00	
9,763.45	88.85	89.94	9,397.34	677.76	419.64	10.00	10.00	10.12	89.94	
11,843.51	88.85	89.94	9,439.00	679.96	2,499.29	0.00	0.00	0.00	0.00	02-V-2500-133H
11,872.41	89.43	89.94	9,439.43	679.99	2,528.18	2.00	2.00	-0.01	-0.18	
14,343.64	89.43	89.94	9,464.00	682.69	4,999.29	0.00	0.00	0.00	0.00	03-V-5000-133H
14,378.42	88.73	89.94	9,464.56	682.73	5,034.06	2.00	-2.00	0.00	-179.98	
16,844.25	88.73	89.94	9,519.00	685.43	7,499.29	0.00	0.00	0.00	0.00	04-V-7500-133H
16,850.22	88.85	89.94	9,519.13	685.44	7,505.26	2.00	2.00	0.00	0.11	
19,344.74	88.85	89.94	9,569.00	688.16	9,999.28	0.00	0.00	0.00	0.00	05-V-10000-133H
19,630.84	88.85	89.94	9,574.72	688.47	10,285.32	0.00	0.00	0.00	0.00	06-LTP(CH32-133H)
19,720.85	88.85	89.94	9,576.52	688.57	10,375.32	0.00	0.00	0.00	0.00	07-PBHL(CH32-133H)



## Planning Report

<b>Database:</b>	EDM 5000.14 Single User Db	<b>Local Co-ordinate Reference:</b>	Well Crazy Horse 32 State Fed Com 133H
<b>Company:</b>	Colgate Energy	<b>TVD Reference:</b>	3264+25 @ 3289.00usft
<b>Project:</b>	Eddy County, NM (N83-NME)	<b>MD Reference:</b>	3264+25 @ 3289.00usft
<b>Site:</b>	Crazy Horse 32 State Fed Com	<b>North Reference:</b>	Grid
<b>Well:</b>	Crazy Horse 32 State Fed Com 133H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Permit		
<b>Design:</b>	ADP-Rev2 v3		

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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	
139.00	0.00	0.00	139.00	0.00	0.00	0.00	0.00	0.00	0.00	
<b>Rustler</b>										
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00	
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	
379.00	0.00	0.00	379.00	0.00	0.00	0.00	0.00	0.00	0.00	
<b>Top of Salt</b>										
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00	
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00	
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00	
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00	
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00	
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,294.00	0.00	0.00	1,294.00	0.00	0.00	0.00	0.00	0.00	0.00	
<b>Base of Salt</b>										
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,464.00	0.00	0.00	1,464.00	0.00	0.00	0.00	0.00	0.00	0.00	
<b>Yates</b>										
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,824.00	0.00	0.00	1,824.00	0.00	0.00	0.00	0.00	0.00	0.00	
<b>Capitan</b>										
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00	
<b>Start Build 1.50</b>										
2,000.00	1.50	348.17	1,999.99	1.28	-0.27	-0.27	1.50	1.50	0.00	
2,100.00	3.00	348.17	2,099.91	5.12	-1.07	-1.07	1.50	1.50	0.00	
2,200.00	4.50	348.17	2,199.69	11.52	-2.41	-2.40	1.50	1.50	0.00	
2,300.00	6.00	348.17	2,299.27	20.48	-4.29	-4.27	1.50	1.50	0.00	
2,400.00	7.50	348.17	2,398.57	31.98	-6.70	-6.67	1.50	1.50	0.00	
2,480.35	8.71	348.17	2,478.12	43.07	-9.02	-8.98	1.50	1.50	0.00	
<b>Start 3989.72 hold at 2480.35 MD</b>										
2,500.00	8.71	348.17	2,497.54	45.98	-9.63	-9.58	0.00	0.00	0.00	
2,600.00	8.71	348.17	2,596.39	60.79	-12.73	-12.67	0.00	0.00	0.00	
2,700.00	8.71	348.17	2,695.24	75.61	-15.84	-15.76	0.00	0.00	0.00	
2,800.00	8.71	348.17	2,794.09	90.42	-18.94	-18.84	0.00	0.00	0.00	
2,900.00	8.71	348.17	2,892.94	105.23	-22.04	-21.93	0.00	0.00	0.00	
3,000.00	8.71	348.17	2,991.78	120.05	-25.15	-25.02	0.00	0.00	0.00	
3,100.00	8.71	348.17	3,090.63	134.86	-28.25	-28.11	0.00	0.00	0.00	
3,200.00	8.71	348.17	3,189.48	149.67	-31.35	-31.19	0.00	0.00	0.00	
3,300.00	8.71	348.17	3,288.33	164.49	-34.45	-34.28	0.00	0.00	0.00	
3,400.00	8.71	348.17	3,387.18	179.30	-37.56	-37.37	0.00	0.00	0.00	
3,401.85	8.71	348.17	3,389.00	179.58	-37.61	-37.43	0.00	0.00	0.00	
<b>DLWR Mnt. Group</b>										
3,500.00	8.71	348.17	3,486.02	194.12	-40.66	-40.46	0.00	0.00	0.00	
3,600.00	8.71	348.17	3,584.87	208.93	-43.76	-43.54	0.00	0.00	0.00	
3,700.00	8.71	348.17	3,683.72	223.74	-46.87	-46.63	0.00	0.00	0.00	





## Planning Report

<b>Database:</b>	EDM 5000.14 Single User Db	<b>Local Co-ordinate Reference:</b>	Well Crazy Horse 32 State Fed Com 133H
<b>Company:</b>	Colgate Energy	<b>TVD Reference:</b>	3264+25 @ 3289.00usft
<b>Project:</b>	Eddy County, NM (N83-NME)	<b>MD Reference:</b>	3264+25 @ 3289.00usft
<b>Site:</b>	Crazy Horse 32 State Fed Com	<b>North Reference:</b>	Grid
<b>Well:</b>	Crazy Horse 32 State Fed Com 133H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Permit		
<b>Design:</b>	ADP-Rev2 v3		

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)
3,800.00	8.71	348.17	3,782.57	238.56	-49.97	-49.72	0.00	0.00	0.00
3,900.00	8.71	348.17	3,881.42	253.37	-53.07	-52.81	0.00	0.00	0.00
4,000.00	8.71	348.17	3,980.26	268.18	-56.17	-55.89	0.00	0.00	0.00
4,100.00	8.71	348.17	4,079.11	283.00	-59.28	-58.98	0.00	0.00	0.00
4,200.00	8.71	348.17	4,177.96	297.81	-62.38	-62.07	0.00	0.00	0.00
4,300.00	8.71	348.17	4,276.81	312.62	-65.48	-65.16	0.00	0.00	0.00
4,400.00	8.71	348.17	4,375.66	327.44	-68.59	-68.24	0.00	0.00	0.00
4,500.00	8.71	348.17	4,474.50	342.25	-71.69	-71.33	0.00	0.00	0.00
4,600.00	8.71	348.17	4,573.35	357.07	-74.79	-74.42	0.00	0.00	0.00
4,700.00	8.71	348.17	4,672.20	371.88	-77.90	-77.51	0.00	0.00	0.00
4,800.00	8.71	348.17	4,771.05	386.69	-81.00	-80.59	0.00	0.00	0.00
4,900.00	8.71	348.17	4,869.90	401.51	-84.10	-83.68	0.00	0.00	0.00
5,000.00	8.71	348.17	4,968.74	416.32	-87.20	-86.77	0.00	0.00	0.00
5,100.00	8.71	348.17	5,067.59	431.13	-90.31	-89.86	0.00	0.00	0.00
5,200.00	8.71	348.17	5,166.44	445.95	-93.41	-92.94	0.00	0.00	0.00
5,300.00	8.71	348.17	5,265.29	460.76	-96.51	-96.03	0.00	0.00	0.00
5,400.00	8.71	348.17	5,364.14	475.57	-99.62	-99.12	0.00	0.00	0.00
5,500.00	8.71	348.17	5,462.98	490.39	-102.72	-102.20	0.00	0.00	0.00
5,600.00	8.71	348.17	5,561.83	505.20	-105.82	-105.29	0.00	0.00	0.00
5,700.00	8.71	348.17	5,660.68	520.02	-108.92	-108.38	0.00	0.00	0.00
5,800.00	8.71	348.17	5,759.53	534.83	-112.03	-111.47	0.00	0.00	0.00
5,900.00	8.71	348.17	5,858.38	549.64	-115.13	-114.55	0.00	0.00	0.00
5,905.69	8.71	348.17	5,864.00	550.49	-115.31	-114.73	0.00	0.00	0.00
<b>Lower Brushy Canyon</b>									
6,000.00	8.71	348.17	5,957.22	564.46	-118.23	-117.64	0.00	0.00	0.00
6,100.00	8.71	348.17	6,056.07	579.27	-121.34	-120.73	0.00	0.00	0.00
6,194.01	8.71	348.17	6,149.00	593.20	-124.25	-123.63	0.00	0.00	0.00
<b>Bone Spring Lime</b>									
6,200.00	8.71	348.17	6,154.92	594.08	-124.44	-123.82	0.00	0.00	0.00
6,300.00	8.71	348.17	6,253.77	608.90	-127.54	-126.90	0.00	0.00	0.00
6,400.00	8.71	348.17	6,352.62	623.71	-130.64	-129.99	0.00	0.00	0.00
6,470.07	8.71	348.17	6,421.88	634.09	-132.82	-132.15	0.00	0.00	0.00
<b>Start Drop -1.50</b>									
6,500.00	8.26	348.17	6,451.48	638.41	-133.72	-133.06	1.50	-1.50	0.00
6,600.00	6.76	348.17	6,550.62	651.20	-136.40	-135.72	1.50	-1.50	0.00
6,700.00	5.26	348.17	6,650.07	661.44	-138.55	-137.85	1.50	-1.50	0.00
6,800.00	3.76	348.17	6,749.76	669.13	-140.16	-139.46	1.50	-1.50	0.00
6,900.00	2.26	348.17	6,849.62	674.26	-141.23	-140.53	1.50	-1.50	0.00
7,000.00	0.76	348.17	6,949.58	676.83	-141.77	-141.06	1.50	-1.50	0.00
7,050.42	0.00	0.00	7,000.00	677.16	-141.84	-141.13	1.50	-1.50	0.00
<b>Start 1824.50 hold at 7050.42 MD - 00-EON-CH133H</b>									
7,100.00	0.00	0.00	7,049.58	677.16	-141.84	-141.13	0.00	0.00	0.00
7,200.00	0.00	0.00	7,149.58	677.16	-141.84	-141.13	0.00	0.00	0.00
7,300.00	0.00	0.00	7,249.58	677.16	-141.84	-141.13	0.00	0.00	0.00
7,400.00	0.00	0.00	7,349.58	677.16	-141.84	-141.13	0.00	0.00	0.00
7,500.00	0.00	0.00	7,449.58	677.16	-141.84	-141.13	0.00	0.00	0.00
7,524.42	0.00	0.00	7,474.00	677.16	-141.84	-141.13	0.00	0.00	0.00
<b>1st Bone Spring Sand</b>									
7,600.00	0.00	0.00	7,549.58	677.16	-141.84	-141.13	0.00	0.00	0.00
7,700.00	0.00	0.00	7,649.58	677.16	-141.84	-141.13	0.00	0.00	0.00
7,800.00	0.00	0.00	7,749.58	677.16	-141.84	-141.13	0.00	0.00	0.00
7,900.00	0.00	0.00	7,849.58	677.16	-141.84	-141.13	0.00	0.00	0.00
8,000.00	0.00	0.00	7,949.58	677.16	-141.84	-141.13	0.00	0.00	0.00
8,100.00	0.00	0.00	8,049.58	677.16	-141.84	-141.13	0.00	0.00	0.00



## Planning Report

<b>Database:</b>	EDM 5000.14 Single User Db	<b>Local Co-ordinate Reference:</b>	Well Crazy Horse 32 State Fed Com 133H
<b>Company:</b>	Colgate Energy	<b>TVD Reference:</b>	3264+25 @ 3289.00usft
<b>Project:</b>	Eddy County, NM (N83-NME)	<b>MD Reference:</b>	3264+25 @ 3289.00usft
<b>Site:</b>	Crazy Horse 32 State Fed Com	<b>North Reference:</b>	Grid
<b>Well:</b>	Crazy Horse 32 State Fed Com 133H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Permit		
<b>Design:</b>	ADP-Rev2 v3		

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)
8,200.00	0.00	0.00	8,149.58	677.16	-141.84	-141.13	0.00	0.00	0.00
8,254.42	0.00	0.00	8,204.00	677.16	-141.84	-141.13	0.00	0.00	0.00
<b>2nd Bone Spring SD</b>									
8,300.00	0.00	0.00	8,249.58	677.16	-141.84	-141.13	0.00	0.00	0.00
8,400.00	0.00	0.00	8,349.58	677.16	-141.84	-141.13	0.00	0.00	0.00
8,500.00	0.00	0.00	8,449.58	677.16	-141.84	-141.13	0.00	0.00	0.00
8,600.00	0.00	0.00	8,549.58	677.16	-141.84	-141.13	0.00	0.00	0.00
8,700.00	0.00	0.00	8,649.58	677.16	-141.84	-141.13	0.00	0.00	0.00
8,800.00	0.00	0.00	8,749.58	677.16	-141.84	-141.13	0.00	0.00	0.00
8,874.92	0.00	0.00	8,824.50	677.16	-141.84	-141.13	0.00	0.00	0.00
<b>KOP: 8874.92' MD, -141.13' VS, 8824.50' TVD</b>									
8,900.00	2.51	89.94	8,849.57	677.16	-141.29	-140.58	10.00	10.00	0.00
8,950.00	7.51	89.94	8,899.36	677.17	-136.93	-136.22	10.00	10.00	0.00
9,000.00	12.51	89.94	8,948.59	677.17	-128.24	-127.53	10.00	10.00	0.00
9,050.00	17.51	89.94	8,996.87	677.19	-115.30	-114.59	10.00	10.00	0.00
9,100.00	22.51	89.94	9,043.83	677.21	-98.20	-97.49	10.00	10.00	0.00
9,150.00	27.51	89.94	9,089.13	677.23	-77.07	-76.36	10.00	10.00	0.00
9,190.08	31.52	89.94	9,124.00	677.25	-57.33	-56.62	10.00	10.00	0.00
<b>3rd Bone Spring SD</b>									
9,200.00	32.51	89.94	9,132.42	677.26	-52.07	-51.36	10.00	10.00	0.00
9,250.00	37.51	89.94	9,173.36	677.29	-23.39	-22.68	10.00	10.00	0.00
9,300.00	42.51	89.94	9,211.64	677.32	8.74	9.45	10.00	10.00	0.00
9,350.00	47.51	89.94	9,246.98	677.36	44.09	44.80	10.00	10.00	0.00
<b>01-FTP (CH32-133H)</b>									
9,400.00	52.51	89.94	9,279.11	677.40	82.38	83.09	10.00	10.00	0.00
9,450.00	57.51	89.94	9,307.77	677.44	123.33	124.04	10.00	10.00	0.00
9,500.00	62.51	89.94	9,332.76	677.49	166.62	167.33	10.00	10.00	0.00
9,550.00	67.51	89.94	9,353.87	677.54	211.93	212.64	10.00	10.00	0.00
9,600.00	72.51	89.94	9,370.96	677.58	258.90	259.61	10.00	10.00	0.00
9,650.00	77.51	89.94	9,383.89	677.64	307.18	307.89	10.00	10.00	0.00
9,700.00	82.51	89.94	9,392.57	677.69	356.41	357.12	10.00	10.00	0.00
9,750.00	87.51	89.94	9,396.92	677.74	406.20	406.91	10.00	10.00	0.00
9,763.45	88.85	89.94	9,397.34	677.76	419.64	420.35	10.00	10.00	0.00
<b>EOC: 9763.45' MD, 420.36' VS, 9397.34' TVD</b>									
9,800.00	88.85	89.94	9,398.08	677.79	456.19	456.90	0.00	0.00	0.00
9,900.00	88.85	89.94	9,400.08	677.90	556.17	556.88	0.00	0.00	0.00
10,000.00	88.85	89.94	9,402.08	678.01	656.15	656.86	0.00	0.00	0.00
10,100.00	88.85	89.94	9,404.08	678.11	756.13	756.84	0.00	0.00	0.00
10,200.00	88.85	89.94	9,406.09	678.22	856.11	856.82	0.00	0.00	0.00
10,300.00	88.85	89.94	9,408.09	678.32	956.09	956.80	0.00	0.00	0.00
10,400.00	88.85	89.94	9,410.09	678.43	1,056.07	1,056.78	0.00	0.00	0.00
10,500.00	88.85	89.94	9,412.09	678.54	1,156.05	1,156.76	0.00	0.00	0.00
10,600.00	88.85	89.94	9,414.10	678.64	1,256.03	1,256.74	0.00	0.00	0.00
10,700.00	88.85	89.94	9,416.10	678.75	1,356.01	1,356.72	0.00	0.00	0.00
10,800.00	88.85	89.94	9,418.10	678.85	1,455.99	1,456.70	0.00	0.00	0.00
10,900.00	88.85	89.94	9,420.10	678.96	1,555.97	1,556.68	0.00	0.00	0.00
11,000.00	88.85	89.94	9,422.11	679.07	1,655.95	1,656.66	0.00	0.00	0.00
11,100.00	88.85	89.94	9,424.11	679.17	1,755.93	1,756.64	0.00	0.00	0.00
11,200.00	88.85	89.94	9,426.11	679.28	1,855.91	1,856.62	0.00	0.00	0.00
11,300.00	88.85	89.94	9,428.12	679.38	1,955.89	1,956.60	0.00	0.00	0.00
11,400.00	88.85	89.94	9,430.12	679.49	2,055.87	2,056.58	0.00	0.00	0.00
11,500.00	88.85	89.94	9,432.12	679.60	2,155.85	2,156.56	0.00	0.00	0.00
11,600.00	88.85	89.94	9,434.12	679.70	2,255.83	2,256.54	0.00	0.00	0.00



## Planning Report

<b>Database:</b>	EDM 5000.14 Single User Db	<b>Local Co-ordinate Reference:</b>	Well Crazy Horse 32 State Fed Com 133H
<b>Company:</b>	Colgate Energy	<b>TVD Reference:</b>	3264+25 @ 3289.00usft
<b>Project:</b>	Eddy County, NM (N83-NME)	<b>MD Reference:</b>	3264+25 @ 3289.00usft
<b>Site:</b>	Crazy Horse 32 State Fed Com	<b>North Reference:</b>	Grid
<b>Well:</b>	Crazy Horse 32 State Fed Com 133H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Permit		
<b>Design:</b>	ADP-Rev2 v3		

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)
11,700.00	88.85	89.94	9,436.13	679.81	2,355.81	2,356.52	0.00	0.00	0.00
11,800.00	88.85	89.94	9,438.13	679.91	2,455.79	2,456.50	0.00	0.00	0.00
11,843.51	88.85	89.94	9,439.00	679.96	2,499.29	2,500.00	0.00	0.00	0.00
<b>Start DLS 2.00 TFO -0.18 - 02-V-2500-133H</b>									
11,872.41	89.43	89.94	9,439.43	679.99	2,528.18	2,528.89	2.00	2.00	-0.01
<b>Start 2471.23 hold at 11872.41 MD</b>									
11,900.00	89.43	89.94	9,439.71	680.02	2,555.77	2,556.48	0.00	0.00	0.00
12,000.00	89.43	89.94	9,440.70	680.13	2,655.77	2,656.48	0.00	0.00	0.00
12,100.00	89.43	89.94	9,441.70	680.24	2,755.76	2,756.47	0.00	0.00	0.00
12,200.00	89.43	89.94	9,442.69	680.35	2,855.76	2,856.47	0.00	0.00	0.00
12,300.00	89.43	89.94	9,443.68	680.46	2,955.75	2,956.46	0.00	0.00	0.00
12,400.00	89.43	89.94	9,444.68	680.57	3,055.75	3,056.46	0.00	0.00	0.00
12,500.00	89.43	89.94	9,445.67	680.68	3,155.74	3,156.45	0.00	0.00	0.00
12,600.00	89.43	89.94	9,446.67	680.79	3,255.74	3,256.45	0.00	0.00	0.00
12,700.00	89.43	89.94	9,447.66	680.89	3,355.73	3,356.44	0.00	0.00	0.00
12,800.00	89.43	89.94	9,448.65	681.00	3,455.73	3,456.44	0.00	0.00	0.00
12,900.00	89.43	89.94	9,449.65	681.11	3,555.72	3,556.43	0.00	0.00	0.00
13,000.00	89.43	89.94	9,450.64	681.22	3,655.72	3,656.43	0.00	0.00	0.00
13,100.00	89.43	89.94	9,451.64	681.33	3,755.71	3,756.42	0.00	0.00	0.00
13,200.00	89.43	89.94	9,452.63	681.44	3,855.71	3,856.42	0.00	0.00	0.00
13,300.00	89.43	89.94	9,453.63	681.55	3,955.70	3,956.41	0.00	0.00	0.00
13,400.00	89.43	89.94	9,454.62	681.66	4,055.70	4,056.41	0.00	0.00	0.00
13,500.00	89.43	89.94	9,455.61	681.77	4,155.69	4,156.40	0.00	0.00	0.00
13,600.00	89.43	89.94	9,456.61	681.88	4,255.69	4,256.40	0.00	0.00	0.00
13,700.00	89.43	89.94	9,457.60	681.99	4,355.68	4,356.40	0.00	0.00	0.00
13,800.00	89.43	89.94	9,458.60	682.10	4,455.68	4,456.39	0.00	0.00	0.00
13,900.00	89.43	89.94	9,459.59	682.21	4,555.67	4,556.39	0.00	0.00	0.00
14,000.00	89.43	89.94	9,460.58	682.31	4,655.67	4,656.38	0.00	0.00	0.00
14,100.00	89.43	89.94	9,461.58	682.42	4,755.66	4,756.38	0.00	0.00	0.00
14,200.00	89.43	89.94	9,462.57	682.53	4,855.66	4,856.37	0.00	0.00	0.00
14,300.00	89.43	89.94	9,463.57	682.64	4,955.65	4,956.37	0.00	0.00	0.00
14,343.64	89.43	89.94	9,464.00	682.69	4,999.29	5,000.00	0.00	0.00	0.00
<b>Start DLS 2.00 TFO -179.98 - 03-V-5000-133H</b>									
14,378.42	88.73	89.94	9,464.56	682.73	5,034.06	5,034.77	2.00	-2.00	0.00
<b>Start 2465.83 hold at 14378.42 MD</b>									
14,400.00	88.73	89.94	9,465.03	682.75	5,055.64	5,056.35	0.00	0.00	0.00
14,442.26	88.73	89.94	9,465.97	682.80	5,097.89	5,098.60	0.00	0.00	0.00
<b>Sec: 14442.26' MD, 9465.97' TVD - Sec 32.61508567, -103.98557757</b>									
14,500.00	88.73	89.94	9,467.24	682.86	5,155.62	5,156.33	0.00	0.00	0.00
14,600.00	88.73	89.94	9,469.45	682.97	5,255.59	5,256.30	0.00	0.00	0.00
14,700.00	88.73	89.94	9,471.66	683.08	5,355.57	5,356.28	0.00	0.00	0.00
14,800.00	88.73	89.94	9,473.87	683.19	5,455.54	5,456.26	0.00	0.00	0.00
14,900.00	88.73	89.94	9,476.07	683.30	5,555.52	5,556.23	0.00	0.00	0.00
15,000.00	88.73	89.94	9,478.28	683.41	5,655.49	5,656.21	0.00	0.00	0.00
15,100.00	88.73	89.94	9,480.49	683.52	5,755.47	5,756.18	0.00	0.00	0.00
15,200.00	88.73	89.94	9,482.70	683.63	5,855.45	5,856.16	0.00	0.00	0.00
15,300.00	88.73	89.94	9,484.90	683.74	5,955.42	5,956.13	0.00	0.00	0.00
15,400.00	88.73	89.94	9,487.11	683.85	6,055.40	6,056.11	0.00	0.00	0.00
15,500.00	88.73	89.94	9,489.32	683.96	6,155.37	6,156.09	0.00	0.00	0.00
15,600.00	88.73	89.94	9,491.53	684.07	6,255.35	6,256.06	0.00	0.00	0.00
15,700.00	88.73	89.94	9,493.74	684.18	6,355.32	6,356.04	0.00	0.00	0.00
15,800.00	88.73	89.94	9,495.94	684.29	6,455.30	6,456.01	0.00	0.00	0.00
15,900.00	88.73	89.94	9,498.15	684.40	6,555.27	6,555.99	0.00	0.00	0.00



## Planning Report

<b>Database:</b>	EDM 5000.14 Single User Db	<b>Local Co-ordinate Reference:</b>	Well Crazy Horse 32 State Fed Com 133H
<b>Company:</b>	Colgate Energy	<b>TVD Reference:</b>	3264+25 @ 3289.00usft
<b>Project:</b>	Eddy County, NM (N83-NME)	<b>MD Reference:</b>	3264+25 @ 3289.00usft
<b>Site:</b>	Crazy Horse 32 State Fed Com	<b>North Reference:</b>	Grid
<b>Well:</b>	Crazy Horse 32 State Fed Com 133H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Permit		
<b>Design:</b>	ADP-Rev2 v3		

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)
16,000.00	88.73	89.94	9,500.36	684.50	6,655.25	6,655.96	0.00	0.00	0.00
16,100.00	88.73	89.94	9,502.57	684.61	6,755.23	6,755.94	0.00	0.00	0.00
16,200.00	88.73	89.94	9,504.78	684.72	6,855.20	6,855.91	0.00	0.00	0.00
16,300.00	88.73	89.94	9,506.98	684.83	6,955.18	6,955.89	0.00	0.00	0.00
16,400.00	88.73	89.94	9,509.19	684.94	7,055.15	7,055.87	0.00	0.00	0.00
16,500.00	88.73	89.94	9,511.40	685.05	7,155.13	7,155.84	0.00	0.00	0.00
16,600.00	88.73	89.94	9,513.61	685.16	7,255.10	7,255.82	0.00	0.00	0.00
16,700.00	88.73	89.94	9,515.82	685.27	7,355.08	7,355.79	0.00	0.00	0.00
16,800.00	88.73	89.94	9,518.02	685.38	7,455.05	7,455.77	0.00	0.00	0.00
16,844.25	88.73	89.94	9,519.00	685.43	7,499.29	7,500.00	0.00	0.00	0.00
<b>Start DLS 2.00 TFO 0.11 - 04-V-7500-133H</b>									
16,850.22	88.85	89.94	9,519.13	685.44	7,505.26	7,505.98	2.00	2.00	0.00
<b>Start 2494.52 hold at 16850.22 MD</b>									
16,900.00	88.85	89.94	9,520.12	685.49	7,555.03	7,555.75	0.00	0.00	0.00
17,000.00	88.85	89.94	9,522.12	685.60	7,655.01	7,655.73	0.00	0.00	0.00
17,100.00	88.85	89.94	9,524.12	685.71	7,754.99	7,755.71	0.00	0.00	0.00
17,200.00	88.85	89.94	9,526.12	685.82	7,854.97	7,855.69	0.00	0.00	0.00
17,300.00	88.85	89.94	9,528.12	685.93	7,954.95	7,955.67	0.00	0.00	0.00
17,400.00	88.85	89.94	9,530.12	686.04	8,054.93	8,055.65	0.00	0.00	0.00
17,500.00	88.85	89.94	9,532.12	686.15	8,154.91	8,155.63	0.00	0.00	0.00
17,600.00	88.85	89.94	9,534.12	686.26	8,254.89	8,255.61	0.00	0.00	0.00
17,700.00	88.85	89.94	9,536.12	686.36	8,354.87	8,355.59	0.00	0.00	0.00
17,800.00	88.85	89.94	9,538.12	686.47	8,454.85	8,455.57	0.00	0.00	0.00
17,900.00	88.85	89.94	9,540.11	686.58	8,554.83	8,555.55	0.00	0.00	0.00
18,000.00	88.85	89.94	9,542.11	686.69	8,654.81	8,655.53	0.00	0.00	0.00
18,100.00	88.85	89.94	9,544.11	686.80	8,754.79	8,755.51	0.00	0.00	0.00
18,200.00	88.85	89.94	9,546.11	686.91	8,854.77	8,855.49	0.00	0.00	0.00
18,300.00	88.85	89.94	9,548.11	687.02	8,954.75	8,955.47	0.00	0.00	0.00
18,400.00	88.85	89.94	9,550.11	687.13	9,054.73	9,055.45	0.00	0.00	0.00
18,500.00	88.85	89.94	9,552.11	687.24	9,154.71	9,155.43	0.00	0.00	0.00
18,600.00	88.85	89.94	9,554.11	687.35	9,254.69	9,255.41	0.00	0.00	0.00
18,700.00	88.85	89.94	9,556.11	687.46	9,354.67	9,355.39	0.00	0.00	0.00
18,800.00	88.85	89.94	9,558.11	687.57	9,454.65	9,455.37	0.00	0.00	0.00
18,900.00	88.85	89.94	9,560.11	687.67	9,554.63	9,555.35	0.00	0.00	0.00
19,000.00	88.85	89.94	9,562.11	687.78	9,654.61	9,655.33	0.00	0.00	0.00
19,100.00	88.85	89.94	9,564.11	687.89	9,754.59	9,755.31	0.00	0.00	0.00
19,200.00	88.85	89.94	9,566.11	688.00	9,854.57	9,855.29	0.00	0.00	0.00
19,300.00	88.85	89.94	9,568.11	688.11	9,954.55	9,955.27	0.00	0.00	0.00
19,344.74	88.85	89.94	9,569.00	688.16	9,999.28	10,000.00	0.00	0.00	0.00
<b>Start 286.10 hold at 19344.74 MD - 05-V-10000-133H</b>									
19,400.00	88.85	89.94	9,570.11	688.22	10,054.53	10,055.25	0.00	0.00	0.00
19,500.00	88.85	89.94	9,572.10	688.33	10,154.51	10,155.23	0.00	0.00	0.00
19,600.00	88.85	89.94	9,574.10	688.44	10,254.49	10,255.21	0.00	0.00	0.00
19,630.84	88.85	89.94	9,574.72	688.47	10,285.32	10,286.04	0.00	0.00	0.00
<b>Start 90.02 hold at 19630.84 MD - 06-LTP(CH32-133H)</b>									
19,700.00	88.85	89.94	9,576.10	688.55	10,354.47	10,355.19	0.00	0.00	0.00
19,720.85	88.85	89.94	9,576.52	688.57	10,375.32	10,376.04	0.00	0.00	0.00
<b>TD: 19720.85' MD, 10376.03' VS, 9576.52' TVD - 07-PBHL(CH32-133H)</b>									



## Planning Report

<b>Database:</b>	EDM 5000.14 Single User Db	<b>Local Co-ordinate Reference:</b>	Well Crazy Horse 32 State Fed Com 133H
<b>Company:</b>	Colgate Energy	<b>TVD Reference:</b>	3264+25 @ 3289.00usft
<b>Project:</b>	Eddy County, NM (N83-NME)	<b>MD Reference:</b>	3264+25 @ 3289.00usft
<b>Site:</b>	Crazy Horse 32 State Fed Com	<b>North Reference:</b>	Grid
<b>Well:</b>	Crazy Horse 32 State Fed Com 133H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Permit		
<b>Design:</b>	ADP-Rev2 v3		

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
00-EON-CH133H - plan hits target center - Point	0.00	0.00	7,000.00	677.16	-141.84	587,668.46	643,172.33	32.61511613	-104.00259493
01-FTP (CH32-133H) - plan misses target center by 196.60usft at 9350.00usft MD (9246.98 TVD, 677.36 N, 44.09 E) - Point	0.00	89.94	9,389.00	677.13	-91.86	587,668.43	643,222.31	32.61511562	-104.00243260
02-V-2500-133H - plan hits target center - Point	0.00	0.00	9,439.00	679.96	2,499.29	587,671.26	645,813.46	32.61510095	-103.99401718
03-V-5000-133H - plan hits target center - Point	0.00	0.00	9,464.00	682.69	4,999.29	587,673.99	648,313.46	32.61508626	-103.98589780
04-V-7500-133H - plan hits target center - Point	0.00	0.00	9,519.00	685.43	7,499.29	587,676.73	650,813.46	32.61507107	-103.97777843
05-V-10000-133H - plan hits target center - Point	0.00	0.00	9,569.00	688.16	9,999.28	587,679.46	653,313.45	32.61505532	-103.96965910
06-LTP(CH32-133H) - plan misses target center by 0.09usft at 19630.84usft MD (9574.72 TVD, 688.47 N, 10285.32 E) - Point	0.00	0.00	9,574.72	688.38	10,285.32	587,679.68	653,599.49	32.61505323	-103.96873011
07-PBHL(CH32-133H) - plan hits target center - Point	0.00	0.00	9,576.52	688.57	10,375.32	587,679.87	653,689.49	32.61505291	-103.96843781

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
139.00	139.00	Rustler				
379.00	379.00	Top of Salt				
1,294.00	1,294.00	Base of Salt				
1,464.00	1,464.00	Yates				
1,824.00	1,824.00	Capitan				
3,401.85	3,389.00	DLWR Mnt. Group				
5,905.69	5,864.00	Lower Brushy Canyon				
6,194.01	6,149.00	Bone Spring Lime				
7,524.42	7,474.00	1st Bone Spring Sand				
8,254.42	8,204.00	2nd Bone Spring SD				
9,190.08	9,124.00	3rd Bone Spring SD				



## Planning Report

<b>Database:</b>	EDM 5000.14 Single User Db	<b>Local Co-ordinate Reference:</b>	Well Crazy Horse 32 State Fed Com 133H
<b>Company:</b>	Colgate Energy	<b>TVD Reference:</b>	3264+25 @ 3289.00usft
<b>Project:</b>	Eddy County, NM (N83-NME)	<b>MD Reference:</b>	3264+25 @ 3289.00usft
<b>Site:</b>	Crazy Horse 32 State Fed Com	<b>North Reference:</b>	Grid
<b>Well:</b>	Crazy Horse 32 State Fed Com 133H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Permit		
<b>Design:</b>	ADP-Rev2 v3		

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,900.00	1,900.00	0.00	0.00	Start Build 1.50
2,480.35	2,478.12	43.07	-9.02	Start 3989.72 hold at 2480.35 MD
6,470.07	6,421.88	634.09	-132.82	Start Drop -1.50
7,050.42	7,000.00	677.16	-141.84	Start 1824.50 hold at 7050.42 MD
8,874.92	8,824.50	677.16	-141.84	KOP: 8874.92' MD, -141.13' VS, 8824.50' TVD
9,763.45	9,397.34	677.76	419.64	EOC: 9763.45' MD, 420.36' VS, 9397.34' TVD
11,843.51	9,439.00	679.96	2,499.29	Start DLS 2.00 TFO -0.18
11,872.41	9,439.43	679.99	2,528.18	Start 2471.23 hold at 11872.41 MD
14,343.64	9,464.00	682.69	4,999.29	Start DLS 2.00 TFO -179.98
14,378.42	9,464.56	682.73	5,034.06	Start 2465.83 hold at 14378.42 MD
14,442.26	9,465.97	682.80	5,097.89	Sec: 14442.26' MD, 9465.97' TVD
14,442.26	9,465.97	682.80	5,097.89	Sec 32.61508567, -103.98557757
16,844.25	9,519.00	685.43	7,499.29	Start DLS 2.00 TFO 0.11
16,850.22	9,519.13	685.44	7,505.26	Start 2494.52 hold at 16850.22 MD
19,344.74	9,569.00	688.16	9,999.28	Start 286.10 hold at 19344.74 MD
19,630.84	9,574.72	688.47	10,285.32	Start 90.02 hold at 19630.84 MD
19,720.85	9,576.52	688.57	10,375.32	TD: 19720.85' MD, 10376.03' VS, 9576.52' TVD



## PECOS DISTRICT DRILLING CONDITIONS OF APPROVAL

<b>OPERATOR'S NAME:</b>	<b>Colgate Operating LLC</b>
<b>LEASE NO.:</b>	<b>NMNM06771A</b>
<b>LOCATION:</b>	Section 32, T.19 S., R.30 E., NMPM
<b>COUNTY:</b>	Eddy County, New Mexico

<b>WELL NAME &amp; NO.:</b>	Crazy Horse 32 State Fed Com 133H
<b>SURFACE HOLE FOOTAGE:</b>	1303'/S & 190'/W
<b>BOTTOM HOLE FOOTAGE:</b>	1980'/S & 10'/E

<b>WELL NAME &amp; NO.:</b>	Crazy Horse 32 State Fed Com 134H
<b>SURFACE HOLE FOOTAGE:</b>	1303'/S & 235'/W
<b>BOTTOM HOLE FOOTAGE:</b>	330'/S & 10'/E

<b>WELL NAME &amp; NO.:</b>	Crazy Horse 32 State Fed Com 203H
<b>SURFACE HOLE FOOTAGE:</b>	1303'/S & 280'/W
<b>BOTTOM HOLE FOOTAGE:</b>	1155'/S & 10'/E

COA

H2S	<input type="radio"/> Yes	<input checked="" type="radio"/> No	
Potash	<input type="radio"/> None	<input checked="" type="radio"/> Secretary	<input type="radio"/> R-111-P
Cave/Karst Potential	<input type="radio"/> Low	<input type="radio"/> Medium	<input checked="" type="radio"/> High
Cave/Karst Potential	<input type="radio"/> Critical		
Variance	<input type="radio"/> None	<input checked="" type="radio"/> Flex Hose	<input type="radio"/> Other
Wellhead	<input type="radio"/> Conventional	<input type="radio"/> Multibowl	<input checked="" type="radio"/> Both
Other	<input checked="" type="checkbox"/> 4 String Area	<input checked="" type="checkbox"/> Capitan Reef	<input type="checkbox"/> WIPP
Other	<input type="checkbox"/> Fluid Filled	<input type="checkbox"/> Cement Squeeze	<input type="checkbox"/> Pilot Hole
Special Requirements	<input type="checkbox"/> Water Disposal	<input checked="" type="checkbox"/> COM	<input type="checkbox"/> Unit

### A. HYDROGEN SULFIDE

Hydrogen Sulfide (H2S) monitors shall be installed prior to drilling out the surface shoe. If H2S is detected in concentrations greater than 100 ppm, the Hydrogen Sulfide area shall meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, provide measured values and formations to the BLM.

**B. CASING**

1. The **18-5/8** inch surface casing shall be set at approximately **330 feet** (a minimum of **70 feet (Eddy County)** into the Rustler Anhydrite and above the salt) and cemented to the surface.
  - a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.
  - b. Wait on cement (WOC) time for a primary cement job will be a minimum of **24 hours in the Potash Area** or 500 pounds compressive strength, whichever is greater. (This is to include the lead cement)
  - c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.
  - d. If cement falls back, remedial cementing will be done prior to drilling out that string.
2. The minimum required fill of cement behind the **13-3/8** inch intermediate casing shall be set at approximately **1670 feet** is:
  - Cement to surface. If cement does not circulate see B.1.a, c-d above.  
**Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst, potash or capitan reef.**
  - ❖ In High Cave/Karst Areas if cement does not circulate to surface on the first two casing strings, the cement on the 3rd casing string must come to surface.
  - ❖ In Secretary Potash Areas if cement does not circulate to surface on the first two casing strings, the cement on the 3rd casing string must come to surface.
  - ❖ In Capitan Reef Areas if cement does not circulate to surface on the first two casing strings, the cement on the 3rd casing string must come to surface.
3. The minimum required fill of cement behind the **9-5/8** inch intermediate casing is:  
**Option 1:**
  - Cement should tie-back at least **50 feet** on top of Capitan Reef top **or 200 feet** into the previous casing, whichever is greater. If cement does not circulate see B.1.a, c-d above.

**Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst, potash or capitan reef. Cement excess is less than 25%, more cement might be required.**

**Option 2:**

Operator has proposed a DV tool, the depth may be adjusted as long as the cement is changed proportionally. The DV tool may be cancelled if cement circulates to surface on the first stage.

- a. First stage to DV tool: Cement to circulate. If cement does not circulate off the DV tool, contact the appropriate BLM office before proceeding with second stage cement job.
- b. Second stage above DV tool:
  - Cement should tie-back at least **50 feet** on top of Capitan Reef top or **200 feet** into the previous casing, whichever is greater. If cement does not circulate see B.1.a, c-d above.  
**Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst, potash or capitan reef. Cement excess is less than 25%, more cement might be required.**
4. The minimum required fill of cement behind the **5-1/2** inch production casing is:
  - Cement should tie-back at least **200 feet** into previous casing string. Operator shall provide method of verification.

**C. PRESSURE CONTROL**

1. Variance approved to use flex line from BOP to choke manifold. Manufacturer's specification to be readily available. No external damage to flex line. Flex line to be installed as straight as possible (no hard bends).'
2.
  - a. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **600** psi. A Diverter system is approved as a variance to drill the **13 3/8** inch casing in a **18 5/8** inch hole.
  - a. Operator has proposed a multi-bowl wellhead assembly. This assembly will only be tested when installed on the **13 3/8** inch intermediate casing. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall

be **10,000 (10M) psi. Variance is approved to use a 5000 (5M) Annular which shall be tested to 5000 (5M) psi.**

- a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
- b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
- c. Manufacturer representative shall install the test plug for the initial BOP test.
- d. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.
- e. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.

#### **D. SPECIAL REQUIREMENT (S)**

##### **Communitization Agreement**

- The operator will submit a Communitization Agreement to the Santa Fe Office, 301 Dinosaur Trail Santa Fe, New Mexico 87508, at least 90 days before the anticipated date of first production from a well subject to a spacing order issued by the New Mexico Oil Conservation Division. The Communitization Agreement will include the signatures of all working interest owners in all Federal and Indian leases subject to the Communitization Agreement (i.e., operating rights owners and lessees of record), or certification that the operator has obtained the written signatures of all such owners and will make those signatures available to the BLM immediately upon request.
- If the operator does not comply with this condition of approval, the BLM may take enforcement actions that include, but are not limited to, those specified in 43 CFR 3163.1.
- In addition, the well sign shall include the surface and bottom hole lease numbers. When the Communitization Agreement number is known, it shall also be on the sign.

## GENERAL REQUIREMENTS

The BLM is to be notified in advance for a representative to witness:

- a. Spudding well (minimum of 24 hours)
- b. Setting and/or Cementing of all casing strings (minimum of 4 hours)
- c. BOPE tests (minimum of 4 hours)

☒ Eddy County

Call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220,  
(575) 361-2822

☒ Lea County

Call the Hobbs Field Station, 414 West Taylor, Hobbs NM 88240, (575)  
393-3612

1. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval.
  - a. In the event the operator has proposed to drill multiple wells utilizing a skid/walking rig. Operator shall secure the wellbore on the current well, after installing and testing the wellhead, by installing a blind flange of like pressure rating to the wellhead and a pressure gauge that can be monitored while drilling is performed on the other well(s).
  - b. When the operator proposes to set surface casing with Spudder Rig
    - Notify the BLM when moving in and removing the Spudder Rig.
    - Notify the BLM when moving in the 2<sup>nd</sup> Rig. Rig to be moved in within 90 days of notification that Spudder Rig has left the location.
    - BOP/BOPE test to be conducted per Onshore Oil and Gas Order No. 2 as soon as 2nd Rig is rigged up on well.
2. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works are located, this does not include the dog house or stairway area.
3. The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.

A. CASING

1. Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size or are Non-API. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.). The initial wellhead installed on the well will remain on the well with spools used as needed.
2. Wait on cement (WOC) for Potash Areas: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi for all cement blends, 2) until cement has been in place at least 24 hours. WOC time will be recorded in the driller's log. The casing integrity test can be done (prior to the cement setting up) immediately after bumping the plug.
3. Wait on cement (WOC) for Water Basin: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi at the shoe, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements. The casing integrity test can be done (prior to the cement setting up) immediately after bumping the plug.
4. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. Have well specific cement details onsite prior to pumping the cement for each casing string.
5. No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.
6. On that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Formation at the shoe shall be tested to a minimum of the mud weight equivalent anticipated to control the formation pressure to the next casing depth or at total depth of the well. This test shall be performed before drilling more than 20 feet of new hole.
7. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.
8. Whenever a casing string is cemented in the R-111-P potash area, the NMOCD requirements shall be followed.

B. PRESSURE CONTROL



1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.
2. If a variance is approved for a flexible hose to be installed from the BOP to the choke manifold, the following requirements apply: The flex line must meet the requirements of API 16C. Check condition of flexible line from BOP to choke manifold, replace if exterior is damaged or if line fails test. Line to be as straight as possible with no hard bends and is to be anchored according to Manufacturer's requirements. The flexible hose can be exchanged with a hose of equal size and equal or greater pressure rating. Anchor requirements, specification sheet and hydrostatic pressure test certification matching the hose in service, to be onsite for review. These documents shall be posted in the company man's trailer and on the rig floor.
3. 5M or higher system requires an HCR valve, remote kill line and annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure.
4. If the operator has proposed a multi-bowl wellhead assembly in the APD. The following requirements must be met:
  - a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
  - b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
  - c. Manufacturer representative shall install the test plug for the initial BOP test.
  - d. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.
  - e. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.
5. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.
  - a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not

hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).

- b. In potash areas, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. For all casing strings, casing cut-off and BOP installation can be initiated at twelve hours after bumping the plug. However, **no tests** shall commence until the cement has had a minimum of 24 hours setup time, except the casing pressure test can be initiated immediately after bumping the plug (only applies to single stage cement jobs).
- c. The tests shall be done by an independent service company utilizing a test plug not a cup or J-packer. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to Onshore Order 2 with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for water basin (8 hours) or potash (24 hours) or 500 pounds compressive strength, whichever is greater, prior to initiating the test (see casing segment as lead cement may be critical item).
- d. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.
- e. The results of the test shall be reported to the appropriate BLM office.
- f. All tests are required to be recorded on a calibrated test chart. A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.
- g. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.
- h. BOP/BOPE must be tested by an independent service company within 500 feet of the top of the Wolfcamp formation if the time between the setting of the intermediate casing and reaching this depth exceeds 20 days. This test does not exclude the test prior to drilling out the casing shoe as per Onshore Order No. 2.

#### C. DRILLING MUD

Mud system monitoring equipment, with derrick floor indicators and visual and audio alarms, shall be operating before drilling into the Wolfcamp formation, and shall be used until production casing is run and cemented.

**D. WASTE MATERIAL AND FLUIDS**

All waste (i.e. drilling fluids, trash, salts, chemicals, sewage, gray water, etc.) created as a result of drilling operations and completion operations shall be safely contained and disposed of properly at a waste disposal facility. No waste material or fluid shall be disposed of on the well location or surrounding area.

Porto-johns and trash containers will be on-location during fracturing operations or any other crew-intensive operations.

**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 15763

**COMMENTS**

Operator:	OGRID:	Action Number:	Action Type:
COLGATE OPERATING, LLC Suite 1000 Midland, TX79701	371449	15763	FORM 3160-3
300 North Marienfeld Street			

Created By	Comment	Comment Date
kpickford	KP GEO Review 1/27/2021	01/27/2021

**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 15763

**CONDITIONS OF APPROVAL**

Operator:			OGRID:	Action Number:	Action Type:
COLGATE OPERATING, LLC	300 North Marienfeld Street		371449	15763	FORM 3160-3
Suite 1000	Midland, TX79701				

OCD Reviewer	Condition
kpickford	Notify OCD 24 hours prior to casing & cement
kpickford	Will require a File As Drilled C-102 and a Directional Survey with the C-104
kpickford	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 fresh water zone or zones and shall immediately set in cement the water protection string
kpickford	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