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.: NMNM90807

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.: BLACK DIAMOND 34 FED 131H

2. Name of Operator: COLGATE OPERATING LLC

9. API Well No.:

3a. Address: 306 W. Wall St., Suite 500, Midland, TX 79701

3b. Phone No. *(include area code)*: (432) 695-4224

10. Field and Pool, or Exploratory: PARKWAY/BONE SPRING

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

At surface: NENE / 990 FNL / 170 FEL / LAT 32.6216944 / LONG -104.0546864

At proposed prod. zone: NWNE / 910 FNL / 2624 FEL / LAT 32.6220097 / LONG -104.0798327

11. Sec., T. R. M. or Blk. and Survey or Area: SEC 34/T19S/R29E/NMP

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

12. County or Parish: EDDY

13. State: NM

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any): 170 feet

16. No of acres in lease:

17. Spacing Unit dedicated to this well: 240.0

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.: 563 feet

19. Proposed Depth: 8983 feet / 16664 feet

20. BLM/BIA Bond No. in file: FED: NMB001382

21. Elevations (Show whether DF, KDB, RT, GL, etc.): 3313 feet

22. Approximate date work will start*: 09/01/2020

23. Estimated duration: 90 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: (432) 695-4224	05/31/2020

Title: President

Approved by *(Signature)*	Name *(Printed/Typed)*	Date
(Electronic Submission)	Cody Layton / Ph: (575) 234-5959	12/14/2020

Title	Office
Assistant Field Manager Lands & Minerals	Carlsbad 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

Approval Date: 12/14/2020

(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 wen, 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 directionany 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 wen 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 win 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 conects this information to anow 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 Conection Clearance Officer (WO-630), 1849 C Street, N.W., Mail Stop 401 LS, Washington, D.C. 20240.

(Continued on page 3)

Additional Operator Remarks

Location of Well

0. SHL: NENE / 990 FNL / 170 FEL / TWSP: 19S / RANGE: 29E / SECTION: 34 / LAT: 32.6216944 / LONG: -104.0546864 (TVD: 0 feet, MD: 0 feet)

PPP: NENE / 910 FNL / 50 FEL / TWSP: 19S / RANGE: 29E / SECTION: 34 / LAT: 32.6219134 / LONG: -104.0542967 (TVD: 5648 feet, MD: 5651 feet)

BHL: NWNE / 910 FNL / 2624 FEL / TWSP: 19S / RANGE: 29E / SECTION: 33 / LAT: 32.6220097 / LONG: -104.0798327 (TVD: 8983 feet, MD: 16664 feet)

BLM Point of Contact

Name: Gavin Mickwee

Title: Land Law Examiner

Phone: (575) 234-5972

Email: gmickwee@blm.gov

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

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

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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

[1] API Number	[2] Pool Code	[3] Pool Name
30-015-	49622	PARKWAY; BONE SPRING

[4] Property Code	[5] Property Name	[6] Well Number
	BLACK DIAMOND 34 FED	131H

[7] OGRID No.	[8] Operator Name	[9] Elevation
371449	COLGATE OPERATING, LLC	3313.2

[10] Surface Location

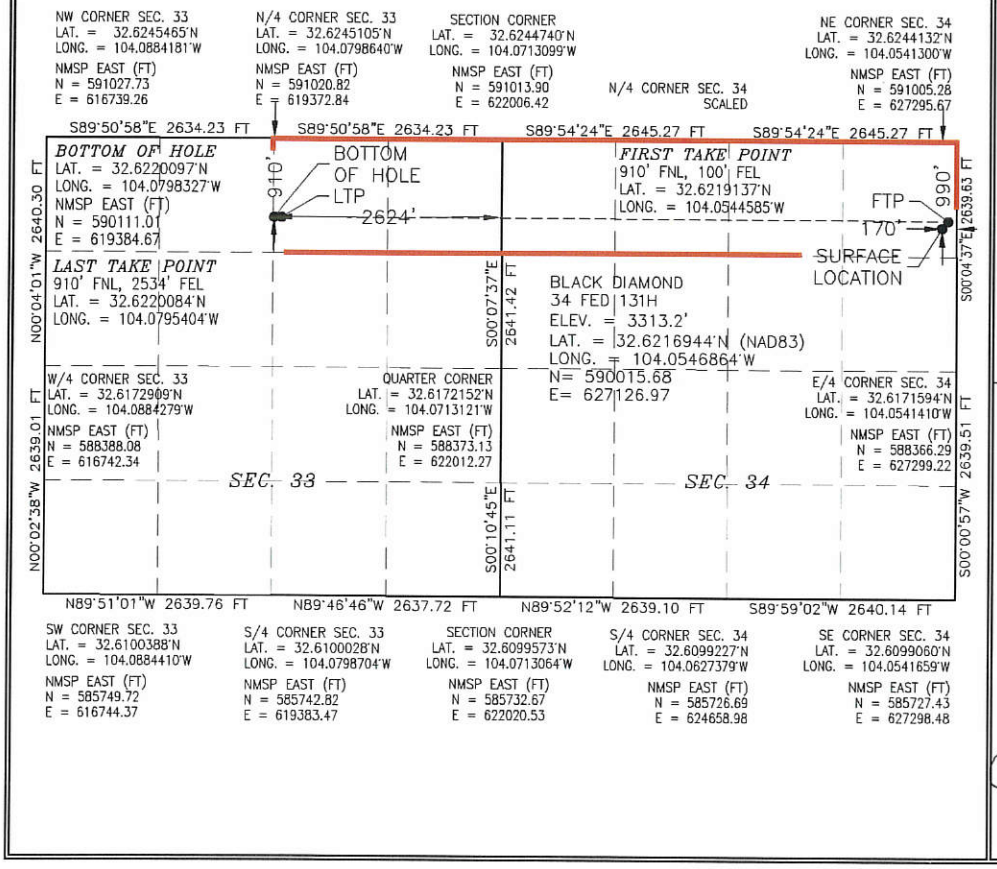
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A	34	19 S	29 E		990	NORTH	170	EAST	EDDY

[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
B	33	19 S	29 E		910	NORTH	2624	EAST	EDDY

[12] Dedicated Acres	[13] Joint or Infill	[14] Consolidation Code	[15] Order No.
240.00			

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.



[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.

5-26-20

Signature Date

BRIAN WOOD

Printed Name

brian@permitswest.com

E-mail Address

505 466-8120

[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.

MAY 8, 2020

Date of Survey

Signature and Seal of Professional Surveyor:

Certificate Number: EDMUND F. JARAMILLO PLS 12797

EDMUND F. JARAMILLO NEW MEXICO 12797 REGISTERED PROFESSIONAL SURVEYOR

SURVEY NO. 7731B

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: 5/25/2020

X 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, 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	API	SHL (ULSTR)	SHL Footages	Expected MCF/D	Flared or Vented	Comments
Black Diamond 34 Fed 131H	30-015-	A-34-19S-29E	990 FNL & 170 FEL	1300	30 days	Time depends on well clean up

Gathering System and Pipeline Notification

Well will be connected to a production facility after flowback operations are complete, if gas transporter system is in place. No gas contract has been signed, but 2 potential transporters are DCP Operating Company, LP (36785) and Lucid Artesia Company (147831) who transport gas from Colgate's Parkway 35 Federal Com 5H well in P-34-19s-29e. That well is ≈3,800' south. Colgate Operating, LLC will provide (periodically) to its Gas Transporter 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 its Gas Transporter have periodic conference calls to discuss changes to drilling and completion schedules. Gas from these wells will be processed at an as yet undetermined Gas Transporter Processing Plant located in 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 temporary production tanks and gas will be flared or vented. During flowback, the fluids and sand content will be monitored. When the produced fluids contain minimal sand, 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 its Gas Transporter system at that time. Based on current information, it is Colgate Operating, LLC's belief an existing or new system can take this gas upon completion of the well(s). Safety requirements during cleanout operations from using 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

AFMSS
U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT

Drilling Plan Data Report
12/14/2020

APD ID: 10400057571
Submission Date: 05/31/2020
Operator Name: COLGATE OPERATING LLC
Well Name: BLACK DIAMOND 34 FED
Well Number: 131H
Well Type: OIL WELL
Well Work Type: Drill

Highlighted data reflects the most recent changes

Show Final Text

Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
748426	QUATERNARY	3313	0	0	OTHER : None	USEABLE WATER	N
748427	RUSTLER ANHYDRITE	3209	104	104	ANHYDRITE	NONE	N
748428	TOP SALT	2974	339	339	SALT	NONE	N
748429	BASE OF SALT	2219	1094	1094	SALT	NONE	N
748430	YATES	1970	1343	1343	SANDSTONE	NONE	N
748431	CAPITAN REEF	602	2711	2712	LIMESTONE	USEABLE WATER	N
748432	CHERRY CANYON	-133	3446	3448	SANDSTONE	NONE	N
748433	LOWER BRUSHY CANYON 8A	-2009	5322	5325	SANDSTONE	NATURAL GAS, OIL	N
748434	BONE SPRING	-2335	5648	5651	LIMESTONE	NATURAL GAS, OIL	N
748435	BONE SPRING 1ST	-3711	7024	7027	SANDSTONE	NATURAL GAS, OIL	N
748436	2ND BONE SPRING LIME	-3914	7227	7230	LIMESTONE	NATURAL GAS, OIL	N
748437	BONE SPRING 2ND	-4543	7856	7859	SANDSTONE	NATURAL GAS, OIL	N
748438	BONE SPRING 3RD	-4884	8197	8200	LIMESTONE	NATURAL GAS, OIL	N
748439	BONE SPRING 3RD	-5472	8785	8805	SANDSTONE	NATURAL GAS, OIL	Y

Section 2 - Blowout Prevention

Operator Name: COLGATE OPERATING LLC

Well Name: BLACK DIAMOND 34 FED **Well Number:** 131H

Pressure Rating (PSI): 10M **Rating Depth:** 15000

Equipment: A 10M system rated to 15,000 will be used. Well control equipment with working pressure ratings in excess of anticipated surface pressure will be used for well control from drill out of surface casing to TMD. A diverter system will be installed on the 18.625 casing once it is set and cemented. A 13.625 multi-bowl wellhead will be SOW installed to 13.375 once set and cemented. A 13.625 10M BOP will be nipple up to the 13.625 multi-bowl wellhead through the completion of the drilling operation. A rotating head will also be installed and used as needed. All BOPE connections will be flanged, welded, or clamped. All choke lines will be straight unless targeted with running tees or tee blocks are used. Choke lines will be anchored to prevent whip and reduce vibrations. All valves in the choke line and the choke manifold will be full opening as to not cause restrictions and to allow for straight fluid paths to minimize potential erosion. All gauges used in the well control system will be of a type designed for drilling fluid service. Subs equipped with full opening valves sized to fit the drill pipe and collars will be available on the rig floor in open position. The key to operate said valve equipped subs will on the rig floor at all times. The accumulator system will have sufficient capacity to open the HCR and close all 3 sets of rams plus the annular preventer while retaining at least 300-psi above pre-charge on the closing manifold. (Accumulator system will 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. Fluid level will be maintained at the manufactures recommended level. Before connecting the closing unit to the BOP stack, an accumulator pre-charge pressure test will be performed to ensure the pre-charge pressure is within 100-psi of the desired pressure. (Only nitrogen gas will be used to pre-charge.) Two independent power sources will always be available to power the closing unit pumps so 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 >200-psi above pre-charge pressure with the accumulator system isolated from service in 2 minutes. A valve will be installed in the closing line as close to the annular preventer as possible to act as a locking device. The valve will be maintained in the open position and will be closed only when the power source for the accumulator is inoperative. Remote controls capable of opening and closing all preventers and the HCR will be readily accessible to the driller. Master controls will be operable at the accumulator. The wellhead will be a multi-bowl speed head allowing for hang-off of intermediate 2 casing and isolation of the 13.375 x 9.625 annulus without breaking the connection between the BOP and wellhead to install an additional casing head. A wear bushing will be installed and inspected frequently to guard against internal wear to the wellhead.

Requesting Variance? YES

Variance request: Variance is requested to drill the well using a co-flex hose between the BOP and choke manifold. Certification for the proposed hose is attached. Manufacturer does not require the hose to be anchored. If this specific hose in not available, then one of equal or higher rating will be used. Variance is requested to the Onshore Order 2 requirement that a 2M system with annular preventer be installed before 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 of 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 breech the surface.

Testing Procedure: BOPE will be tested as follows. Once the surface casing is set and the diverter system is installed on the 18.625" casing, pressure tests will be performed by a 3rd party tester to 500-psi. After intermediate 1 casing is set and BOPE installed, pressure tests of BOPE will be performed by a 3rd party tester using water and a test plug to 250-psi low and 10,000 psi high. A pressure test will be deemed successful if pressure is maintained for 10-minuutes without any bleed-off. A valve on the wellhead below the seat of the test plug will always be open during BOPE tests to prevent 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 does not pass pressure tests after initial install will be replaced before drilling out of the intermediate 1 casing shoe. If at any time a BOPE component cannot function to secure the hole, the hole will be secured using a retrievable packer, and the non-functioning BOPE component will be repaired or replaced. After repair or replacement, a pressure test of the repaired or replaced component and any connections broken to repair or replace said component will be tested in the same manner as described for initial install of BOPE. Annular preventer will be function tested at least weekly. Ram-type preventers will be function tested on each trip. BOP pit level drills will be conducted weekly with each drilling crew. All pressure tests performed on BOPE and BOPE pit levels drills will be recorded in the drilling log. Isolation of 13.375" x 9.625" casing annulus will be confirmed by pressure testing of wellhead sealing component after said sealing component is installed. Each installed casing string will be tested as follows. After cement has set undisturbed for 18-hours and has reached a compressive strength of 500-psi, then the 18.625" surface casing will be pressured to 1500-psi and held for 30-minutes. Lab reports with the 500-psi compressive strength time for the cement will be on-site for review. A casing test will be deemed successful if test pressure does not decline >10% over the 30-minute period. The casing pressure test will be completed against the cement head. After cement has set undisturbed for 18-hours and has reached a compressive strength of 500-psi, then the 13.375" intermediate 1

Operator Name: COLGATE OPERATING LLC

Well Name: BLACK DIAMOND 34 FED **Well Number:** 131H

casing will be pressured to 1500-psi and held for 30-minutes. Lab reports with the 500-psi compressive strength time for the cement will be on-site for review. A casing test will be deemed successful if test pressure does not decline >10% over the 30-minute period. The casing pressure test will be completed against the blind rams of the 13.625" 10M BOPE before picking up tools to drill out. After cement has set undisturbed for 18-hours and has reached a compressive strength of 500-psi, then the 9.625" intermediate 2 casing will be pressured to 2500-psi and held for 30-minutes. Lab reports with the 500-psi compressive strength time for the cement will be on-site for review. A casing test will be deemed successful if test pressure does not decline >10% over the 30-minute period. The casing pressure test will be completed against the lower pipe rams of the 13.625" 10M BOPE immediately before drilling out the float equipment. Casing pressure test of the 5.5" production casing will occur >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 on-site for review. A casing test will be deemed successful if test pressure does not decline >10% over the 30-minute period. Casing will be tested by pressuring up to 10,000-psi and holding pressure for 30-minutes before starting perforation and stimulation.

Choke Diagram Attachment:

BD_131H_Choke_20200531105942.pdf

BOP Diagram Attachment:

BD_131H_BOP_20200531105952.pdf

Section 3 - Casing

Casing ID	String Type	Hole Size	Csg Size	Condition	Standard	Tapered String	Top Set MD	Bottom Set MD	Top Set TVD	Bottom Set TVD	Top Set MSL	Bottom Set MSL	Calculated casing length MD	Grade	Weight	Joint Type	Collapse SF	Burst SF	Joint SF Type	Joint SF	Body SF Type	Body SF
1	SURFACE	24	18.625	NEW	API	N	0	290	0	290	3313	3023	290	J-55	87.5	BUTT	1.125	1.2	DRY	1.6	DRY	1.6
2	INTERMEDIATE	17.5	13.375	NEW	API	N	0	1550	0	1550	3313	1763	1550	J-55	54.5	BUTT	1.125	1.2	DRY	1.6	DRY	1.6
3	INTERMEDIATE	12.25	9.625	NEW	API	N	0	4300	0	4297	3313	-984	4300	J-55	36	BUTT	1.125	1.2	DRY	1.6	DRY	1.6
4	PRODUCTION	8.75	5.5	NEW	API	N	0	16664	0	8983	3313	-5670	16664	HCP-110	20	OTHER - CDC-HTQ	1.125	1.2	DRY	1.6	DRY	1.6

Casing Attachments

Operator Name: COLGATE OPERATING LLC

Well Name: BLACK DIAMOND 34 FED **Well Number:** 131H

Casing Attachments

Casing ID: 1 **String Type:** SURFACE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

BD_131H_Casing_Design_Assumptions_20201005112052.pdf

Casing ID: 2 **String Type:** INTERMEDIATE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

BD_131H_Casing_Design_Assumptions_20200531110101.pdf

Casing ID: 3 **String Type:** INTERMEDIATE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

BD_131H_Casing_Design_Assumptions_20200531110157.pdf

Operator Name: COLGATE OPERATING LLC

Well Name: BLACK DIAMOND 34 FED **Well Number:** 131H

Casing Attachments

Casing ID: 4 **String Type:** PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

BD_131H_Casing_Design_Assumptions_20200531110306.pdf

5.5in_USS_CDC_Spec_20200531110323.pdf

Section 4 - Cement

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
SURFACE	Lead		0	0	0	0	0	0	0	None	None
SURFACE	Tail		0	290	362	1.8	13.5	651	100	Class C	salt + accelerator + extender + LCM
PRODUCTION	Lead		0	0	0	0	0	0	0	None	None
PRODUCTION	Tail		2050	16664	3528	1.24	14.2	4374	20	Class C	Fluid loss + dispersant + retarder + LCM
INTERMEDIATE	Lead		0	1550	701	2.19	12.7	1535	100	Class C	salt + extender + LCM
INTERMEDIATE	Tail		0	1550	202	1.33	14.8	268	25	Class C	Salt + accelerator + extender + LCM
INTERMEDIATE	Lead	2500	0	2500	201	4.41	10.6	886	100	Class C	accelerator + extender + LCM
INTERMEDIATE	Tail		0	2500	127	1.33	14.8	169	25	Class C	Accelerator + LCM
INTERMEDIATE	Lead	2500	2500	4300	134	4.41	10.6	591	100	Class C	accelerator + extender + LCM
INTERMEDIATE	Tail		2500	4300	253	1.33	14.8	336	25	Class C	accelerator + LCM

Operator Name: COLGATE OPERATING LLC

Well Name: BLACK DIAMOND 34 FED **Well Number:** 131H

Section 5 - Circulating Medium

Mud System Type: Closed

Will an air or gas system be Used? NO

Description of the equipment for the circulating system in accordance with Onshore Order #2:

Diagram of the equipment for the circulating system in accordance with Onshore Order #2:

Describe what will be on location to control well or mitigate other conditions: All necessary mud products for weight addition and fluid loss control will be on site at all times. Mud program is subject to change due to hole conditions. Slow pump rates will be taken and recorded every tour in the drilling log. Mud engineer will perform tests and provide a written report at least every 12 hours while circulating. A trip tank will be used. Trip sheet will be recorded to ensure wellbore is taking proper fill or displacing proper fluid volume during all tripping operations. Gas detectors will monitor for hydrocarbon gas at the shakers while drilling and/or circulating. H2S monitors with visual and 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 will be used to gather and burn all gas. Flare will discharge >100 from the wellbore. Flare line will be straight unless targeted with running tees. A mud gas separator will be installed and operable >500 before the first anticipated hydrocarbon zone. Air compressors will gather large volumes of air and compress it to 350 psi in the first stage of compression. The compressed air will then be fed into a medium pressure booster capable of compressing it further to 2000 psi in the second stage of compression. If the rigs standpipe pressure is less than the capability of the medium pressure booster, then the high-pressure booster will be plumbed in so that it can be isolated, bypassed, and temporarily taken of-line. Assuming higher standpipe pressures are encountered, the air supplied by the medium pressure booster will be fed into the high-pressure booster where it will be compressed further (to as much as 5000-psi). Immediately downstream of the high-pressure booster, a pressure relief valve (PRV) manifold will be placed in-line to safeguard against an unintentional over pressuring of the air system. All energized air lines will be cabled and hobbled to ensure proper whip restraint is in place at all times. A manifold, consisting of ball and check vales, will be placed at the airs injection point into the standpipe on the rig floor. This manifold will be used to direct the flow of air either into the rigs standpipe or into an air bypass line as needed. The check valves placed in the manifold will act to prevent the flow of drilling mud in the air system. 5R string floats will be strategically placed in the drill string to prevent backflow of drilling mud during connections and aid in maintaining a more consistent BHP. A dart style float will be placed in the BHA to prevent backflow pf fluids and cutting from the annulus into the drill string. A properly lubricated and maintained rotating head will be used to direct the flow of the rapidly expanding air into the flow line at the surface. A properly sized mud gas separator will be used to remove the air from the returns before the rig shakers. The mud gas separator will be connected to a flare stack where all separated gas will be directed. The flare stack will include an automatic igniter or continuous pilot light and it will be rigged up so that the outlet is >100 from the wellbore. The compressor/booster equipment will be set and rigged up >100 from the wellbore. If a formation influx occurs while aerate drilling, then Colgate will immediately remove the air supply from the stand pipe using the air manifold at the rig floor. This would allow the mud pump 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. If an additional influx is observed once a full hydrostatic column of drilling mud is in place, then all well control practices and procedures will be identical to mud drilling well control protocols. During weekly BOP drills with each rig crew, emphasis will be placed on well control situations occurring while aerate drilling. Special emphasis w

Describe the mud monitoring system utilized: Electronic Pason PVT system satisfying Onshore Order 1. Both visual and electronic mud monitoring equipment will be used to detect volume changes indicating loss or gain of circulating system fluid volume. Slow pump rates will be taken and recorded every tour in the drilling log. Mud engineer will perform tests and provide a written report at least every 12 hours while circulating. A trip tank will be used. Trip sheet will be recorded to ensure wellbore is taking proper fill or displacing proper fluid volume during all tripping operations. Gas detectors will monitor for hydrocarbon gas at the shakers while drilling and/or circulating. H2S monitors with visual and 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 will be used to gather and burn all gas. Flare will discharge >100 from the wellbore. Flare line will be straight unless targeted with running tees. A mud gas separator will be installed and operable >500 before the first anticipated hydrocarbon zone. If circulation is lost in the Capitan Reef, then only fresh water will be pumped down the drill string for the remainder of

Operator Name: COLGATE OPERATING LLC

Well Name: BLACK DIAMOND 34 FED **Well Number:** 131H

the hole section.

Circulating Medium Table

Top Depth	Bottom Depth	Mud Type	Min Weight (lbs/gal)	Max Weight (lbs/gal)	Density (lbs/cu ft)	Gel Strength (lbs/100 sqft)	PH	Viscosity (CP)	Salinity (ppm)	Filtration (cc)	Additional Characteristics
0	290	OTHER : Fresh water spud	8.6	9							
290	1550	OTHER : Brine water	10	10.2							
1550	4300	OTHER : Aerated Fresh Water	8.4	8.9							
4300	16664	OTHER : Cut brine poly oil mud	9	10							

Section 6 - Test, Logging, Coring

List of production tests including testing procedures, equipment and safety measures:

Directional surveys will be collected via MWD tools at <200 intervals.

GR log will be acquired by MWD tools from the intermediate casing to TD.

A formation integrity test (FIT) will be performed on all casing strings after BOPE is installed to at least 1 ppg over planned section mud after drilling 10 of new hole.

List of open and cased hole logs run in the well:

GAMMA RAY LOG,

Coring operation description for the well:

No core, drill stem test, open hole log, CBL, or temperature survey is planned.

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 3903 **Anticipated Surface Pressure:** 1926

Anticipated Bottom Hole Temperature(F): 120

Anticipated abnormal pressures, temperatures, or potential geologic hazards? NO

Describe:

Contingency Plans geoharzards description:

Operator Name: COLGATE OPERATING LLC

Well Name: BLACK DIAMOND 34 FED **Well Number:** 131H

Contingency Plans geohazards attachment:

Hydrogen Sulfide drilling operations plan required? YES

Hydrogen sulfide drilling operations plan:

BD_131H_H2S_Plan_20200531111739.pdf

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

BD_131H_Horizontal_Plan_20200531111524.pdf

Other proposed operations facets description:

Cement will be placed on all casing strings using 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 used on all casing strings to prevent contamination of the cement by the displacement fluid. A pre-flush fluid will be pumped before cementing to aid in removal of the drilling mud from the wellbore, prevent drilling mud contamination of the cement, and prepare the surfaces of the wellbore and casing for cement.

Other proposed operations facets attachment:

CoFlex_Certs_20200531111632.pdf

BD_131H_Anti_Collision_Report_20200531111651.pdf

Closed_Loop_Mud_Gas_Separator_20201005111759.pdf

Diverter_20201005111806.pdf

Speedhead_Specs_20201005111813.pdf

BD_131H_Drill_Plan_Revised_20201005122806.pdf

Other Variance attachment:

Colgate Operating, LLC DRILL PLAN PAGE 1
Black Diamond 34 Fed 131H
SHL 990' FNL & 170' FEL 34-19S-29E
BHL 910' FNL & 2624' FEL 33-19S-29E
Eddy County, NM

Drilling Program

1. ESTIMATED TOPS

Formation Name	TVD	MD	Bearing
Quaternary	0'	0'	water
Rustler anhydrite	104'	104'	N/A
top salt	339'	339'	N/A
base salt	1094'	1094'	N/A
Yates sandstone	1343'	1343'	N/A
Capitan Reef limestone	2711'	2712'	water
Cherry Canyon sandstone	3446'	3448'	N/A
Lower Brushy Canyon sandstone	5322'	5325'	hydrocarbons
Bone Spring limestone	5648'	5651'	N/A
1st Bone Spring sandstone	7024'	7027'	hydrocarbons
2nd Bone Spring limestone	7227'	7230'	hydrocarbons
2nd Bone Spring sandstone	7856'	7859'	hydrocarbons
3rd Bone Spring limestone	8197'	8200'	hydrocarbons
KOP	8476'	8479'	hydrocarbons
3rd Bone Spring sandstone	8785'	8805'	hydrocarbons
TD	8983'	16664'	hydrocarbons

2. NOTABLE ZONES

Bone Spring is the goal. All perforations will be ≥100' from the dedication perimeter. Closest water well (CP 00741) is 0.42-mile west-southwest. Depth to water was 60' in this 230' deep well.

3. PRESSURE CONTROL

A 10M system rated to 15,000' will be used. Well control equipment with working pressure ratings in excess of anticipated surface pressure will be used for well control from drill out of surface casing to TMD. A diverter system will be installed on the 18.625" casing once it is set and cemented. A 13.625" multi-bowl wellhead will be SOW installed to 13.375" once set and cemented. A 13.625" 10M BOP will be nippled up to the 13.625" multi-bowl wellhead through the completion of the drilling operation. A rotating head will also be installed and used as needed.

All BOPE connections will be flanged, welded, or clamped. All choke lines will be straight unless targeted with running tees or tee blocks are used. Choke lines will be anchored to prevent whip and reduce vibrations. All valves in the choke line and the choke manifold will be full opening as to not cause restrictions and to allow for straight fluid paths to minimize potential erosion.

All gauges used in the well control system will be of a type designed for drilling fluid service. Subs equipped with full opening valves sized to fit the drill pipe and collars will be available on the rig floor in open position. The key to operate said valve equipped subs will on the rig floor at all times. The accumulator system will have sufficient capacity to open the HCR and close all 3 sets of rams plus the annular preventer while retaining at least 300-psi above pre-charge on the closing manifold. (Accumulator system will 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. Fluid level will be maintained at the manufacture's recommended level.

Before connecting the closing unit to the BOP stack, an accumulator pre-charge pressure test will be performed to ensure the pre-charge pressure is within 100-psi of the desired pressure. (Only nitrogen gas will be used to pre-charge.) Two independent power sources will always be available to power the closing unit pumps so 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 ≥200-psi above pre-charge pressure with the accumulator system isolated from service in <2 minutes.

A valve will be installed in the closing line as close to the annular preventer as possible to act as a locking device. The valve will be maintained in the open position and will be closed only when the power source for the accumulator is inoperative.

Remote controls capable of opening and closing all preventers and the HCR will be readily accessible to the driller. Master controls will be operable at the accumulator. The wellhead will be a multi-bowl speed head allowing for hang-off of intermediate 2 casing and isolation of the 13.375" x 9.625" annulus without breaking the connection between the BOP and wellhead to install an additional casing head. A wear bushing will be installed and inspected frequently to guard against internal wear to the wellhead.

Variance is requested to drill the well using a co-flex hose between the BOP and choke manifold. Certification for the proposed hose is attached. Manufacturer does not require the hose to be anchored. If this specific hose in not available, then one of equal or higher rating will be used.

Variance is requested to the Onshore Order 2 requirement that a 2M system with annular preventer be installed before 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 of 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 breech the surface.

BOPE will be tested as follows. Once the surface casing is set and the diverter system is installed on the 18.625" casing, pressure tests will be performed by a 3rd party tester to 500-psi. After intermediate 1 casing is set and BOPE installed, pressure tests of BOPE will be performed by a 3rd party tester using water and a test plug to 250-psi low and 10,000 psi high. A pressure test will be deemed successful if pressure is maintained for 10-minuutes without any bleed-off. A valve on the wellhead below the seat of the test plug will always be open during BOPE tests to prevent 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 does not pass pressure tests after initial install will be replaced before drilling out of the intermediate 1 casing shoe.

If at any time a BOPE component cannot function to secure the hole, the hole will be secured using a retrievable packer, and the non-functioning BOPE component will be repaired or replaced. After repair or replacement, a pressure test of the repaired or replaced component and any connections broken to repair or replace said component will be tested in the same manner as described for initial install of BOPE.

Annular preventer will be function tested at least weekly. Ram-type preventers will be function tested on each trip. BOP pit level drills will be conducted weekly with each drilling crew. All pressure tests performed on BOPE and BOPE pit levels drills will be recorded in the drilling log. Isolation of 13.375" x 9.625 casing annulus will be confirmed by pressure testing of wellhead sealing component after said sealing component is installed.

Each installed casing string will be tested as follows.

After cement has set undisturbed for 18-hours and has reached a compressive strength of 500-psi, then the 18.625" surface casing will be pressured to 1500-psi and held for 30-minutes. Lab reports with the 500-psi compressive strength time for the cement will be on-site for review. A casing test will be deemed successful if test pressure does not decline >10% over the 30-minute period. The casing pressure test will be completed against the cement head.

After cement has set undisturbed for 18-hours and has reached a compressive strength of 500-psi, then the 13.375" intermediate 1 casing will be pressured to 1500-psi and held for 30-minutes. Lab reports with the 500-psi compressive strength time for the cement will be on-site for review. A casing test will be deemed successful if test pressure does not decline >10% over the 30-minute period. The casing pressure test will be completed against the blind rams of the 13.625" 10M BOPE before picking up tools to drill out.

After cement has set undisturbed for 18-hours and has reached a compressive strength of 500-psi, then the 9.625" intermediate 2 casing will be pressured to 2500-psi and held for 30-minutes. Lab reports with the 500-psi compressive strength time for the cement will be on-site for review. A casing test will be deemed successful if test pressure does not decline >10% over the 30-minute period. The casing pressure test will be completed against the lower pipe rams of the 13.625" 10M BOPE immediately before drilling out the float equipment.

Casing pressure test of the 5.5" production casing will occur >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 on-site for review. A casing test will be deemed successful if test pressure does not decline >10% over the 30-minute period. Casing will be tested by pressuring up to 10,000-psi and holding pressure for 30-minutes before starting perforation and stimulation.

4. CASING & CEMENT

All casing will be new. First three strings will be API. See attached casing assumption worksheet.

Hole O. D.	Set MD	Set TVD	Casing OD	Weight (lb/ft)	Grade	Joint	Collapse	Burst	Tension
24"	0' – 290'	0' – 290'	18.625" surface	87.5	J-55	BTC	1.125	1.2	1.60
17.5"	0' - 1550'	0' - 1550'	13.375" inter. 1	54.5	J-55	BTC	1.125	1.2	1.60
12.25"	0' - 4300'	0' - 4297'	9.625" inter. 2	36	J-55	BTC	1.125	1.2	1.60
8.75"	0' – 16664'	0' – 8983'	5.5" product.	20	HCP-110	CDC HTQ	1.125	1.2	1.60

Colgate Operating, LLC
Black Diamond 34 Fed 131H
SHL 990' FNL & 170' FEL 34-19S-29E
BHL 910' FNL & 2624' FEL 33-19S-29E
Eddy County, NM

DRILL PLAN PAGE 6

Name	Type	Sacks	Yield	Cu. Ft.	Weight	Blend
Surface	Tail	362	1.8	651	13.5	Class C + salt + accelerator + extender + LCM
TOC = GL		100% excess			1 centralizer 5' above shoe held in place with stop ring; 1 cent. per joint for following 2 joints, then every other joint to GL	
Intermediate 1	Lead	701	2.19	1535	12.7	Class C + salt + extender + LCM
	Tail	202	1.33	268	14.8	Class C + accelerator + LCM
TOC = GL		100% excess lead & 25% excess tail			2 centralizers on 1st joint + 1 centralizer on 2nd joint + 1 centralizer every 4th joint to GL	
Intermediate 2 (Stage tool and external casing packer will be set @ ≈2500' to ensure intermediate casing string is adequately cemented.)	Lead 1st stage	134	4.41	591	10.6	Class C + accelerator + extender + LCM
	Tail 1st stage	253	1.33	336	14.8	Class C + accelerator + LCM
	Lead 2nd stage	201	4.41	886	10.6	Class C + accelerator + extender + LCM
	Tail 2nd stage	127	1.33	169	14.8	Class C + accelerator + LCM
TOC = GL		100% excess leads & 25% excess tails			2 centralizers on 1st joint + 1 centralizer on 2nd joint + 1 centralizer every 4th joint to GL	
Production	Tail	3496	1.24	4335	14.2	Class H + fluid loss + dispersant + retarder + LCM
TOC = 2050'		20% excess			2 centralizers on 1st joint + 1 centralizer on 2nd joint + 1 centralizer every 3rd joint to 2940'	

Cement will be placed on all casing strings using 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 used on all casing strings to prevent contamination of the cement by the displacement fluid. A pre-flush fluid will be pumped before cementing to aid in removal of the drilling mud from the wellbore, prevent drilling mud contamination of the cement, and prepare the surfaces of the wellbore and casing for cement.

5. MUD PROGRAM

All necessary mud products for weight addition and fluid loss control will be on site at all times. Mud program is subject to change due to hole conditions. Mud monitoring system will be an electronic Pason PVT system satisfying Onshore Order 1. Both visual and electronic mud monitoring equipment will be used to detect volume changes indicating loss or gain of circulating system fluid volume.

Slow pump rates will be taken and recorded every tour in the drilling log. Mud engineer will perform tests and provide a written report at least every 12 hours while circulating. A trip tank will be used. Trip sheet will be recorded to ensure wellbore is taking proper fill or displacing proper fluid volume during all tripping operations.

Gas detectors will monitor for hydrocarbon gas at the shakers while drilling and/or circulating. H2S monitors with visual and 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 will be used to gather and burn all gas. Flare will discharge ≥100' from the wellbore. Flare line will be straight unless targeted with running tees. A mud gas separator will be installed and operable ≥500' before the first anticipated hydrocarbon zone.

Type	Interval (MD)	lb/gal	Viscosity	Fluid Loss
fresh water spud	0' - 290'	8.6 – 9.0	28 - 34	NC
brine water	290' - 1550'	10.0 – 10.2	30 - 32	NC

aerated fresh water	1550' – 4300'	8.4 – 8.9	28 – 30	NC
cut brine poly oil mud	4300' – 16664'	9.0 – 10.0	32 - 35	NC

Air compressors will gather large volumes of air and compress it to ≈350 psi in the first stage of compression. The compressed air will then be fed into a medium pressure booster capable of compressing it further to ≈2000 psi in the second stage of compression.

If the rig's standpipe pressure is less than the capability of the medium pressure booster, then the high-pressure booster will be plumbed in so that it can be isolated, bypassed, and temporarily taken of-line. Assuming higher standpipe pressures are encountered, the air supplied by the medium pressure booster will be fed into the high-pressure booster where it will be compressed further (to as much as 5000-psi).

Immediately downstream of the high-pressure booster, a pressure relief valve (PRV) manifold will be placed in-line to safeguard against an unintentional over pressuring of the air system. All energized air lines will be cabled and hobbled to ensure proper whip restraint is in place at all times.

A manifold, consisting of ball and check vales, will be placed at the air's injection point into the standpipe on the rig floor. This manifold will be used to direct the flow of air either into the rig's standpipe or into an air bypass line as needed. The check valves placed in the manifold will act to prevent the flow of drilling mud in the air system.

5R string floats will be strategically placed in the drill string to prevent backflow of drilling mud during connections and aid in maintaining a more consistent BHP. A dart style float will be placed in the BHA to prevent backflow pf fluids and cutting from the annulus into the drill string. A properly lubricated and maintained rotating head will be used to direct the flow of the rapidly expanding air into the flow line at the surface.

A properly sized mud gas separator will be used to remove the air from the returns before the rig shakers. The mud gas separator will be connected to a flare stack where all separated gas will be directed. The flare stack will include an automatic igniter or continuous pilot light and it will be rigged up so that the outlet is >100' from the

wellbore. The compressor/booster equipment will be set and rigged up >100' from the wellbore.

If a formation influx occurs while aerate drilling, then Colgate will immediately remove the air supply from the stand pipe using the air manifold at the rig floor. This would allow the mud pump 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. If an additional influx is observed once a full hydrostatic column of drilling mud is in place, then all well control practices and procedures will be identical to mud drilling well control protocols. During weekly BOP drills with each rig crew, emphasis will be placed on well control situations occurring while aerate drilling. Special emphasis will identify the steps at the air manifold required to remove air injection from the standpipe in order to allow the mud pumps to fill the wellbore with non-aerated drilling mud to regain a full hydrostatic column.

6. CORES, TESTS, & LOGS

No core, drill stem test, open hole log, CBL, or temperature survey is planned.

Directional surveys will be collected via MWD tools at ≤200' intervals.

GR log will be acquired by MWD tools from the intermediate casing to TD.

A formation integrity test (FIT) will be performed on all casing strings after BOPE is installed to at least 1 ppg over planned section mud after drilling 10' of new hole.

7. DOWN HOLE CONDITIONS

No abnormal pressure or temperature is expected. Maximum expected bottom hole pressure is ≈3903 psi. Expected bottom hole temperature is ≈120˚ F.

Colgate has 21 wells in the township and based on that experience does not anticipate there will be enough H2S from GL to the Bone Spring to meet BLM's requirements for submitting an H2S plan. Nevertheless, a plan is attached. In any event, an H2S safety package is present on all Colgate wells. Adequate flare lines will be installed off the mud/gas separator where gas will safely flare.

8. OTHER INFORMATION

Anticipated spud date is upon approval. It is expected it will take ≈3 months to drill and complete the well.

COLGATE ENERGY

Site: Black Diamond 34 Fed Com
Well: Black Diamond 34 Fed Com 131H
Wellbore: Permit
Plan: Plan #1

WELL DETAILS: Black Diamond 34 Fed Com 131H

Northing	Easting	Latittude	Longitude
590015.68	627126.97	32.62169436	-104.05468636

G T M

Azimuths to Grid North
True North: -0.15°
Magnetic North: 6.80°

Magnetic Field
Strength: 47812.9snT
Dip Angle: 60.23°
Date: 3/4/2020
Model: IGRF2020

PROJECT DETAILS: Eddy County, NM (N83-NME)
Well Name: Black Diamond 34 Fed Com 131H
Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: New Mexico Eastern Zone
System Datum: Mean Sea Level
Local North: Grid
KB Elevation: 3313+26 @ 3339.00usft
Elevation: 3313.00

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
104.00	104.00	Rustler
339.00	339.00	Top of Salt
1094.00	1094.00	Base of Salt
1343.00	1343.00	Yates
2711.00	2712.03	Capitan
3446.00	3447.71	DLWR Mnt. Group
5322.00	5325.06	Lower Brushy Canyon
5648.00	5651.06	Bone Spring Lime
7024.00	7027.06	1st Bone Spring SD
7227.00	7230.06	2nd Bone Spring LM
7856.00	7859.06	2nd Bone Spring SD
8197.00	8200.06	3rd Bone Spring LM
8785.00	8805.44	3rd Bone Spring SD

Section Details

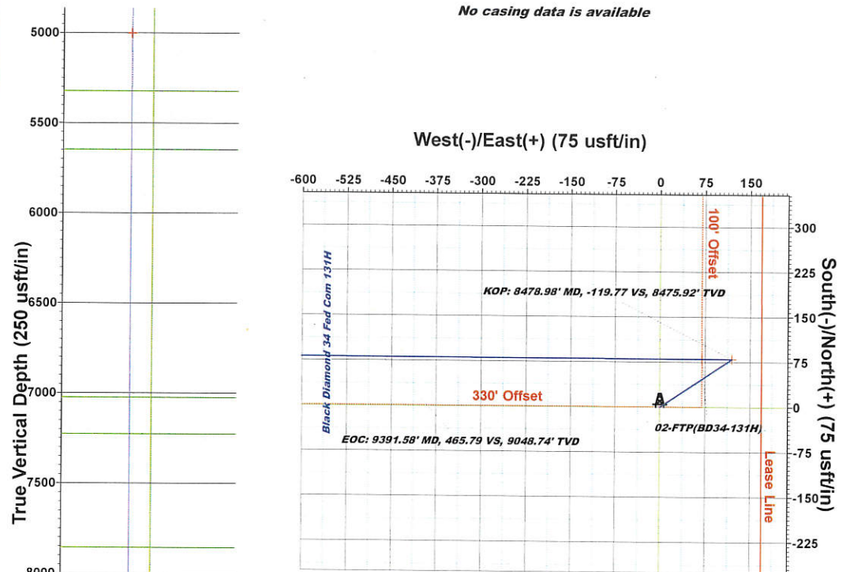
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	1500.00	0.00	0.00	1500.00	0.00	0.00	0.00	0.00	0.00
3	1664.93	2.47	56.33	1664.88	1.97	2.96	1.50	56.33	-2.96
4	4838.13	2.47	56.33	4835.12	77.91	116.96	0.00	0.00	-116.81
5	5003.06	0.00	0.00	5000.00	79.88	119.92	1.50	180.00	-119.77
6	8478.98	0.00	0.00	8475.92	79.88	119.92	0.00	0.00	-119.77
7	9391.58	91.26	270.11	9048.74	81.00	-465.64	10.00	270.11	465.79
8	11421.28	91.26	270.11	9004.11	84.90	-2494.84	0.00	0.00	2495.00
9	11473.03	90.23	270.11	9003.44	85.00	-2546.59	2.00	179.78	2546.74
10	16663.82	90.23	270.11	8983.05	95.32	-7737.33	0.00	0.00	7737.50

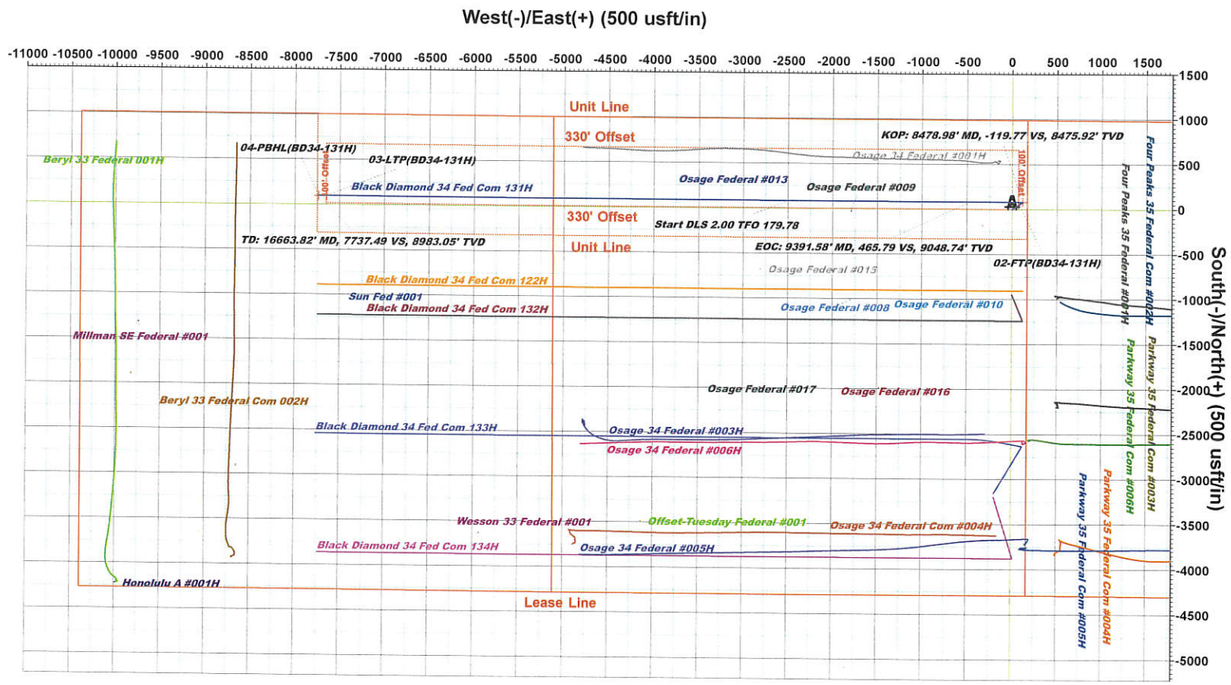
DESIGN TARGET DETAILS

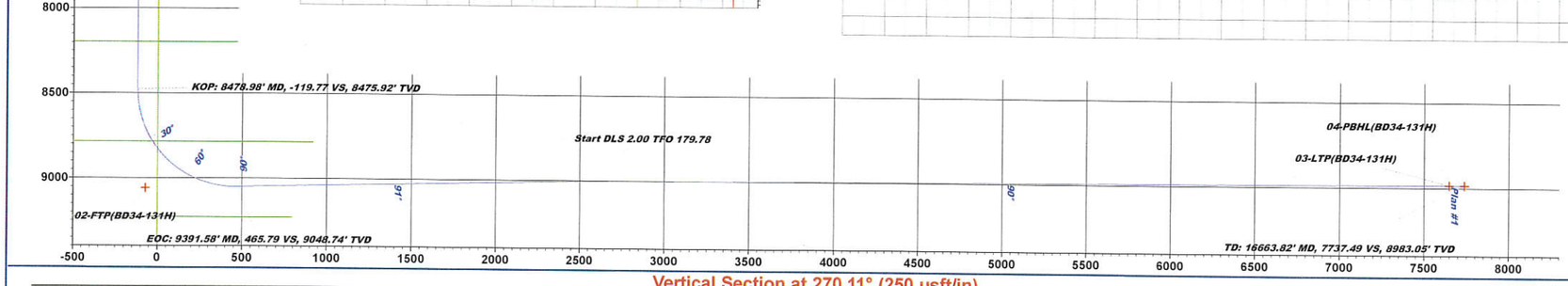
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
01-EON(BD34-131H)	5000.00	79.88	119.92	590095.56	627246.89	32.62191306	-104.05429618
02-FTP(BD34-131H)	9059.00	79.98	69.94	590095.66	627196.91	32.62191370	-104.05445850
03-LTP(BD34-131H)	8983.40	95.08	-7647.35	590110.76	619479.62	32.62200836	-104.07952424
04-PBHL(BD34-131H)	8983.05	95.32	-7737.33	590111.00	619389.64	32.62200961	-104.07981650

CASING DETAILS

No casing data is available







TURNAZONTAL WELL PLANNING

Plan: Plan #1 (Black Diamond 34 Fed Com 131H/Permit)
Created By: Adrian Castro Date: 22:10, March 06 2020

COLGATE ENERGY

Planning Report

Database:	EDM 5000.14 Single User Db	**Local Co-ordinate Reference:**	Well Black Diamond 34 Fed Com 131H
Company:	Colgate Energy	**TVD Reference:**	3313+26 @ 3339.00usft
Project:	Eddy County, NM (N83-NME)	**MD Reference:**	3313+26 @ 3339.00usft
Site:	Black Diamond 34 Fed Com	**North Reference:**	Grid
Well:	Black Diamond 34 Fed Com 131H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Permit		
Design:	Plan #1		

Project Eddy County, NM (N83-NME)

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

Site Black Diamond 34 Fed Com

Site Position:		**Northing:**	589,010.96 usft	**Latitude:**	32.61893234
From:	Map	**Easting:**	627,173.41 usft	**Longitude:**	-104.05454408
Position Uncertainty:	0.00 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0.15 °

Well Black Diamond 34 Fed Com 131H

Well Position	**+N/-S**	1,004.72 usft	**Northing:**	590,015.68 usft	**Latitude:**	32.62169435
	+E/-W	-46.44 usft	**Easting:**	627,126.97 usft	**Longitude:**	-104.05468636
Position Uncertainty		0.00 usft	**Wellhead Elevation:**		**Ground Level:**	3,313.00 usft

Wellbore Permit

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2020	3/4/2020	6.95	60.23	47,812.92670152

Design Plan #1

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	270.11

Plan Survey Tool Program **Date** 3/6/2020

	Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	16,663.82	Plan #1 (Permit)	OWSG MWD Rev 4	
				OWSG MWD - Standard	

COLGATE ENERGY

Planning Report

Database:	EDM 5000.14 Single User Db	**Local Co-ordinate Reference:**	Well Black Diamond 34 Fed Com 131H
Company:	Colgate Energy	**TVD Reference:**	3313+26 @ 3339.00usft
Project:	Eddy County, NM (N83-NME)	**MD Reference:**	3313+26 @ 3339.00usft
Site:	Black Diamond 34 Fed Com	**North Reference:**	Grid
Well:	Black Diamond 34 Fed Com 131H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Permit		
Design:	Plan #1		

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	
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,664.93	2.47	56.33	1,664.88	1.97	2.96	1.50	1.50	0.00	56.33	
4,838.13	2.47	56.33	4,835.13	77.91	116.96	0.00	0.00	0.00	0.00	
5,003.06	0.00	0.00	5,000.00	79.88	119.92	1.50	-1.50	0.00	180.00	01-EON(BD34-131H)
8,478.98	0.00	0.00	8,475.92	79.88	119.92	0.00	0.00	0.00	0.00	
9,391.58	91.26	270.11	9,048.74	81.00	-465.64	10.00	10.00	0.00	270.11	
11,421.28	91.26	270.11	9,004.11	84.90	-2,494.84	0.00	0.00	0.00	0.00	
11,473.03	90.23	270.11	9,003.44	85.00	-2,546.59	2.00	-2.00	0.01	179.78	
16,663.82	90.23	270.11	8,983.05	95.32	-7,737.33	0.00	0.00	0.00	0.00	04-PBHL(BD34-131H

COLGATE ENERGY

Planning Report

Database:	EDM 5000.14 Single User Db	**Local Co-ordinate Reference:**	Well Black Diamond 34 Fed Com 131H
Company:	Colgate Energy	**TVD Reference:**	3313+26 @ 3339.00usft
Project:	Eddy County, NM (N83-NME)	**MD Reference:**	3313+26 @ 3339.00usft
Site:	Black Diamond 34 Fed Com	**North Reference:**	Grid
Well:	Black Diamond 34 Fed Com 131H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Permit		
Design:	Plan #1		

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
104.00	0.00	0.00	104.00	0.00	0.00	0.00	0.00	0.00	0.00
Rustler									
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
339.00	0.00	0.00	339.00	0.00	0.00	0.00	0.00	0.00	0.00
Top of Salt									
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
1,094.00	0.00	0.00	1,094.00	0.00	0.00	0.00	0.00	0.00	0.00
Base of Salt									
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
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,343.00	0.00	0.00	1,343.00	0.00	0.00	0.00	0.00	0.00	0.00
Yates									
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
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	1.50	56.33	1,599.99	0.73	1.09	-1.09	1.50	1.50	0.00
1,664.93	2.47	56.33	1,664.88	1.97	2.96	-2.96	1.50	1.50	0.00
1,700.00	2.47	56.33	1,699.92	2.81	4.22	-4.22	0.00	0.00	0.00
1,800.00	2.47	56.33	1,799.82	5.21	7.82	-7.81	0.00	0.00	0.00
1,900.00	2.47	56.33	1,899.73	7.60	11.41	-11.39	0.00	0.00	0.00
2,000.00	2.47	56.33	1,999.64	9.99	15.00	-14.98	0.00	0.00	0.00
2,100.00	2.47	56.33	2,099.54	12.38	18.59	-18.57	0.00	0.00	0.00
2,200.00	2.47	56.33	2,199.45	14.78	22.18	-22.16	0.00	0.00	0.00
2,300.00	2.47	56.33	2,299.36	17.17	25.78	-25.74	0.00	0.00	0.00
2,400.00	2.47	56.33	2,399.26	19.56	29.37	-29.33	0.00	0.00	0.00
2,500.00	2.47	56.33	2,499.17	21.96	32.96	-32.92	0.00	0.00	0.00
2,600.00	2.47	56.33	2,599.08	24.35	36.55	-36.51	0.00	0.00	0.00
2,700.00	2.47	56.33	2,698.98	26.74	40.15	-40.10	0.00	0.00	0.00
2,712.03	2.47	56.33	2,711.00	27.03	40.58	-40.53	0.00	0.00	0.00
Capitan									
2,800.00	2.47	56.33	2,798.89	29.14	43.74	-43.68	0.00	0.00	0.00
2,900.00	2.47	56.33	2,898.80	31.53	47.33	-47.27	0.00	0.00	0.00
3,000.00	2.47	56.33	2,998.70	33.92	50.92	-50.86	0.00	0.00	0.00
3,100.00	2.47	56.33	3,098.61	36.31	54.52	-54.45	0.00	0.00	0.00
3,200.00	2.47	56.33	3,198.52	38.71	58.11	-58.03	0.00	0.00	0.00
3,300.00	2.47	56.33	3,298.42	41.10	61.70	-61.62	0.00	0.00	0.00
3,400.00	2.47	56.33	3,398.33	43.49	65.29	-65.21	0.00	0.00	0.00
3,447.71	2.47	56.33	3,446.00	44.63	67.01	-66.92	0.00	0.00	0.00
DLWR Mnt. Group									
3,500.00	2.47	56.33	3,498.24	45.89	68.89	-68.80	0.00	0.00	0.00
3,600.00	2.47	56.33	3,598.15	48.28	72.48	-72.39	0.00	0.00	0.00
3,700.00	2.47	56.33	3,698.05	50.67	76.07	-75.97	0.00	0.00	0.00
3,800.00	2.47	56.33	3,797.96	53.06	79.66	-79.56	0.00	0.00	0.00
3,900.00	2.47	56.33	3,897.87	55.46	83.26	-83.15	0.00	0.00	0.00

COLGATE ENERGY

Planning Report

Database:	EDM 5000.14 Single User Db	**Local Co-ordinate Reference:**	Well Black Diamond 34 Fed Com 131H
Company:	Colgate Energy	**TVD Reference:**	3313+26 @ 3339.00usft
Project:	Eddy County, NM (N83-NME)	**MD Reference:**	3313+26 @ 3339.00usft
Site:	Black Diamond 34 Fed Com	**North Reference:**	Grid
Well:	Black Diamond 34 Fed Com 131H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Permit		
Design:	Plan #1		

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)
4,000.00	2.47	56.33	3,997.77	57.85	86.85	-86.74	0.00	0.00	0.00
4,100.00	2.47	56.33	4,097.68	60.24	90.44	-90.32	0.00	0.00	0.00
4,200.00	2.47	56.33	4,197.59	62.64	94.03	-93.91	0.00	0.00	0.00
4,300.00	2.47	56.33	4,297.49	65.03	97.63	-97.50	0.00	0.00	0.00
4,400.00	2.47	56.33	4,397.40	67.42	101.22	-101.09	0.00	0.00	0.00
4,500.00	2.47	56.33	4,497.31	69.82	104.81	-104.68	0.00	0.00	0.00
4,600.00	2.47	56.33	4,597.21	72.21	108.40	-108.26	0.00	0.00	0.00
4,700.00	2.47	56.33	4,697.12	74.60	111.99	-111.85	0.00	0.00	0.00
4,800.00	2.47	56.33	4,797.03	76.99	115.59	-115.44	0.00	0.00	0.00
4,838.13	2.47	56.33	4,835.13	77.91	116.96	-116.81	0.00	0.00	0.00
4,900.00	1.55	56.33	4,896.95	79.11	118.76	-118.61	1.50	-1.50	0.00
5,003.06	0.00	0.00	5,000.00	79.88	119.92	-119.77	1.50	-1.50	0.00
01-EON(BD34-131H)									
5,100.00	0.00	0.00	5,096.94	79.88	119.92	-119.77	0.00	0.00	0.00
5,200.00	0.00	0.00	5,196.94	79.88	119.92	-119.77	0.00	0.00	0.00
5,300.00	0.00	0.00	5,296.94	79.88	119.92	-119.77	0.00	0.00	0.00
5,325.06	0.00	0.00	5,322.00	79.88	119.92	-119.77	0.00	0.00	0.00
Lower Brushy Canyon									
5,400.00	0.00	0.00	5,396.94	79.88	119.92	-119.77	0.00	0.00	0.00
5,500.00	0.00	0.00	5,496.94	79.88	119.92	-119.77	0.00	0.00	0.00
5,600.00	0.00	0.00	5,596.94	79.88	119.92	-119.77	0.00	0.00	0.00
5,651.06	0.00	0.00	5,648.00	79.88	119.92	-119.77	0.00	0.00	0.00
Bone Spring Lime									
5,700.00	0.00	0.00	5,696.94	79.88	119.92	-119.77	0.00	0.00	0.00
5,800.00	0.00	0.00	5,796.94	79.88	119.92	-119.77	0.00	0.00	0.00
5,900.00	0.00	0.00	5,896.94	79.88	119.92	-119.77	0.00	0.00	0.00
6,000.00	0.00	0.00	5,996.94	79.88	119.92	-119.77	0.00	0.00	0.00
6,100.00	0.00	0.00	6,096.94	79.88	119.92	-119.77	0.00	0.00	0.00
6,200.00	0.00	0.00	6,196.94	79.88	119.92	-119.77	0.00	0.00	0.00
6,300.00	0.00	0.00	6,296.94	79.88	119.92	-119.77	0.00	0.00	0.00
6,400.00	0.00	0.00	6,396.94	79.88	119.92	-119.77	0.00	0.00	0.00
6,500.00	0.00	0.00	6,496.94	79.88	119.92	-119.77	0.00	0.00	0.00
6,600.00	0.00	0.00	6,596.94	79.88	119.92	-119.77	0.00	0.00	0.00
6,700.00	0.00	0.00	6,696.94	79.88	119.92	-119.77	0.00	0.00	0.00
6,800.00	0.00	0.00	6,796.94	79.88	119.92	-119.77	0.00	0.00	0.00
6,900.00	0.00	0.00	6,896.94	79.88	119.92	-119.77	0.00	0.00	0.00
7,000.00	0.00	0.00	6,996.94	79.88	119.92	-119.77	0.00	0.00	0.00
7,027.06	0.00	0.00	7,024.00	79.88	119.92	-119.77	0.00	0.00	0.00
1st Bone Spring SD									
7,100.00	0.00	0.00	7,096.94	79.88	119.92	-119.77	0.00	0.00	0.00
7,200.00	0.00	0.00	7,196.94	79.88	119.92	-119.77	0.00	0.00	0.00
7,230.06	0.00	0.00	7,227.00	79.88	119.92	-119.77	0.00	0.00	0.00
2nd Bone Spring LM									
7,300.00	0.00	0.00	7,296.94	79.88	119.92	-119.77	0.00	0.00	0.00
7,400.00	0.00	0.00	7,396.94	79.88	119.92	-119.77	0.00	0.00	0.00
7,500.00	0.00	0.00	7,496.94	79.88	119.92	-119.77	0.00	0.00	0.00
7,600.00	0.00	0.00	7,596.94	79.88	119.92	-119.77	0.00	0.00	0.00
7,700.00	0.00	0.00	7,696.94	79.88	119.92	-119.77	0.00	0.00	0.00
7,800.00	0.00	0.00	7,796.94	79.88	119.92	-119.77	0.00	0.00	0.00
7,859.06	0.00	0.00	7,856.00	79.88	119.92	-119.77	0.00	0.00	0.00
2nd Bone Spring SD									
7,900.00	0.00	0.00	7,896.94	79.88	119.92	-119.77	0.00	0.00	0.00
8,000.00	0.00	0.00	7,996.94	79.88	119.92	-119.77	0.00	0.00	0.00

COLGATE ENERGY

Planning Report

Database:	EDM 5000.14 Single User Db	**Local Co-ordinate Reference:**	Well Black Diamond 34 Fed Com 131H
Company:	Colgate Energy	**TVD Reference:**	3313+26 @ 3339.00usft
Project:	Eddy County, NM (N83-NME)	**MD Reference:**	3313+26 @ 3339.00usft
Site:	Black Diamond 34 Fed Com	**North Reference:**	Grid
Well:	Black Diamond 34 Fed Com 131H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Permit		
Design:	Plan #1		

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)
8,100.00	0.00	0.00	8,096.94	79.88	119.92	-119.77	0.00	0.00	0.00
8,200.00	0.00	0.00	8,196.94	79.88	119.92	-119.77	0.00	0.00	0.00
8,200.06	0.00	0.00	8,197.00	79.88	119.92	-119.77	0.00	0.00	0.00
3rd Bone Spring LM									
8,300.00	0.00	0.00	8,296.94	79.88	119.92	-119.77	0.00	0.00	0.00
8,400.00	0.00	0.00	8,396.94	79.88	119.92	-119.77	0.00	0.00	0.00
8,478.98	0.00	0.00	8,475.92	79.88	119.92	-119.77	0.00	0.00	0.00
KOP: 8478.98' MD, -119.77 VS, 8475.92' TVD									
8,500.00	2.10	270.11	8,496.94	79.88	119.53	-119.38	10.00	10.00	0.00
8,550.00	7.10	270.11	8,546.76	79.89	115.52	-115.37	10.00	10.00	0.00
8,600.00	12.10	270.11	8,596.04	79.90	107.19	-107.03	10.00	10.00	0.00
8,650.00	17.10	270.11	8,644.41	79.93	94.59	-94.43	10.00	10.00	0.00
8,700.00	22.10	270.11	8,691.50	79.96	77.82	-77.66	10.00	10.00	0.00
8,750.00	27.10	270.11	8,736.95	80.00	57.01	-56.85	10.00	10.00	0.00
8,800.00	32.10	270.11	8,780.41	80.05	32.32	-32.16	10.00	10.00	0.00
8,805.44	32.65	270.11	8,785.00	80.05	29.40	-29.25	10.00	10.00	0.00
3rd Bone Spring SD									
8,850.00	37.10	270.11	8,821.55	80.10	3.93	-3.78	10.00	10.00	0.00
8,900.00	42.10	270.11	8,860.06	80.16	-27.93	28.08	10.00	10.00	0.00
8,950.00	47.10	270.11	8,895.65	80.23	-63.03	63.18	10.00	10.00	0.00
8,954.60	47.56	270.11	8,898.77	80.24	-66.41	66.57	10.00	10.00	0.00
02-FTP(BD34-131H)									
9,000.00	52.10	270.11	8,928.04	80.30	-101.09	101.25	10.00	10.00	0.00
9,050.00	57.10	270.11	8,957.00	80.38	-141.84	141.99	10.00	10.00	0.00
9,100.00	62.10	270.11	8,982.29	80.47	-184.95	185.11	10.00	10.00	0.00
9,150.00	67.10	270.11	9,003.73	80.55	-230.10	230.26	10.00	10.00	0.00
9,200.00	72.10	270.11	9,021.15	80.64	-276.95	277.11	10.00	10.00	0.00
9,250.00	77.10	270.11	9,034.42	80.73	-325.14	325.30	10.00	10.00	0.00
9,300.00	82.10	270.11	9,043.44	80.83	-374.31	374.46	10.00	10.00	0.00
9,350.00	87.10	270.11	9,048.15	80.92	-424.07	424.22	10.00	10.00	0.00
9,391.58	91.26	270.11	9,048.74	81.00	-465.64	465.79	10.00	10.00	0.00
EOC: 9391.58' MD, 465.79 VS, 9048.74' TVD									
9,400.00	91.26	270.11	9,048.55	81.02	-474.05	474.21	0.00	0.00	0.00
9,500.00	91.26	270.11	9,046.36	81.21	-574.03	574.18	0.00	0.00	0.00
9,600.00	91.26	270.11	9,044.16	81.40	-674.00	674.16	0.00	0.00	0.00
9,700.00	91.26	270.11	9,041.96	81.60	-773.98	774.14	0.00	0.00	0.00
9,800.00	91.26	270.11	9,039.76	81.79	-873.96	874.11	0.00	0.00	0.00
9,900.00	91.26	270.11	9,037.56	81.98	-973.93	974.09	0.00	0.00	0.00
10,000.00	91.26	270.11	9,035.36	82.17	-1,073.91	1,074.06	0.00	0.00	0.00
10,100.00	91.26	270.11	9,033.16	82.36	-1,173.88	1,174.04	0.00	0.00	0.00
10,200.00	91.26	270.11	9,030.96	82.56	-1,273.86	1,274.01	0.00	0.00	0.00
10,300.00	91.26	270.11	9,028.76	82.75	-1,373.83	1,373.99	0.00	0.00	0.00
10,400.00	91.26	270.11	9,026.56	82.94	-1,473.81	1,473.97	0.00	0.00	0.00
10,500.00	91.26	270.11	9,024.37	83.13	-1,573.79	1,573.94	0.00	0.00	0.00
10,600.00	91.26	270.11	9,022.17	83.32	-1,673.76	1,673.92	0.00	0.00	0.00
10,700.00	91.26	270.11	9,019.97	83.52	-1,773.74	1,773.89	0.00	0.00	0.00
10,800.00	91.26	270.11	9,017.77	83.71	-1,873.71	1,873.87	0.00	0.00	0.00
10,900.00	91.26	270.11	9,015.57	83.90	-1,973.69	1,973.85	0.00	0.00	0.00
11,000.00	91.26	270.11	9,013.37	84.09	-2,073.66	2,073.82	0.00	0.00	0.00
11,100.00	91.26	270.11	9,011.17	84.28	-2,173.64	2,173.80	0.00	0.00	0.00
11,200.00	91.26	270.11	9,008.97	84.48	-2,273.62	2,273.77	0.00	0.00	0.00
11,300.00	91.26	270.11	9,006.77	84.67	-2,373.59	2,373.75	0.00	0.00	0.00
11,400.00	91.26	270.11	9,004.58	84.86	-2,473.57	2,473.72	0.00	0.00	0.00

COLGATE ENERGY

Planning Report

Database:	EDM 5000.14 Single User Db	**Local Co-ordinate Reference:**	Well Black Diamond 34 Fed Com 131H
Company:	Colgate Energy	**TVD Reference:**	3313+26 @ 3339.00usft
Project:	Eddy County, NM (N83-NME)	**MD Reference:**	3313+26 @ 3339.00usft
Site:	Black Diamond 34 Fed Com	**North Reference:**	Grid
Well:	Black Diamond 34 Fed Com 131H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Permit		
Design:	Plan #1		

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)
11,421.28	91.26	270.11	9,004.11	84.90	-2,494.84	2,495.00	0.00	0.00	0.00
Start DLS 2.00 TFO 179.78									
11,473.03	90.23	270.11	9,003.44	85.00	-2,546.59	2,546.74	2.00	-2.00	0.01
11,500.00	90.23	270.11	9,003.33	85.05	-2,573.56	2,573.71	0.00	0.00	0.00
11,600.00	90.23	270.11	9,002.94	85.25	-2,673.55	2,673.71	0.00	0.00	0.00
11,700.00	90.23	270.11	9,002.55	85.45	-2,773.55	2,773.71	0.00	0.00	0.00
11,800.00	90.23	270.11	9,002.15	85.65	-2,873.55	2,873.71	0.00	0.00	0.00
11,900.00	90.23	270.11	9,001.76	85.85	-2,973.55	2,973.71	0.00	0.00	0.00
12,000.00	90.23	270.11	9,001.37	86.05	-3,073.55	3,073.71	0.00	0.00	0.00
12,100.00	90.23	270.11	9,000.97	86.25	-3,173.55	3,173.71	0.00	0.00	0.00
12,200.00	90.23	270.11	9,000.58	86.45	-3,273.55	3,273.71	0.00	0.00	0.00
12,300.00	90.23	270.11	9,000.19	86.65	-3,373.55	3,373.71	0.00	0.00	0.00
12,400.00	90.23	270.11	8,999.80	86.84	-3,473.55	3,473.71	0.00	0.00	0.00
12,500.00	90.23	270.11	8,999.40	87.04	-3,573.55	3,573.71	0.00	0.00	0.00
12,600.00	90.23	270.11	8,999.01	87.24	-3,673.55	3,673.71	0.00	0.00	0.00
12,700.00	90.23	270.11	8,998.62	87.44	-3,773.54	3,773.71	0.00	0.00	0.00
12,800.00	90.23	270.11	8,998.23	87.64	-3,873.54	3,873.70	0.00	0.00	0.00
12,900.00	90.23	270.11	8,997.83	87.84	-3,973.54	3,973.70	0.00	0.00	0.00
13,000.00	90.23	270.11	8,997.44	88.04	-4,073.54	4,073.70	0.00	0.00	0.00
13,100.00	90.23	270.11	8,997.05	88.24	-4,173.54	4,173.70	0.00	0.00	0.00
13,200.00	90.23	270.11	8,996.65	88.43	-4,273.54	4,273.70	0.00	0.00	0.00
13,300.00	90.23	270.11	8,996.26	88.63	-4,373.54	4,373.70	0.00	0.00	0.00
13,400.00	90.23	270.11	8,995.87	88.83	-4,473.54	4,473.70	0.00	0.00	0.00
13,500.00	90.23	270.11	8,995.48	89.03	-4,573.54	4,573.70	0.00	0.00	0.00
13,600.00	90.23	270.11	8,995.08	89.23	-4,673.54	4,673.70	0.00	0.00	0.00
13,700.00	90.23	270.11	8,994.69	89.43	-4,773.53	4,773.70	0.00	0.00	0.00
13,800.00	90.23	270.11	8,994.30	89.63	-4,873.53	4,873.70	0.00	0.00	0.00
13,900.00	90.23	270.11	8,993.91	89.83	-4,973.53	4,973.70	0.00	0.00	0.00
14,000.00	90.23	270.11	8,993.51	90.02	-5,073.53	5,073.70	0.00	0.00	0.00
14,100.00	90.23	270.11	8,993.12	90.22	-5,173.53	5,173.69	0.00	0.00	0.00
14,200.00	90.23	270.11	8,992.73	90.42	-5,273.53	5,273.69	0.00	0.00	0.00
14,300.00	90.23	270.11	8,992.33	90.62	-5,373.53	5,373.69	0.00	0.00	0.00
14,400.00	90.23	270.11	8,991.94	90.82	-5,473.53	5,473.69	0.00	0.00	0.00
14,500.00	90.23	270.11	8,991.55	91.02	-5,573.53	5,573.69	0.00	0.00	0.00
14,600.00	90.23	270.11	8,991.16	91.22	-5,673.53	5,673.69	0.00	0.00	0.00
14,700.00	90.23	270.11	8,990.76	91.42	-5,773.52	5,773.69	0.00	0.00	0.00
14,800.00	90.23	270.11	8,990.37	91.61	-5,873.52	5,873.69	0.00	0.00	0.00
14,900.00	90.23	270.11	8,989.98	91.81	-5,973.52	5,973.69	0.00	0.00	0.00
15,000.00	90.23	270.11	8,989.58	92.01	-6,073.52	6,073.69	0.00	0.00	0.00
15,100.00	90.23	270.11	8,989.19	92.21	-6,173.52	6,173.69	0.00	0.00	0.00
15,200.00	90.23	270.11	8,988.80	92.41	-6,273.52	6,273.69	0.00	0.00	0.00
15,300.00	90.23	270.11	8,988.41	92.61	-6,373.52	6,373.69	0.00	0.00	0.00
15,400.00	90.23	270.11	8,988.01	92.81	-6,473.52	6,473.68	0.00	0.00	0.00
15,500.00	90.23	270.11	8,987.62	93.01	-6,573.52	6,573.68	0.00	0.00	0.00
15,600.00	90.23	270.11	8,987.23	93.21	-6,673.52	6,673.68	0.00	0.00	0.00
15,700.00	90.23	270.11	8,986.84	93.40	-6,773.52	6,773.68	0.00	0.00	0.00
15,800.00	90.23	270.11	8,986.44	93.60	-6,873.51	6,873.68	0.00	0.00	0.00
15,900.00	90.23	270.11	8,986.05	93.80	-6,973.51	6,973.68	0.00	0.00	0.00
16,000.00	90.23	270.11	8,985.66	94.00	-7,073.51	7,073.68	0.00	0.00	0.00
16,100.00	90.23	270.11	8,985.26	94.20	-7,173.51	7,173.68	0.00	0.00	0.00
16,200.00	90.23	270.11	8,984.87	94.40	-7,273.51	7,273.68	0.00	0.00	0.00
16,300.00	90.23	270.11	8,984.48	94.60	-7,373.51	7,373.68	0.00	0.00	0.00
16,400.00	90.23	270.11	8,984.09	94.80	-7,473.51	7,473.68	0.00	0.00	0.00
16,500.00	90.23	270.11	8,983.69	94.99	-7,573.51	7,573.68	0.00	0.00	0.00

COLGATE ENERGY

Planning Report

Database:	EDM 5000.14 Single User Db	**Local Co-ordinate Reference:**	Well Black Diamond 34 Fed Com 131H
Company:	Colgate Energy	**TVD Reference:**	3313+26 @ 3339.00usft
Project:	Eddy County, NM (N83-NME)	**MD Reference:**	3313+26 @ 3339.00usft
Site:	Black Diamond 34 Fed Com	**North Reference:**	Grid
Well:	Black Diamond 34 Fed Com 131H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Permit		
Design:	Plan #1		

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)
16,573.84	90.23	270.11	8,983.40	95.14	-7,647.35	7,647.52	0.00	0.00	0.00
03-LTP(BD34-131H)									
16,600.00	90.23	270.11	8,983.30	95.19	-7,673.51	7,673.68	0.00	0.00	0.00
16,663.82	90.23	270.11	8,983.05	95.32	-7,737.33	7,737.49	0.00	0.00	0.00
TD: 16663.82' MD, 7737.49 VS, 8983.05' TVD - 04-PBHL(BD34-131H)									

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
01-EON(BD34-131H) - plan hits target center - Point	0.00	0.00	5,000.00	79.88	119.92	590,095.56	627,246.89	32.62191306	-104.05429618
04-PBHL(BD34-131H) - plan hits target center - Point	0.00	0.00	8,983.05	95.32	-7,737.33	590,111.00	619,389.64	32.62200961	-104.07981650
03-LTP(BD34-131H) - plan misses target center by 0.06usft at 16573.84usft MD (8983.40 TVD, 95.14 N, -7647.35 E) - Point	0.00	0.00	8,983.40	95.08	-7,647.35	590,110.76	619,479.62	32.62200836	-104.07952424
02-FTP(BD34-131H) - plan misses target center by 210.40usft at 8954.60usft MD (8898.77 TVD, 80.24 N, -66.41 E) - Point	0.00	0.00	9,059.00	79.98	69.94	590,095.67	627,196.92	32.62191370	-104.05445850

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
104.00	104.00	Rustler			
339.00	339.00	Top of Salt			
1,094.00	1,094.00	Base of Salt			
1,343.00	1,343.00	Yates			
2,712.03	2,711.00	Capitan			
3,447.71	3,446.00	DLWR Mnt. Group			
5,325.06	5,322.00	Lower Brushy Canyon			
5,651.06	5,648.00	Bone Spring Lime			
7,027.06	7,024.00	1st Bone Spring SD			
7,230.06	7,227.00	2nd Bone Spring LM			
7,859.06	7,856.00	2nd Bone Spring SD			
8,200.06	8,197.00	3rd Bone Spring LM			
8,805.44	8,785.00	3rd Bone Spring SD			

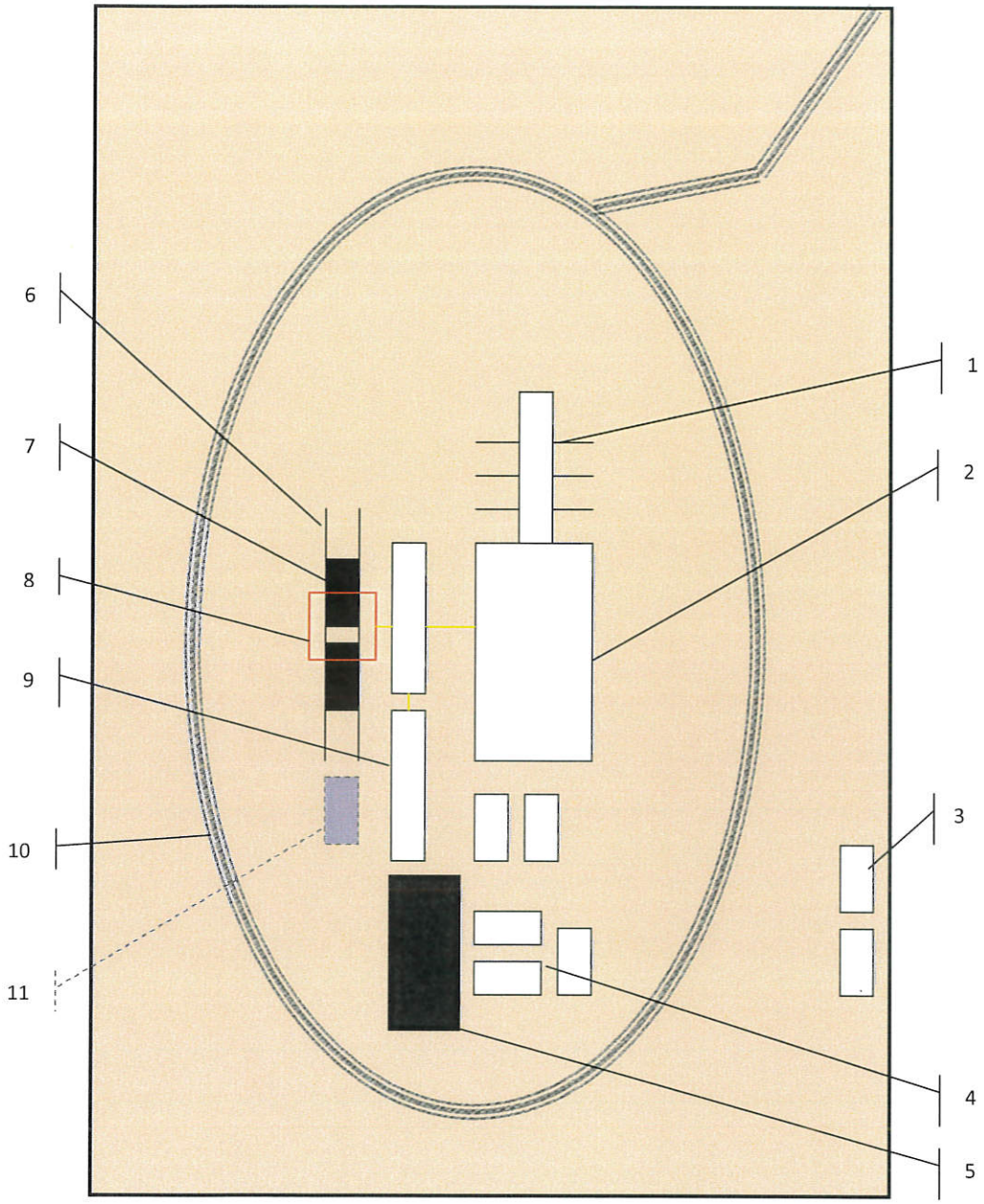
COLGATE ENERGY

Planning Report

Database:	EDM 5000.14 Single User Db	**Local Co-ordinate Reference:**	Well Black Diamond 34 Fed Com 131H
Company:	Colgate Energy	**TVD Reference:**	3313+26 @ 3339.00usft
Project:	Eddy County, NM (N83-NME)	**MD Reference:**	3313+26 @ 3339.00usft
Site:	Black Diamond 34 Fed Com	**North Reference:**	Grid
Well:	Black Diamond 34 Fed Com 131H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Permit		
Design:	Plan #1		

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
8,478.98	8,475.92	79.88	119.92	KOP: 8478.98' MD, -119.77 VS, 8475.92' TVD
9,391.58	9,048.74	81.00	-465.64	EOC: 9391.58' MD, 465.79 VS, 9048.74' TVD
11,421.28	9,004.11	84.90	-2,494.84	Start DLS 2.00 TFO 179.78
16,663.82	8,983.05	95.32	-7,737.33	TD: 16663.82' MD, 7737.49 VS, 8983.05' TVD



Schematic Closed Loop Drilling Rig*

1. **Pipe Rack**
2. **Drill Rig**
3. **House Trailers/ Offices**
4. **Generator/Fuel/Storage**
5. **Overflow-Frac Tank**
6. **Skids**
7. **Roll Offs**
8. **Hopper or Centrifuge**
9. **Mud Tanks**
10. **Loop Drive**
11. Generator (only for use with centrifuge)

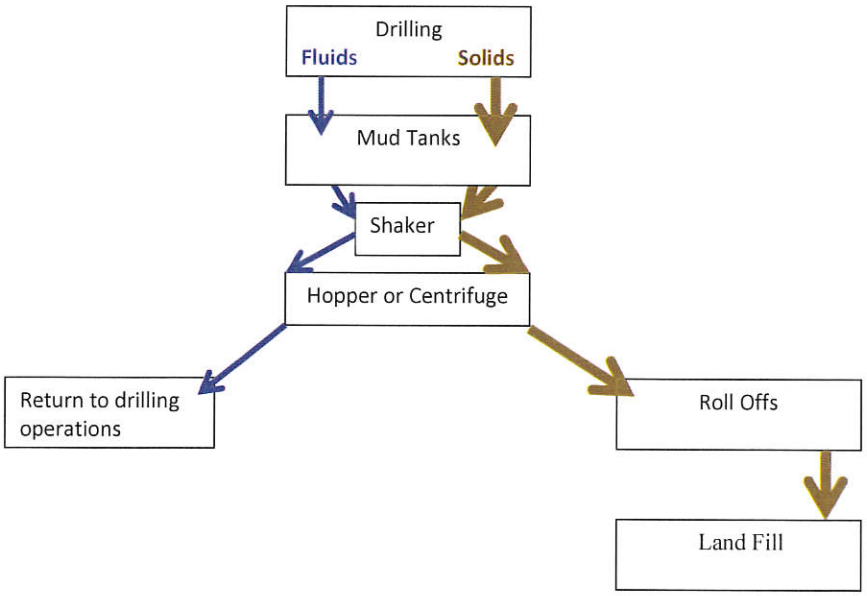
*Not drawn to scale: Closed loop system requires at least 30 feet beyond mud tanks. Ideally 60 feet would be available

Above: Centrifugal Closed Loop System

PERMITS WEST, INC.
PROVIDING PERMITS for LAND USERS
37Verano Loop, Santa Fe, New Mexico 87508 (505) 466-8120

Closed Loop Drilling System: Mud tanks to right (1)
Hopper in air to settle out solids (2)
Water return pipe (3)
Shaker between hopper and mud tanks (4)
Roll offs on skids (5)

Flow Chart for Drilling Fluids and Solids



Photos Courtesy of Gandy Corporation Oil Field Service

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 12055

COMMENTS

Operator:	OGRID:	Action Number:	Action Type:
COLGATE OPERATING, LLC 300 North Marienfeld Street Suite 1000 Midland, TX79701	371449	12055	FORM 3160-3

Created By	Comment	Comment Date
kpickford	KP GEO Review 12/15/2020	12/15/2020

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 12055

CONDITIONS OF APPROVAL

Operator:	OGRID:	Action Number:	Action Type:
COLGATE OPERATING, LLC 300 North Marienfeld Street Suite 1000 Midland, TX79701	371449	12055	FORM 3160-3

OCD Reviewer	Condition
kpickford	Will require 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