

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. 30-015-49741
3a. Address	3b. Phone No. (include area code)	10. Field and Pool, or Exploratory <del>OLD MILLMAN RANCH BONE SPRING (ASSOC)</del>
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: NENE / 988 FNL / 260 FEL / TWSP: 20S / RANGE: 28E / SECTION: 5 / LAT: 32.607182 / LONG: -104.1917373 ( TVD: 0 feet, MD: 0 feet )  
PPP: SWNE / 2247 FNL / 0 FWL / TWSP: 20S / RANGE: 28E / SECTION: 4 / LAT: 32.6036893 / LONG: -104.1650117 ( TVD: 8475 feet, MD: 16597 feet )  
PPP: SWNE / 2288 FNL / 0 FWL / TWSP: 20S / RANGE: 28E / SECTION: 4 / LAT: 32.6035969 / LONG: -104.182275 ( TVD: 8475 feet, MD: 11280 feet )  
PPP: SWNW / 2310 FNL / 100 FWL / TWSP: 20S / RANGE: 28E / SECTION: 4 / LAT: 32.6035526 / LONG: -104.1905857 ( TVD: 8438 feet, MD: 8731 feet )  
PPP: SWNW / 2306 FNL / 0 FWL / TWSP: 20S / RANGE: 28E / SECTION: 4 / LAT: 32.6035574 / LONG: -104.1905857 ( TVD: 8432 feet, MD: 8716 feet )  
BHL: SENE / 2286 FNL / 10 FEL / TWSP: 20S / RANGE: 28E / SECTION: 3 / LAT: 32.6037344 / LONG: -104.156417 ( TVD: 8475 feet, MD: 19243 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, 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 <b>30-015- 49741</b>	2 Pool Code <b>65010-48035</b>	3 Well Name <b>OLD MILLMAN RANCH BONE SPRING (ASSOC) WINCHESTER, BONE SPRING</b>
4 Property Code <b>333079</b>	5 Property Name DUNDEE 4 FED COM	6 Well Number 132H
7 OGRID No. 371449	8 Operator Name COLGATE ENERGY LLC	9 Elevation 3318.33'

10 Surface Location

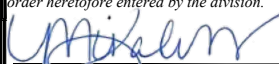
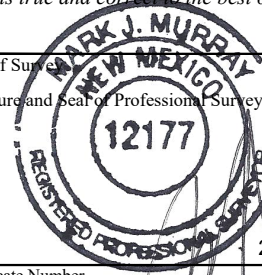
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
1	5	20-S	28-E		988'	NORTH	260'	EAST	EDDY

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
H	3	20-S	28-E		2286'	NORTH	10'	EAST	EDDY

12 Dedicated Acres	13 Joint or Infill	14 Consolidation Code	15 Order No.
320			

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.

<p>16</p> <p><b>SURFACE HOLE LOCATION (SHL)</b> NEW MEXICO EAST - NAD 83 X=584938.85 LAT.= 32.60718203° N Y=584652.62 LONG.= 104.19173739° W NEW MEXICO EAST - NAD 27 X=543758.80 LAT.= 32.60706499° N Y=584591.02 LONG.= -104.19122936° W 988' FNL, 260' FEL - SECTION 5</p> <p><b>FIRST TAKE POINT (FTP)</b> NEW MEXICO EAST - NAD 83 X=585295.25 LAT.= 32.60355265° N Y=583332.71 LONG.= 104.19058574° W NEW MEXICO EAST - NAD 27 X=544115.17 LAT.= 32.60343557° N Y=583271.14 LONG.= -104.19007783° W 2310' FNL, 100' FWL - SECTION 4</p> <p><b>LAST TAKE POINT (LTP)</b> NEW MEXICO EAST - NAD 83 X=595727.07 LAT.= 32.60373265° N Y=583413.86 LONG.= 104.15670935° W NEW MEXICO EAST - NAD 27 X=554546.97 LAT.= 32.60361521° N Y=583352.21 LONG.= -104.15620229° W 2287' FNL, 100' FEL - SECTION 3</p> <p><b>BOTTOM HOLE LOCATION (BHL)</b> NEW MEXICO EAST - NAD 83 X=595817.07 LAT.= 32.60373445° N Y=583414.66 LONG.= 104.15641708° W NEW MEXICO EAST - NAD 27 X=554636.97 LAT.= 32.60361700° N Y=583353.01 LONG.= -104.15591002° W 2286' FNL, 10' FEL - SECTION 3</p> <p><b>CORNER DATA</b> NEW MEXICO EAST - NAD 83 A - FOUND IRON PIPE W/ BRASS CAP N:585641.97' E:585202.31' B - FOUND IRON PIPE W/ BRASS CAP N:585656.50' E:587858.72' C - FOUND IRON PIPE W/ BRASS CAP N:585671.76' E:590514.87' D - FOUND 3/4" IRON ROD W/ ALUM. CAP N:585686.35' E:593171.86' E - FOUND IRON PIPE W/ BRASS CAP N:585701.20' E:595828.61' F - FOUND IRON PIPE W/ BRASS CAP N:583084.74' E:595826.84' G - FOUND IRON PIPE W/ BRASS CAP N:580433.88' E:595824.69' H - FOUND IRON PIPE W/ BRASS CAP N:580412.62' E:593168.80' I - FOUND IRON PIPE W/ BRASS CAP N:580391.30' E:590513.47' J - FOUND IRON PIPE W/ BRASS CAP N:580373.68' E:587849.16' K - FOUND IRON PIPE W/ BRASS CAP N:580356.62' E:585185.65' L - FOUND IRON PIPE W/ BRASS CAP N:583002.03' E:585194.24' M - FOUND IRON PIPE W/ BRASS CAP N:583037.35' E:590513.68'</p>	<p><b>17 OPERATOR CERTIFICATION</b> 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.</p> <p> <b>03.06.2022</b> Signature Date <b>Mikah Thomas</b> Printed Name <b>mthomas@colgateenergy.com</b> E-mail Address</p> <p><b>18 SURVEYOR CERTIFICATION</b> 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.</p> <p> Date of Survey Signature and Seal of Professional Surveyor <b>2/24/2022</b> Certificate Number</p>
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State of New Mexico  
Energy, Minerals and Natural Resources Department

Submit Electronically  
Via E-permitting

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

## NATURAL GAS MANAGEMENT PLAN

This Natural Gas Management Plan must be submitted with each Application for Permit to Drill (APD) for a new or recompleted well.

### Section 1 – Plan Description

Effective May 25, 2021

**I. Operator:** Colgate Operating, LLC **OGRID:** 371449 **Date:** 02/24 /2022

**II. Type:** ☒ Original ☐ Amendment due to ☐ 19.15.27.9.D(6)(a) NMAC ☐ 19.15.27.9.D(6)(b) NMAC ☐ Other.

If Other, please describe: \_\_\_\_\_

**III. Well(s):** Provide the following information for each new or recompleted well or set of wells proposed to be drilled or proposed to be recompleted from a single well pad or connected to a central delivery point.

Well Name	API	ULSTR	Footages	Anticipated Oil BBL/D	Anticipated Gas MCF/D	Anticipated Produced Water BBL/D
Koala 9 Fed Com 111H	30-015-	A – 8 – 20S – 28E	796 FNL 362 FEL	700	3900	4800
Koala 9 Fed Com 112H	30-015-	A – 8 – 20S – 28E	797 FNL 332 FEL	700	3900	4800
Koala 9 Fed Com 113H	30-015-	P – 8 – 20S – 28E	1144 FSL 135 FEL	700	3900	4800
Koala 9 Fed Com 114H	30-015-	P – 8 – 20S – 28E	1144 FSL 105 FEL	700	3900	4800
Koala 9 Fed Com 121H	30-015-	A – 8 – 20S – 28E	795 FNL 422 FEL	1700	3400	4400
Koala 9 Fed Com 122H	30-015-	A – 8 – 20S – 28E	796 FNL 392 FEL	1700	3400	4400
Koala 9 Fed Com 123H	30-015-	P – 8 – 20S – 28E	1144 FSL 195 FEL	1700	3400	4400
Koala 9 Fed Com 124H	30-015-	P – 8 – 20S – 28E	1144 FSL 165 FEL	1700	3400	4400
Koala 9 Fed Com 131H	30-015-	A – 8 – 20S – 28E	794 FNL 482 FEL	1300	3100	3300
Koala 9 Fed Com 132H	30-015-	A – 8 – 20S – 28E	795 FNL 452 FEL	1300	3100	3300
Koala 9 Fed Com 133H	30-015-	P – 8 – 20S – 28E	1144 FSL 255 FEL	1300	3100	3300
Koala 9 Fed Com 134H	30-015-	P – 8 – 20S – 28E	1144 FSL 225 FEL	1300	3100	3300
Koala 9 Fed Com 201H	30-015-	A – 8 – 20S – 28E	793 FNL 542 FEL	1300	2400	1900
Koala 9 Fed Com 202H	30-015-	A – 8 – 20S – 28E	793 FNL 512 FEL	1300	2400	1900
Koala 9 Fed Com 203H	30-015-	P – 8 – 20S – 28E	1144 FSL 315 FEL	1300	2400	1900
Koala 9 Fed Com 204H	30-015-	P – 8 – 20S – 28E	1144 FSL 285 FEL	1300	2400	1900
Dundee 4 Fed Com 111H	30-015-	I – 5 – 20S – 28E	989 FNL 140 FEL	700	3900	4800
Dundee 4 Fed Com 112H	30-015-	I – 5 – 20S – 28E	989 FNL 170 FEL	700	3900	4800
Dundee 4 Fed Com 113H	30-015-	I – 5 – 20S – 28E	1396 FSL 105 FEL	700	3900	4800
Dundee 4 Fed Com 114H	30-015-	I – 5 – 20S – 28E	1396 FSL 135 FEL	700	3900	4800

Page 6

Dundee 4 Fed Com 121H	30-015-	I – 5 – 20S – 28E	989 FNL 170 FEL	1700	3400	4400
Dundee 4 Fed Com 122H	30-015-	I – 5 – 20S – 28E	987 FNL 320 FEL	1700	3400	4400
Dundee 4 Fed Com 123H	30-015-	I – 5 – 20S – 28E	1397 FSL 285 FEL	1700	3400	4400
Dundee 4 Fed Com 124H	30-015-	I – 5 – 20S – 28E	1397 FSL 315 FEL	1700	3400	4400
Dundee 4 Fed Com 131H	30-015-	I – 5 – 20S – 28E	988 FNL 230 FEL	1300	3100	3300
Dundee 4 Fed Com 132H	30-015-	I – 5 – 20S – 28E	988 FNL 260 FEL	1300	3100	3300
Dundee 4 Fed Com 133H	30-015-	I – 5 – 20S – 28E	1397 FSL 225 F3L	1300	3100	3300
Dundee 4 Fed Com 134H	30-015-	I – 5 – 20S – 28E	1397 FSL 255 F3L	1300	3100	3300
Dundee 4 Fed Com 201H	30-015-	I – 5 – 20S – 28E	988 FNL 255 F3L	1300	2400	1900
Dundee 4 Fed Com 202H	30-015-	I – 5 – 20S – 28E	1396 FSL 165 F3L	1300	2400	1900
Dundee 4 Fed Com 203H	30-015-	I – 5 – 20S – 28E	1397 FSL 195 F3L	1300	2400	1900

**IV. Central Delivery Point Name:** Dundee/Koala Battery [See 19.15.27.9(D)(1) NMAC]

**V. Anticipated Schedule:** Provide the following information for each new or recompleted well or set of wells proposed to be drilled or proposed to be recompleted from a single well pad or connected to a central delivery point.

Well Name	API	Spud Date	TD ReachedDate	Completion Commencement Date	Initial Flow Back Date	First ProductionDate
Koala 9 Fed Com 111H	30-015-	09/01/2022 (Estimated)	10/01/2022 (Estimated)	Not Yet Scheduled	Not Yet Scheduled	Not Yet Scheduled
Koala 9 Fed Com 112H	30-015-	09/01/2022 (Estimated)	10/01/2022 (Estimated)	Not Yet Scheduled	Not Yet Scheduled	Not Yet Scheduled
Koala 9 Fed Com 113H	30-015-	09/01/2022 (Estimated)	10/01/2022 (Estimated)	Not Yet Scheduled	Not Yet Scheduled	Not Yet Scheduled
Koala 9 Fed Com 114H	30-015-	09/01/2022 (Estimated)	10/01/2022 (Estimated)	Not Yet Scheduled	Not Yet Scheduled	Not Yet Scheduled
Koala 9 Fed Com 121H	30-015-	09/01/2022 (Estimated)	10/01/2022 (Estimated)	Not Yet Scheduled	Not Yet Scheduled	Not Yet Scheduled
Koala 9 Fed Com 122H	30-015-	09/01/2022 (Estimated)	10/01/2022 (Estimated)	Not Yet Scheduled	Not Yet Scheduled	Not Yet Scheduled
Koala 9 Fed Com 123H	30-015-	09/01/2022 (Estimated)	10/01/2022 (Estimated)	Not Yet Scheduled	Not Yet Scheduled	Not Yet Scheduled
Koala 9 Fed Com 124H	30-015-	09/01/2022 (Estimated)	10/01/2022 (Estimated)	Not Yet Scheduled	Not Yet Scheduled	Not Yet Scheduled
Koala 9 Fed Com 131H	30-015-	09/01/2022 (Estimated)	10/01/2022 (Estimated)	Not Yet Scheduled	Not Yet Scheduled	Not Yet Scheduled
Koala 9 Fed Com 132H	30-015-	09/01/2022 (Estimated)	10/01/2022 (Estimated)	Not Yet Scheduled	Not Yet Scheduled	Not Yet Scheduled
Koala 9 Fed Com 133H	30-015-	09/01/2022 (Estimated)	10/01/2022 (Estimated)	Not Yet Scheduled	Not Yet Scheduled	Not Yet Scheduled
Koala 9 Fed Com 134H	30-015-	09/01/2022 (Estimated)	10/01/2022 (Estimated)	Not Yet Scheduled	Not Yet Scheduled	Not Yet Scheduled
Koala 9 Fed Com 201H	30-015-	09/01/2022 (Estimated)	10/01/2022 (Estimated)	Not Yet Scheduled	Not Yet Scheduled	Not Yet Scheduled
Koala 9 Fed Com 202H	30-015-	09/01/2022 (Estimated)	10/01/2022 (Estimated)	Not Yet Scheduled	Not Yet Scheduled	Not Yet Scheduled
Koala 9 Fed Com 203H	30-015-	09/01/2022 (Estimated)	10/01/2022 (Estimated)	Not Yet Scheduled	Not Yet Scheduled	Not Yet Scheduled
Koala 9 Fed Com 204H	30-015-	09/01/2022 (Estimated)	10/01/2022 (Estimated)	Not Yet Scheduled	Not Yet Scheduled	Not Yet Scheduled
Dundee 4 Fed Com 111H	30-015-	05/01/2022 (Estimated)	06/01/2022 (Estimated)	Not Yet Scheduled	Not Yet Scheduled	Not Yet Scheduled
Dundee 4 Fed Com 112H	30-015-	05/01/2022 (Estimated)	06/01/2022 (Estimated)	Not Yet Scheduled	Not Yet Scheduled	Not Yet Scheduled
Dundee 4 Fed Com 113H	30-015-	05/01/2022 (Estimated)	06/01/2022 (Estimated)	Not Yet Scheduled	Not Yet Scheduled	Not Yet Scheduled
Dundee 4 Fed Com 114H	30-015-	05/01/2022 (Estimated)	06/01/2022 (Estimated)	Not Yet Scheduled	Not Yet Scheduled	Not Yet Scheduled
Dundee 4 Fed Com 121H	30-015-	05/01/2022 (Estimated)	06/01/2022 (Estimated)	Not Yet Scheduled	Not Yet Scheduled	Not Yet Scheduled
Dundee 4 Fed Com 122H	30-015-	05/01/2022 (Estimated)	06/01/2022 (Estimated)	Not Yet Scheduled	Not Yet Scheduled	Not Yet Scheduled
Dundee 4 Fed Com 123H	30-015-	05/01/2022 (Estimated)	06/01/2022 (Estimated)	Not Yet Scheduled	Not Yet Scheduled	Not Yet Scheduled
Dundee 4 Fed Com 124H	30-015-	05/01/2022 (Estimated)	06/01/2022 (Estimated)	Not Yet Scheduled	Not Yet Scheduled	Not Yet Scheduled
Dundee 4 Fed Com 131H	30-015-	05/01/2022 (Estimated)	06/01/2022 (Estimated)	Not Yet Scheduled	Not Yet Scheduled	Not Yet Scheduled
Dundee 4 Fed Com 132H	30-015-	05/01/2022 (Estimated)	06/01/2022 (Estimated)	Not Yet Scheduled	Not Yet Scheduled	Not Yet Scheduled
Dundee 4 Fed Com 133H	30-015-	05/01/2022 (Estimated)	06/01/2022 (Estimated)	Not Yet Scheduled	Not Yet Scheduled	Not Yet Scheduled
Dundee 4 Fed Com 134H	30-015-	05/01/2022 (Estimated)	06/01/2022 (Estimated)	Not Yet Scheduled	Not Yet Scheduled	Not Yet Scheduled
Dundee 4 Fed Com 201H	30-015-	05/01/2022 (Estimated)	06/01/2022 (Estimated)	Not Yet Scheduled	Not Yet Scheduled	Not Yet Scheduled

**VI. Separation Equipment:** x Attach a complete description of how Operator will size separation equipment to optimize gas capture.

**VII. Operational Practices:** x Attach a complete description of the actions Operator will take to comply with the requirements of Subsection A through F of 19.15.27.8 NMAC.

**VIII. Best Management Practices:** x Attach a complete description of Operator's best management practices to minimize venting during active and planned maintenance.

**Section 2 – Enhanced Plan**  
**EFFECTIVE APRIL 1, 2022**

Beginning April 1, 2022, an operator that is not in compliance with its statewide natural gas capture requirement for the applicable reporting area must complete this section.

X Operator certifies that it is not required to complete this section because Operator is in compliance with its statewide natural gas capture requirement for the applicable reporting area.

**IX. Anticipated Natural Gas Production:**

Well	API	Anticipated Average Natural Gas Rate MCF/D	Anticipated Volume of Natural Gas for the First Year MCF

**X. Natural Gas Gathering System (NGGS):**

Operator	System	ULSTR of Tie-in	Anticipated Gathering Start Date	Available Maximum Daily Capacity of System Segment Tie-in

**XI. Map.** ☐ Attach an accurate and legible map depicting the location of the well(s), the anticipated pipeline route(s) connecting the production operations to the existing or planned interconnect of the natural gas gathering system(s), and the maximum daily capacity of the segment or portion of the natural gas gathering system(s) to which the well(s) will be connected.

**XII. Line Capacity.** The natural gas gathering system ☐ will ☐ will not have capacity to gather 100% of the anticipated natural gas production volume from the well prior to the date of first production.

**XIII. Line Pressure.** Operator ☐ does ☐ does not anticipate that its existing well(s) connected to the same segment, or portion, of the natural gas gathering system(s) described above will continue to meet anticipated increases in line pressure caused by the new well(s).

☐ Attach Operator's plan to manage production in response to the increased line pressure.

**XIV. Confidentiality:** ☐ Operator asserts confidentiality pursuant to Section 71-2-8 NMSA 1978 for the information provided in Section 2 as provided in Paragraph (2) of Subsection D of 19.15.27.9 NMAC, and attaches a full description of the specific information for which confidentiality is asserted and the basis for such assertion.

### **Section 3 - Certifications**

**Effective May 25, 2021**

Operator certifies that, after reasonable inquiry and based on the available information at the time of submittal:

X Operator will be able to connect the well(s) to a natural gas gathering system in the general area with sufficient capacity to transport one hundred percent of the anticipated volume of natural gas produced from the well(s) commencing on the date of first production, taking into account the current and anticipated volumes of produced natural gas from other wells connected to the pipeline gathering system; or

☐ Operator will not be able to connect to a natural gas gathering system in the general area with sufficient capacity to transport one hundred percent of the anticipated volume of natural gas produced from the well(s) commencing on the date of first production, taking into account the current and anticipated volumes of produced natural gas from other wells connected to the pipeline gathering system.

***If Operator checks this box, Operator will select one of the following:***

**Well Shut-In.** ☐ Operator will shut-in and not produce the well until it submits the certification required by Paragraph (4) of Subsection D of 19.15.27.9 NMAC; or

**Venting and Flaring Plan.** ☐ Operator has attached a venting and flaring plan that evaluates and selects one or more of the potential alternative beneficial uses for the natural gas until a natural gas gathering system is available, including:

- (a) power generation on lease;
- (b) power generation for grid;
- (c) compression on lease;
- (d) liquids removal on lease;
- (e) reinjection for underground storage;
- (f) reinjection for temporary storage;
- (g) reinjection for enhanced oil recovery;
- (h) fuel cell production; and
- (i) other alternative beneficial uses approved by the division.

### **Section 4 - Notices**

1. If, at any time after Operator submits this Natural Gas Management Plan and before the well is spud:

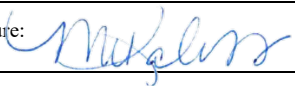
(a) Operator becomes aware that the natural gas gathering system it planned to connect the well(s) to has become unavailable or will not have capacity to transport one hundred percent of the production from the well(s), no later than 20 days after becoming aware of such information, Operator shall submit for OCD's approval a new or revised venting and flaring plan containing the information specified in Paragraph (5) of Subsection D of 19.15.27.9 NMAC; or

(b) Operator becomes aware that it has, cumulatively for the year, become out of compliance with its baseline natural gas capture rate or natural gas capture requirement, no later than 20 days after becoming aware of such information, Operator shall submit for OCD's approval a new or revised Natural Gas Management Plan for each well it plans to spud during the next 90 days containing the information specified in Paragraph (2) of Subsection D of 19.15.27.9 NMAC, and shall file an update for each Natural Gas Management Plan until Operator is back in compliance with its baseline natural gas capture rate or natural gas capture requirement.

2. OCD may deny or conditionally approve an APD if Operator does not make a certification, fails to submit an adequate venting and flaring plan which includes alternative beneficial uses for the anticipated volume of natural gas produced, or if OCD determines that Operator will not have adequate natural gas takeaway capacity at the time a well will be spud.

Page

I certify that, after reasonable inquiry, the statements in and attached to this Natural Gas Management Plan are true and correct to the best of my knowledge and acknowledge that a false statement may be subject to civil and criminal penalties under the Oil and Gas Act.

Signature: 
Printed Name: Mikah Thomas
Title: Sr. Regulatory Analyst
E-mail Address: <a href="mailto:mthomas@colgateenergy.com">mthomas@colgateenergy.com</a>
Date: 06.02.2022
Phone: 432-695-4272
<b>OIL CONSERVATION DIVISION</b> <b>(Only applicable when submitted as a standalone form)</b>
Approved By:
Title:
Approval Date:
Conditions of Approval:

## **VI. Separation Equipment:**

Colgate Operating, LLC production tank batteries include separation equipment designed to efficiently separate gas from liquid phases to optimize gas capture based on projected and estimated volumes from the targeted pool in conjunction with the total number of wells planned to or existing within the facility. Separation equipment is upgraded prior to well being drilled or completed, if determined to be undersized or needed. The separation equipment is designed and built according to the relevant industry specifications (API Specification 12J and ASME Sec VIII Div I). Other recognized industry publications such as the Gas Processors Suppliers Association (GPSA) are referenced when designing separation equipment to optimize gas capture.

## **VII. Operational Practices:**

### **1. Subsection B.**

- During drilling, flare stacks will be located a minimum of 150 feet from the nearest surface hole location. All gas is captured or combusted. If an emergency or malfunction occurs, gas will be flared or vented for public health, safety and the environment and be properly reported to the NMOCD pursuant to 19.15.27.8.G.
- Measure or estimate the volume of natural gas that is vented, flared or beneficially used during drilling, completion and production operations, regardless of the reason or authorization for such venting or flaring.
- At any point in the well life (drilling, completion, production, inactive) an audio, visual and olfactory (AVO) inspection will be performed weekly (at minimum) to confirm that all production equipment is operating properly and there are no leaks or releases except as allowed in Subsection D of 19.15.27.8 NMAC.

### **2. Subsection C.**

- During completion operations, operator does not produce oil or gas but maintains adequate well control through completion operations.

For emergencies, equipment malfunction, or if the operator decides to produce oil and gas during well completion:

- Flowlines will be routed for flowback fluids into a completion or storage tank and, if feasible under well conditions, flare rather than vent and commence operation of a separator as soon as it is technically feasible for a separator to function.



- Measure or estimate the volume of natural gas that is vented, flared or beneficially used during drilling, completion and production operations, regardless of the reason or authorization for such venting or flaring.
- At any point in the well life (drilling, completion, production, inactive) an audio, visual and olfactory (AVO) inspection will be performed weekly (at minimum) to confirm that all production equipment is operating properly and there are no leaks or releases except as allowed in Subsection D of 19.15.27.8 NMAC.

### 3. Subsection D.

- At any point in the well life (drilling, completion, production, inactive) an audio, visual and olfactory (AVO) inspection will be performed weekly (at minimum) to confirm that all production equipment is operating properly and there are no leaks or releases except as allowed in Subsection D of 19.15.27.8 NMAC.
- Monitor manual liquid unloading for wells on-site or in close proximity (<30 minutes' drive time), take reasonable actions to achieve a stabilized rate and pressure at the earliest practical time, and take reasonable actions to minimize venting to the maximum extent practicable.
- Measure or estimate the volume of natural gas that is vented, flared or beneficially used during drilling, completion and production operations, regardless of the reason or authorization for such venting or flaring.

### 4. Subsection E.

- All tanks and separation equipment are designed for maximum throughput and pressure to minimize waste.
- Flare stack has been designed for proper size and combustion efficiency. Flare currently has a continuous pilot and is located more than 100 feet from any known well and storage tanks.
- At any point in the well life (drilling, completion, production, inactive) an audio, visual and olfactory (AVO) inspection will be performed weekly (at minimum) to confirm that all production equipment is operating properly and there are no leaks or releases except as allowed in Subsection D of 19.15.27.8 NMAC.

### 5. Subsection F.

- Measurement equipment is installed to measure the volume of natural gas flared from process piping or a flowline piped from the equipment associated with a well and facility associated with the approved application for permit

to drill that has an average daily production greater than 60 mcf of natural gas.

- Measurement equipment installed is not designed or equipped with a manifold to allow diversion of natural gas around the metering equipment, except for the sole purpose of inspecting and servicing the measurement equipment, as noted in NMAC 19.15.27.8 Subsection G.

### **VIII. Best Management Practices:**

1. During completion operations, operator does not produce oil or gas but maintains adequate well control through completion operations.
2. Operator does not flow well (well shut in) during initial production until all flowlines, tank batteries, and oil/gas takeaway are installed, tested, and determined operational.
3. Operator equips storage tanks with an automatic gauging system to reduce venting of natural gas.
4. Operator reduces the number of blowdowns by looking for opportunities to coordinate repair and maintenance activities.
5. Operator combusts natural gas that would otherwise be vented or flared, when feasible.
6. Operator has a flare stack designed in accordance with need and to handle sufficient volume to ensure proper combustion efficiency. Flare stacks are equipped with continuous pilots and securely anchored at least 100 feet (at minimum) from storage tanks and wells.
7. Operator minimizes venting (when feasible) through pump downs of vessels and reducing time required to purge equipment before returning equipment to service.
8. Operator will shut in wells (when feasible) in the event of a takeaway disruption, emergency situations, or other operations where venting or flaring may occur due to equipment failures.
9. Operator utilizes compressed air to operate pneumatic equipment instead of gas.
10. Operator utilizes vapor recovery towers and VRU's to increase gas capture efficiency.

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

Dundee 4 Fed Com 132H

988' FNL &amp; 260' FEL (SHL)

Sec 5-T20S-R28E

Eddy County, New Mexico

The estimated tops of geologic formations are as follows:

Formation:	TVD	Subsea
Rustler	183	3165
Salado	291	3057
Tansill	778	2570
Yates	848	2500
Seven Rivers	1280	2068
Queen	1793	1555
Grayburg	1938	1410
San Andres	2351	997
Delaware Mountain Group	3028	320
Bone Spring Lime	4318	-970
1st Bone Spring Sand*	6072	-2724
2nd Bone Spring Sand*	7125	-3777
3rd Bone Spring Sand*	8268	-4920

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 string at 250' and cementing to surface.
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:

Name	Hole Size	Casing Size	Weight & Grade	Thread Collar	Top Csg	Setting Depth	Collapse	Burst	Tension
Surface	17 1/2	13 3/8	54.5# J-55 (new)	BTC	0	250'	1.125	1.2	1.6
Intermediate	12 1/4	9 5/8	36# J-55 (new)	BTC	0	2,950'	1.125	1.2	1.6
Production	7 7/8	5 1/2	17# HPP-110 (new)	CDC HTQ	0	19,243'	1.125	1.2	1.6

SF Values will meet or exceed

Proposed cementing program is as follows:

Name	Slurry	Sacks	Yield	Weight	Excess	Top Cement	Blend
Surface	Tail	239	1.34	14.8	100%	0'	Class C w/ accelerator
Intermediate	Lead	520	2.08	12.7	50%	0'	Class C w/ salt, extender and LCM additives
	Tail	172	1.34	14.8	25%	2,360'	Class C w/ accelerator
Production	Lead	693	2.41	11.5	10%	0'	Class H w/ POZ, extender, fluid loss, dispersant & retarder
	Tail	1274	1.73	12.5	10%	7,680'	Class H w/ POZ, extender, fluid loss, dispersant & retarder

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:	2 centralizers on 1st joint, 1 centralizer on 2nd joint, 1 centralizer every 4th joint to surface
Production:	2 centralizers on bottom joint, 1 centralizer on 2nd joint, 1 centralizer every 3rd joint to 500'

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

BOPE 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 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 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. VBRs (variable-bore rams) will be run in upper ram-body of BOP stack to provide redundancy to annular preventer while RIH w/ production casing;

**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.

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

After surface 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 5,000 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 surface 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 faction 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 eight hours and has reached a compressive strength of 500 psi across the zone of interest, the 13-3/8" 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 blind rams of 13-5/8" 10M BOPE prior to PU tools to drill out. After cement has been allowed to sit undisturbed for eight hours and has reached a compressive strength of 500 psi across the zone of interest, the 9-5/8" intermediate 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. 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 8,500 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	17-1/2"	8.6 - 9.0	28 - 34	NC	FW Spud Mud
Intermediate	12-1/4"	10.0 - 10.2	30 - 32	NC	Brine Water
Production	8-3/4"	9.0 - 10.0	32 - 35	NC	Oil Based 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 at least 500 feet before first anticipated hydrocarbon zone.

**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 temperature logs planned at this time. CBL will be run to confirm TOC on production casing after rig is removed from location. A formation integrity test (FIT) will be performed on 9-5/8" casing string after BOPE is installed to at least 1 ppg 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

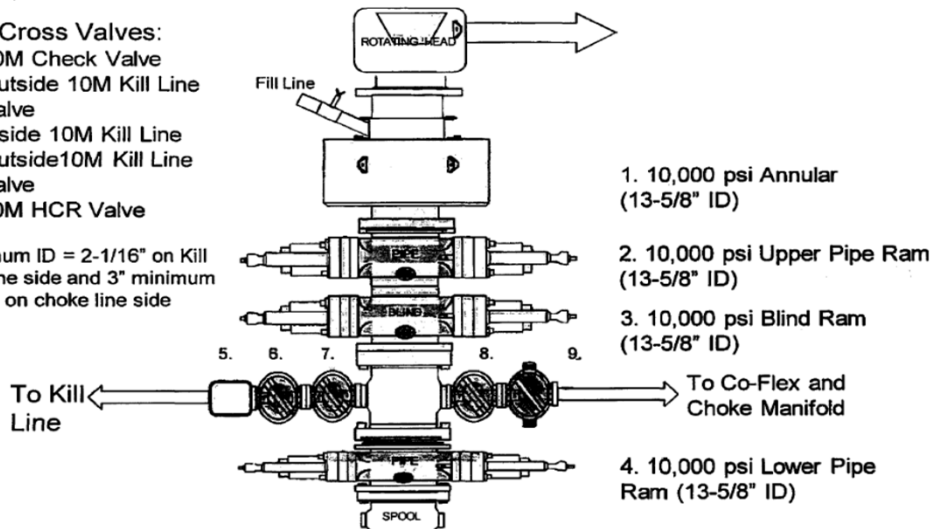
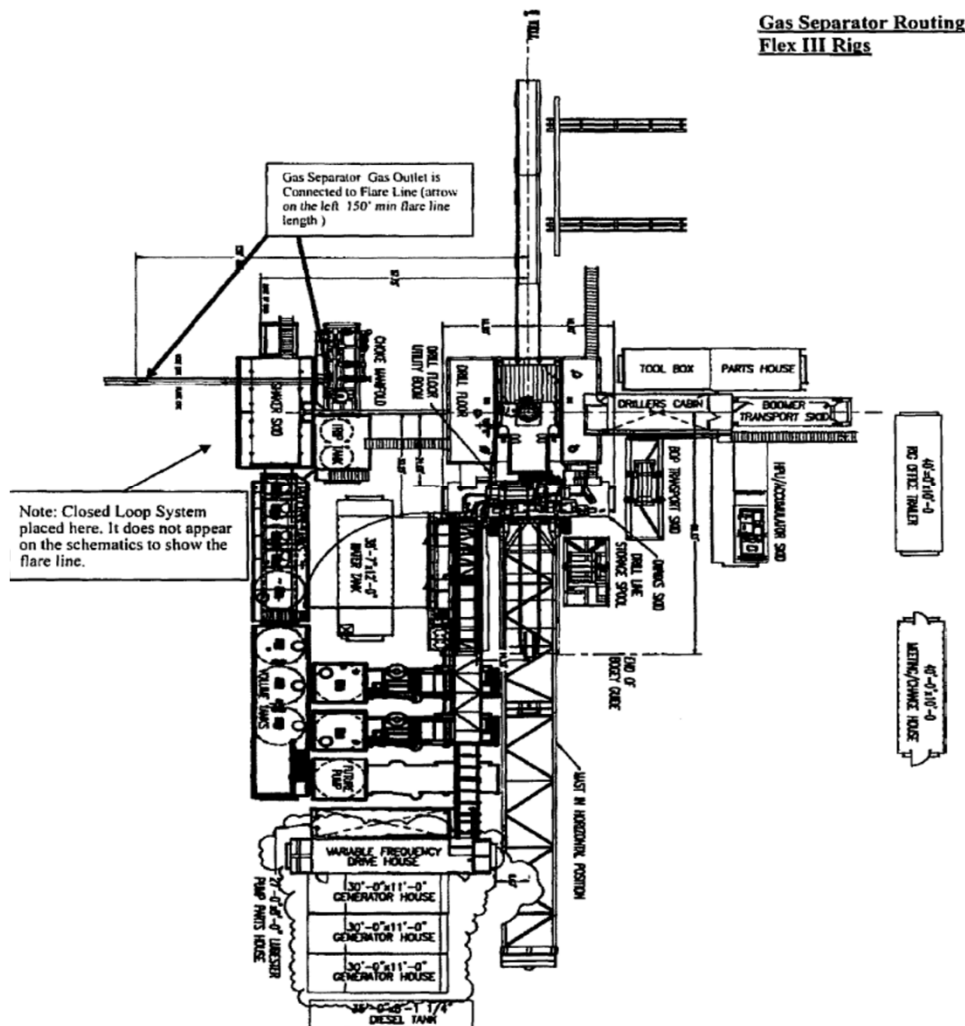
**Planned commencement of operations is as follows:**

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.

**10,000 psi BOP Stack:****Mud Cross Valves:**

5. 10M Check Valve
6. Outside 10M Kill Line Valve
7. Inside 10M Kill Line Valve
8. Outside 10M Kill Line Valve
9. 10M HCR Valve

\*Minimum ID = 2-1/16" on Kill Line side and 3" minimum ID on choke line side

**Closed Loop System Layout:**

7-1/16 10M

25.0"

1-13/16 10M

1-13/16 10M

13-5/8 5M

5-1/2 DBL FS SEALS

22.5"

CASING HANGER, C-22-TV, MBS-A/W,  
13-5/8 NOM X 5-1/2 CSG, EXTRA CAPACITY

13-5/8 5M

2-1/16 5M

CASING HANGER, MBS-W-EWS-22 LOWER, FLT.D,  
13-5/8 NOM, 9-5/8 BC BOX BTM X  
10.000 4TPI SUB ACME-2G-LH PIN TOP,  
W/ PACKOFF SUPPORT

31.8"

2 LP 5M

13-3/8 CASING

9-5/8 CASING

5-1/2 CASING

26 OD BASEPLATE  
W/(2) GROUT PORTS 3" X 3"

The diagram illustrates a wellhead and mud gas separator system. Key components and labels include:

- Wellhead:** Located at the top left, connected to a **BOP** (Blowout Preventer).
- Flow Lines:**
  - 4" ID-10M COFLEX HOSE:** Connects the wellhead to the main steel line.
  - STEEL LINE:** The main horizontal flow line.
  - 4" ID-10M COFLEX HOSE:** Connects the steel line to the mud gas separator.
  - 4" ID-250PSI HOSE:** Connects the mud gas separator to the trip tank.
  - 4"-5M XXH STEEL LINE:** Connects the trip tank back to the wellhead area.
- Valves and Controls:**
  - ADJUSTABLE 3.06"-10M:** Multiple adjustable valves along the steel line and flow lines.
  - Pressure Gauge:** Located on the steel line.
  - REMOTELY ADJUSTABLE 3.06"-10M:** A remotely adjustable valve on the steel line.
  - BUTTERFLY VALVE:** Located on the 4" ID-250PSI hose.
- Equipment:**
  - MUD TANK:** Receives mud from the separator.
  - SHAKERS:** Part of the mud handling system.
  - MUD GAS SEPARATOR:** Separates mud from gas.
  - TRIP TANK:** Collects gas from the separator.
- Other Labels:**
  - 4.06"-10M:** Various pipe sizes throughout the system.
  - 3.06"-10M:** Various pipe sizes throughout the system.
  - 3.06"-5M:** Pipe size for the line from the separator to the trip tank.
  - TO FLARE:** Indicated for the gas output from the trip tank.
  - BLEED LINE:** A line for bleeding pressure from the system.





## **Colgate Energy**

**(Permit) Eddy County, NM (83-NME)**

**(Permit) Dundee 4 Fed Com**

**(A03) Dundee 4 Fed Com 132H - Slot A03-D132H**

**Permit**

**Plan: APD-Rev00**

## **Standard Planning Report**

**22 February, 2022**





## Planning Report

<b>Database:</b>	EDM 5000.14 Single User Db	<b>Local Co-ordinate Reference:</b>	Well (A03) Dundee 4 Fed Com 132H - Slot A03-D132H
<b>Company:</b>	Colgate Energy	<b>TVD Reference:</b>	3318+30 @ 3348.00usft
<b>Project:</b>	(Permit) Eddy County, NM (83-NME)	<b>MD Reference:</b>	3318+30 @ 3348.00usft
<b>Site:</b>	(Permit) Dundee 4 Fed Com	<b>North Reference:</b>	Grid
<b>Well:</b>	(A03) Dundee 4 Fed Com 132H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Permit		
<b>Design:</b>	APD-Rev00		

<b>Project</b>	(Permit) Eddy County, NM (83-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		

<b>Site</b>	(Permit) Dundee 4 Fed Com		
<b>Site Position:</b>		<b>Northing:</b>	584,652.32 usft
<b>From:</b>	Map	<b>Easting:</b>	585,058.85 usft
<b>Position Uncertainty:</b>	0.00 usft	<b>Slot Radius:</b>	13-3/16 "
		<b>Latitude:</b>	32.60718077
		<b>Longitude:</b>	-104.19134771

<b>Well</b>	(A03) Dundee 4 Fed Com 132H - Slot A03-D132H			
<b>Well Position</b>	<b>+N/-S</b>	0.00 usft	<b>Northing:</b>	584,652.62 usft
	<b>+E/-W</b>	0.00 usft	<b>Easting:</b>	584,938.85 usft
<b>Position Uncertainty</b>		0.00 usft	<b>Wellhead Elevation:</b>	usft
<b>Grid Convergence:</b>		0.08 °	<b>Ground Level:</b>	3,318.00 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	2/16/2022	6.78	60.13	47,586.39292442

<b>Design</b>	APD-Rev00			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PROTOTYPE	<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	89.55

<b>Plan Survey Tool Program</b>	<b>Date</b>	2/22/2022		
<b>Depth From (usft)</b>	<b>Depth To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Remarks</b>
1	0.00	19,243.35 APD-Rev00 (Permit)	MWD+IFR1+SAG+FDIR (SQC)	
			OWSG MWD + IFR1 + Sag + F	



## Planning Report

<b>Database:</b>	EDM 5000.14 Single User Db	<b>Local Co-ordinate Reference:</b>	Well (A03) Dundee 4 Fed Com 132H - Slot A03-D132H
<b>Company:</b>	Colgate Energy	<b>TVD Reference:</b>	3318+30 @ 3348.00usft
<b>Project:</b>	(Permit) Eddy County, NM (83-NME)	<b>MD Reference:</b>	3318+30 @ 3348.00usft
<b>Site:</b>	(Permit) Dundee 4 Fed Com	<b>North Reference:</b>	Grid
<b>Well:</b>	(A03) Dundee 4 Fed Com 132H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Permit		
<b>Design:</b>	APD-Rev00		

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	
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,825.38	12.38	180.00	1,818.97	-88.83	0.00	1.50	1.50	0.00	180.00	
7,111.37	12.38	180.00	6,982.03	-1,222.17	0.00	0.00	0.00	0.00	0.00	
7,936.74	0.00	0.00	7,801.00	-1,311.00	0.00	1.50	-1.50	0.00	180.00	
8,037.67	0.00	0.00	7,901.93	-1,311.00	0.00	0.00	0.00	0.00	0.00	
8,637.67	60.00	91.20	8,398.13	-1,317.00	286.42	10.00	10.00	0.00	91.20	
8,938.08	90.00	89.55	8,475.00	-1,318.59	573.27	10.00	9.99	-0.55	-3.29	
19,243.35	90.00	89.55	8,475.00	-1,237.96	10,878.22	0.00	0.00	0.00	0.00	03-PBHL(D-132H)



## Planning Report

<b>Database:</b>	EDM 5000.14 Single User Db	<b>Local Co-ordinate Reference:</b>	Well (A03) Dundee 4 Fed Com 132H - Slot A03-D132H
<b>Company:</b>	Colgate Energy	<b>TVD Reference:</b>	3318+30 @ 3348.00usft
<b>Project:</b>	(Permit) Eddy County, NM (83-NME)	<b>MD Reference:</b>	3318+30 @ 3348.00usft
<b>Site:</b>	(Permit) Dundee 4 Fed Com	<b>North Reference:</b>	Grid
<b>Well:</b>	(A03) Dundee 4 Fed Com 132H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Permit		
<b>Design:</b>	APD-Rev00		

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	
183.00	0.00	0.00	183.00	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	
291.00	0.00	0.00	291.00	0.00	0.00	0.00	0.00	0.00	0.00	
<b>Salado</b>										
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	
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	
778.00	0.00	0.00	778.00	0.00	0.00	0.00	0.00	0.00	0.00	
<b>Tansil</b>										
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00	
848.00	0.00	0.00	848.00	0.00	0.00	0.00	0.00	0.00	0.00	
<b>Yates</b>										
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	1.50	180.00	1,099.99	-1.31	0.00	-0.01	1.50	1.50	0.00	
1,200.00	3.00	180.00	1,199.91	-5.23	0.00	-0.04	1.50	1.50	0.00	
1,280.25	4.20	180.00	1,280.00	-10.28	0.00	-0.08	1.50	1.50	0.00	
<b>Seven Rivers</b>										
1,300.00	4.50	180.00	1,299.69	-11.77	0.00	-0.09	1.50	1.50	0.00	
1,400.00	6.00	180.00	1,399.27	-20.92	0.00	-0.16	1.50	1.50	0.00	
1,500.00	7.50	180.00	1,498.57	-32.68	0.00	-0.26	1.50	1.50	0.00	
1,600.00	9.00	180.00	1,597.54	-47.03	0.00	-0.37	1.50	1.50	0.00	
1,700.00	10.50	180.00	1,696.09	-63.96	0.00	-0.50	1.50	1.50	0.00	
1,798.81	11.98	180.00	1,793.00	-83.22	0.00	-0.65	1.50	1.50	0.00	
<b>Queen</b>										
1,800.00	12.00	180.00	1,794.16	-83.47	0.00	-0.66	1.50	1.50	0.00	
1,825.38	12.38	180.00	1,818.97	-88.83	0.00	-0.70	1.50	1.50	0.00	
1,900.00	12.38	180.00	1,891.86	-104.83	0.00	-0.82	0.00	0.00	0.00	
1,947.24	12.38	180.00	1,938.00	-114.96	0.00	-0.90	0.00	0.00	0.00	
<b>Grayburg</b>										
2,000.00	12.38	180.00	1,989.53	-126.27	0.00	-0.99	0.00	0.00	0.00	
2,100.00	12.38	180.00	2,087.21	-147.71	0.00	-1.16	0.00	0.00	0.00	
2,200.00	12.38	180.00	2,184.88	-169.15	0.00	-1.33	0.00	0.00	0.00	
2,300.00	12.38	180.00	2,282.55	-190.59	0.00	-1.50	0.00	0.00	0.00	
2,370.08	12.38	180.00	2,351.00	-205.61	0.00	-1.61	0.00	0.00	0.00	
<b>San Andres</b>										
2,400.00	12.38	180.00	2,380.23	-212.03	0.00	-1.67	0.00	0.00	0.00	
2,500.00	12.38	180.00	2,477.90	-233.47	0.00	-1.83	0.00	0.00	0.00	
2,600.00	12.38	180.00	2,575.58	-254.91	0.00	-2.00	0.00	0.00	0.00	
2,700.00	12.38	180.00	2,673.25	-276.35	0.00	-2.17	0.00	0.00	0.00	
2,800.00	12.38	180.00	2,770.93	-297.79	0.00	-2.34	0.00	0.00	0.00	
2,900.00	12.38	180.00	2,868.60	-319.23	0.00	-2.51	0.00	0.00	0.00	
3,000.00	12.38	180.00	2,966.28	-340.67	0.00	-2.68	0.00	0.00	0.00	
3,063.19	12.38	180.00	3,028.00	-354.22	0.00	-2.78	0.00	0.00	0.00	
<b>Delaware Sands</b>										
3,100.00	12.38	180.00	3,063.95	-362.11	0.00	-2.84	0.00	0.00	0.00	
3,200.00	12.38	180.00	3,161.62	-383.55	0.00	-3.01	0.00	0.00	0.00	



## Planning Report

<b>Database:</b>	EDM 5000.14 Single User Db	<b>Local Co-ordinate Reference:</b>	Well (A03) Dundee 4 Fed Com 132H - Slot A03-D132H
<b>Company:</b>	Colgate Energy	<b>TVD Reference:</b>	3318+30 @ 3348.00usft
<b>Project:</b>	(Permit) Eddy County, NM (83-NME)	<b>MD Reference:</b>	3318+30 @ 3348.00usft
<b>Site:</b>	(Permit) Dundee 4 Fed Com	<b>North Reference:</b>	Grid
<b>Well:</b>	(A03) Dundee 4 Fed Com 132H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Permit		
<b>Design:</b>	APD-Rev00		

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)	
3,300.00	12.38	180.00	3,259.30	-405.00	0.00	-3.18	0.00	0.00	0.00	
3,400.00	12.38	180.00	3,356.97	-426.44	0.00	-3.35	0.00	0.00	0.00	
3,500.00	12.38	180.00	3,454.65	-447.88	0.00	-3.52	0.00	0.00	0.00	
3,600.00	12.38	180.00	3,552.32	-469.32	0.00	-3.69	0.00	0.00	0.00	
3,700.00	12.38	180.00	3,650.00	-490.76	0.00	-3.85	0.00	0.00	0.00	
3,800.00	12.38	180.00	3,747.67	-512.20	0.00	-4.02	0.00	0.00	0.00	
3,900.00	12.38	180.00	3,845.35	-533.64	0.00	-4.19	0.00	0.00	0.00	
4,000.00	12.38	180.00	3,943.02	-555.08	0.00	-4.36	0.00	0.00	0.00	
4,100.00	12.38	180.00	4,040.70	-576.52	0.00	-4.53	0.00	0.00	0.00	
4,200.00	12.38	180.00	4,138.37	-597.96	0.00	-4.70	0.00	0.00	0.00	
4,300.00	12.38	180.00	4,236.04	-619.40	0.00	-4.86	0.00	0.00	0.00	
4,383.91	12.38	180.00	4,318.00	-637.39	0.00	-5.01	0.00	0.00	0.00	
<b>Bone Spring</b>										
4,400.00	12.38	180.00	4,333.72	-640.84	0.00	-5.03	0.00	0.00	0.00	
4,500.00	12.38	180.00	4,431.39	-662.28	0.00	-5.20	0.00	0.00	0.00	
4,600.00	12.38	180.00	4,529.07	-683.72	0.00	-5.37	0.00	0.00	0.00	
4,700.00	12.38	180.00	4,626.74	-705.16	0.00	-5.54	0.00	0.00	0.00	
4,800.00	12.38	180.00	4,724.42	-726.60	0.00	-5.71	0.00	0.00	0.00	
4,900.00	12.38	180.00	4,822.09	-748.04	0.00	-5.88	0.00	0.00	0.00	
5,000.00	12.38	180.00	4,919.77	-769.48	0.00	-6.04	0.00	0.00	0.00	
5,100.00	12.38	180.00	5,017.44	-790.92	0.00	-6.21	0.00	0.00	0.00	
5,200.00	12.38	180.00	5,115.11	-812.36	0.00	-6.38	0.00	0.00	0.00	
5,300.00	12.38	180.00	5,212.79	-833.81	0.00	-6.55	0.00	0.00	0.00	
5,400.00	12.38	180.00	5,310.46	-855.25	0.00	-6.72	0.00	0.00	0.00	
5,500.00	12.38	180.00	5,408.14	-876.69	0.00	-6.89	0.00	0.00	0.00	
5,600.00	12.38	180.00	5,505.81	-898.13	0.00	-7.05	0.00	0.00	0.00	
5,700.00	12.38	180.00	5,603.49	-919.57	0.00	-7.22	0.00	0.00	0.00	
5,800.00	12.38	180.00	5,701.16	-941.01	0.00	-7.39	0.00	0.00	0.00	
5,900.00	12.38	180.00	5,798.84	-962.45	0.00	-7.56	0.00	0.00	0.00	
6,000.00	12.38	180.00	5,896.51	-983.89	0.00	-7.73	0.00	0.00	0.00	
6,100.00	12.38	180.00	5,994.18	-1,005.33	0.00	-7.90	0.00	0.00	0.00	
6,179.67	12.38	180.00	6,072.00	-1,022.41	0.00	-8.03	0.00	0.00	0.00	
<b>FBSG</b>										
6,200.00	12.38	180.00	6,091.86	-1,026.77	0.00	-8.06	0.00	0.00	0.00	
6,300.00	12.38	180.00	6,189.53	-1,048.21	0.00	-8.23	0.00	0.00	0.00	
6,400.00	12.38	180.00	6,287.21	-1,069.65	0.00	-8.40	0.00	0.00	0.00	
6,500.00	12.38	180.00	6,384.88	-1,091.09	0.00	-8.57	0.00	0.00	0.00	
6,600.00	12.38	180.00	6,482.56	-1,112.53	0.00	-8.74	0.00	0.00	0.00	
6,700.00	12.38	180.00	6,580.23	-1,133.97	0.00	-8.91	0.00	0.00	0.00	
6,800.00	12.38	180.00	6,677.91	-1,155.41	0.00	-9.07	0.00	0.00	0.00	
6,900.00	12.38	180.00	6,775.58	-1,176.85	0.00	-9.24	0.00	0.00	0.00	
7,000.00	12.38	180.00	6,873.26	-1,198.29	0.00	-9.41	0.00	0.00	0.00	
7,100.00	12.38	180.00	6,970.93	-1,219.73	0.00	-9.58	0.00	0.00	0.00	
7,111.37	12.38	180.00	6,982.03	-1,222.17	0.00	-9.60	0.00	0.00	0.00	
7,200.00	11.05	180.00	7,068.82	-1,240.17	0.00	-9.74	1.50	-1.50	0.00	
7,257.16	10.19	180.00	7,125.00	-1,250.71	0.00	-9.82	1.50	-1.50	0.00	
<b>DBSG</b>										
7,300.00	9.55	180.00	7,167.20	-1,258.05	0.00	-9.88	1.50	-1.50	0.00	
7,400.00	8.05	180.00	7,266.02	-1,273.35	0.00	-10.00	1.50	-1.50	0.00	
7,500.00	6.55	180.00	7,365.21	-1,286.06	0.00	-10.10	1.50	-1.50	0.00	
7,600.00	5.05	180.00	7,464.69	-1,296.17	0.00	-10.18	1.50	-1.50	0.00	
7,700.00	3.55	180.00	7,564.41	-1,303.67	0.00	-10.24	1.50	-1.50	0.00	



## Planning Report

<b>Database:</b>	EDM 5000.14 Single User Db	<b>Local Co-ordinate Reference:</b>	Well (A03) Dundee 4 Fed Com 132H - Slot A03-D132H
<b>Company:</b>	Colgate Energy	<b>TVD Reference:</b>	3318+30 @ 3348.00usft
<b>Project:</b>	(Permit) Eddy County, NM (83-NME)	<b>MD Reference:</b>	3318+30 @ 3348.00usft
<b>Site:</b>	(Permit) Dundee 4 Fed Com	<b>North Reference:</b>	Grid
<b>Well:</b>	(A03) Dundee 4 Fed Com 132H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Permit		
<b>Design:</b>	APD-Rev00		

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)
7,800.00	2.05	180.00	7,664.29	-1,308.55	0.00	-10.28	1.50	-1.50	0.00
7,900.00	0.55	180.00	7,764.26	-1,310.82	0.00	-10.30	1.50	-1.50	0.00
7,936.74	0.00	0.00	7,801.00	-1,311.00	0.00	-10.30	1.50	-1.50	0.00
8,000.00	0.00	0.00	7,864.26	-1,311.00	0.00	-10.30	0.00	0.00	0.00
8,037.67	0.00	0.00	7,901.93	-1,311.00	0.00	-10.30	0.00	0.00	0.00
<b>KOP: 8037.67' MD, -10.30' VS, 7901.93' TVD</b>									
8,050.00	1.23	91.20	7,914.26	-1,311.00	0.13	-10.16	10.00	10.00	0.00
8,100.00	6.23	91.20	7,964.13	-1,311.07	3.39	-6.91	10.00	10.00	0.00
8,150.00	11.23	91.20	8,013.54	-1,311.23	10.97	0.67	10.00	10.00	0.00
8,200.00	16.23	91.20	8,062.09	-1,311.48	22.84	12.54	10.00	10.00	0.00
8,250.00	21.23	91.20	8,109.43	-1,311.81	38.89	28.58	10.00	10.00	0.00
8,300.00	26.23	91.20	8,155.19	-1,312.24	59.00	48.69	10.00	10.00	0.00
8,350.00	31.23	91.20	8,199.02	-1,312.74	83.02	72.71	10.00	10.00	0.00
8,400.00	36.23	91.20	8,240.59	-1,313.32	110.77	100.45	10.00	10.00	0.00
8,434.78	39.71	91.20	8,268.00	-1,313.77	132.16	121.84	10.00	10.00	0.00
<b>TBSG</b>									
8,450.00	41.23	91.20	8,279.58	-1,313.98	142.04	131.72	10.00	10.00	0.00
8,500.00	46.23	91.20	8,315.69	-1,314.70	176.59	166.26	10.00	10.00	0.00
8,550.00	51.23	91.20	8,348.66	-1,315.49	214.15	203.81	10.00	10.00	0.00
8,600.00	56.23	91.20	8,378.23	-1,316.33	254.44	244.09	10.00	10.00	0.00
8,637.67	60.00	91.20	8,398.13	-1,317.00	286.42	276.06	10.00	10.00	0.00
8,650.00	61.23	91.12	8,404.17	-1,317.22	297.15	286.80	10.00	9.98	-0.66
8,700.00	66.22	90.81	8,426.30	-1,317.97	341.97	331.61	10.00	9.98	-0.62
8,715.69	67.79	90.72	8,432.43	-1,318.16	356.41	346.05	10.00	9.99	-0.59
<b>20-100FWL-NM083580(D-132H)</b>									
8,731.15	69.33	90.63	8,438.08	-1,318.33	370.80	360.44	10.00	9.99	-0.57
<b>01-FTP(D-132H)</b>									
8,750.00	71.22	90.52	8,444.44	-1,318.51	388.54	378.17	10.00	9.99	-0.56
8,800.00	76.21	90.25	8,458.46	-1,318.83	436.52	426.15	10.00	9.99	-0.54
8,850.00	81.20	89.99	8,468.25	-1,318.94	485.53	475.16	10.00	9.99	-0.52
8,900.00	86.20	89.74	8,473.73	-1,318.82	535.22	524.84	10.00	9.99	-0.50
8,938.08	90.00	89.55	8,475.00	-1,318.59	573.27	562.89	10.00	9.99	-0.50
<b>EOC: 8938.08' MD, 562.89' VS, 8475.00' TVD</b>									
9,000.00	90.00	89.55	8,475.00	-1,318.10	635.19	624.81	0.00	0.00	0.00
9,100.00	90.00	89.55	8,475.00	-1,317.32	735.18	724.81	0.00	0.00	0.00
9,200.00	90.00	89.55	8,475.00	-1,316.54	835.18	824.81	0.00	0.00	0.00
9,300.00	90.00	89.55	8,475.00	-1,315.75	935.18	924.81	0.00	0.00	0.00
9,400.00	90.00	89.55	8,475.00	-1,314.97	1,035.17	1,024.81	0.00	0.00	0.00
9,500.00	90.00	89.55	8,475.00	-1,314.19	1,135.17	1,124.81	0.00	0.00	0.00
9,600.00	90.00	89.55	8,475.00	-1,313.41	1,235.17	1,224.81	0.00	0.00	0.00
9,700.00	90.00	89.55	8,475.00	-1,312.62	1,335.16	1,324.81	0.00	0.00	0.00
9,800.00	90.00	89.55	8,475.00	-1,311.84	1,435.16	1,424.81	0.00	0.00	0.00
9,900.00	90.00	89.55	8,475.00	-1,311.06	1,535.16	1,524.81	0.00	0.00	0.00
10,000.00	90.00	89.55	8,475.00	-1,310.28	1,635.16	1,624.81	0.00	0.00	0.00
10,100.00	90.00	89.55	8,475.00	-1,309.49	1,735.15	1,724.81	0.00	0.00	0.00
10,200.00	90.00	89.55	8,475.00	-1,308.71	1,835.15	1,824.81	0.00	0.00	0.00
10,300.00	90.00	89.55	8,475.00	-1,307.93	1,935.15	1,924.81	0.00	0.00	0.00
10,400.00	90.00	89.55	8,475.00	-1,307.15	2,035.14	2,024.81	0.00	0.00	0.00
10,500.00	90.00	89.55	8,475.00	-1,306.37	2,135.14	2,124.81	0.00	0.00	0.00
10,600.00	90.00	89.55	8,475.00	-1,305.58	2,235.14	2,224.81	0.00	0.00	0.00
10,700.00	90.00	89.55	8,475.00	-1,304.80	2,335.13	2,324.81	0.00	0.00	0.00
10,800.00	90.00	89.55	8,475.00	-1,304.02	2,435.13	2,424.81	0.00	0.00	0.00
10,900.00	90.00	89.55	8,475.00	-1,303.24	2,535.13	2,524.81	0.00	0.00	0.00



## Planning Report

<b>Database:</b>	EDM 5000.14 Single User Db	<b>Local Co-ordinate Reference:</b>	Well (A03) Dundee 4 Fed Com 132H - Slot A03-D132H
<b>Company:</b>	Colgate Energy	<b>TVD Reference:</b>	3318+30 @ 3348.00usft
<b>Project:</b>	(Permit) Eddy County, NM (83-NME)	<b>MD Reference:</b>	3318+30 @ 3348.00usft
<b>Site:</b>	(Permit) Dundee 4 Fed Com	<b>North Reference:</b>	Grid
<b>Well:</b>	(A03) Dundee 4 Fed Com 132H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Permit		
<b>Design:</b>	APD-Rev00		

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)
11,000.00	90.00	89.55	8,475.00	-1,302.45	2,635.13	2,624.81	0.00	0.00	0.00
11,100.00	90.00	89.55	8,475.00	-1,301.67	2,735.12	2,724.81	0.00	0.00	0.00
11,200.00	90.00	89.55	8,475.00	-1,300.89	2,835.12	2,824.81	0.00	0.00	0.00
11,280.49	90.00	89.55	8,475.00	-1,300.26	2,915.61	2,905.31	0.00	0.00	0.00
<b>21-Exit-NM083580(D-132H) - 22-Entry-NM013232A(D-132H)</b>									
11,300.00	90.00	89.55	8,475.00	-1,300.11	2,935.12	2,924.81	0.00	0.00	0.00
11,400.00	90.00	89.55	8,475.00	-1,299.32	3,035.11	3,024.81	0.00	0.00	0.00
11,500.00	90.00	89.55	8,475.00	-1,298.54	3,135.11	3,124.81	0.00	0.00	0.00
11,600.00	90.00	89.55	8,475.00	-1,297.76	3,235.11	3,224.81	0.00	0.00	0.00
11,700.00	90.00	89.55	8,475.00	-1,296.98	3,335.10	3,324.81	0.00	0.00	0.00
11,800.00	90.00	89.55	8,475.00	-1,296.19	3,435.10	3,424.81	0.00	0.00	0.00
11,900.00	90.00	89.55	8,475.00	-1,295.41	3,535.10	3,524.81	0.00	0.00	0.00
12,000.00	90.00	89.55	8,475.00	-1,294.63	3,635.09	3,624.81	0.00	0.00	0.00
12,100.00	90.00	89.55	8,475.00	-1,293.85	3,735.09	3,724.81	0.00	0.00	0.00
12,200.00	90.00	89.55	8,475.00	-1,293.06	3,835.09	3,824.81	0.00	0.00	0.00
12,300.00	90.00	89.55	8,475.00	-1,292.28	3,935.09	3,924.81	0.00	0.00	0.00
12,400.00	90.00	89.55	8,475.00	-1,291.50	4,035.08	4,024.81	0.00	0.00	0.00
12,500.00	90.00	89.55	8,475.00	-1,290.72	4,135.08	4,124.81	0.00	0.00	0.00
12,600.00	90.00	89.55	8,475.00	-1,289.94	4,235.08	4,224.81	0.00	0.00	0.00
12,700.00	90.00	89.55	8,475.00	-1,289.15	4,335.07	4,324.81	0.00	0.00	0.00
12,800.00	90.00	89.55	8,475.00	-1,288.37	4,435.07	4,424.81	0.00	0.00	0.00
12,900.00	90.00	89.55	8,475.00	-1,287.59	4,535.07	4,524.81	0.00	0.00	0.00
13,000.00	90.00	89.55	8,475.00	-1,286.81	4,635.06	4,624.81	0.00	0.00	0.00
13,100.00	90.00	89.55	8,475.00	-1,286.02	4,735.06	4,724.81	0.00	0.00	0.00
13,200.00	90.00	89.55	8,475.00	-1,285.24	4,835.06	4,824.81	0.00	0.00	0.00
13,300.00	90.00	89.55	8,475.00	-1,284.46	4,935.05	4,924.81	0.00	0.00	0.00
13,400.00	90.00	89.55	8,475.00	-1,283.68	5,035.05	5,024.81	0.00	0.00	0.00
13,500.00	90.00	89.55	8,475.00	-1,282.89	5,135.05	5,124.81	0.00	0.00	0.00
13,600.00	90.00	89.55	8,475.00	-1,282.11	5,235.05	5,224.81	0.00	0.00	0.00
13,700.00	90.00	89.55	8,475.00	-1,281.33	5,335.04	5,324.81	0.00	0.00	0.00
13,800.00	90.00	89.55	8,475.00	-1,280.55	5,435.04	5,424.81	0.00	0.00	0.00
13,900.00	90.00	89.55	8,475.00	-1,279.76	5,535.04	5,524.81	0.00	0.00	0.00
14,000.00	90.00	89.55	8,475.00	-1,278.98	5,635.03	5,624.81	0.00	0.00	0.00
14,100.00	90.00	89.55	8,475.00	-1,278.20	5,735.03	5,724.81	0.00	0.00	0.00
14,200.00	90.00	89.55	8,475.00	-1,277.42	5,835.03	5,824.81	0.00	0.00	0.00
14,300.00	90.00	89.55	8,475.00	-1,276.64	5,935.02	5,924.81	0.00	0.00	0.00
14,400.00	90.00	89.55	8,475.00	-1,275.85	6,035.02	6,024.81	0.00	0.00	0.00
14,500.00	90.00	89.55	8,475.00	-1,275.07	6,135.02	6,124.81	0.00	0.00	0.00
14,600.00	90.00	89.55	8,475.00	-1,274.29	6,235.02	6,224.81	0.00	0.00	0.00
14,700.00	90.00	89.55	8,475.00	-1,273.51	6,335.01	6,324.81	0.00	0.00	0.00
14,800.00	90.00	89.55	8,475.00	-1,272.72	6,435.01	6,424.81	0.00	0.00	0.00
14,900.00	90.00	89.55	8,475.00	-1,271.94	6,535.01	6,524.81	0.00	0.00	0.00
15,000.00	90.00	89.55	8,475.00	-1,271.16	6,635.00	6,624.81	0.00	0.00	0.00
15,100.00	90.00	89.55	8,475.00	-1,270.38	6,735.00	6,724.81	0.00	0.00	0.00
15,200.00	90.00	89.55	8,475.00	-1,269.59	6,835.00	6,824.81	0.00	0.00	0.00
15,300.00	90.00	89.55	8,475.00	-1,268.81	6,934.99	6,924.81	0.00	0.00	0.00
15,400.00	90.00	89.55	8,475.00	-1,268.03	7,034.99	7,024.81	0.00	0.00	0.00
15,500.00	90.00	89.55	8,475.00	-1,267.25	7,134.99	7,124.81	0.00	0.00	0.00
15,600.00	90.00	89.55	8,475.00	-1,266.46	7,234.98	7,224.81	0.00	0.00	0.00
15,700.00	90.00	89.55	8,475.00	-1,265.68	7,334.98	7,324.81	0.00	0.00	0.00
15,800.00	90.00	89.55	8,475.00	-1,264.90	7,434.98	7,424.81	0.00	0.00	0.00
15,900.00	90.00	89.55	8,475.00	-1,264.12	7,534.98	7,524.81	0.00	0.00	0.00



## Planning Report

<b>Database:</b>	EDM 5000.14 Single User Db	<b>Local Co-ordinate Reference:</b>	Well (A03) Dundee 4 Fed Com 132H - Slot A03-D132H
<b>Company:</b>	Colgate Energy	<b>TVD Reference:</b>	3318+30 @ 3348.00usft
<b>Project:</b>	(Permit) Eddy County, NM (83-NME)	<b>MD Reference:</b>	3318+30 @ 3348.00usft
<b>Site:</b>	(Permit) Dundee 4 Fed Com	<b>North Reference:</b>	Grid
<b>Well:</b>	(A03) Dundee 4 Fed Com 132H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Permit		
<b>Design:</b>	APD-Rev00		

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	90.00	89.55	8,475.00	-1,263.33	7,634.97	7,624.81	0.00	0.00	0.00	
16,100.00	90.00	89.55	8,475.00	-1,262.55	7,734.97	7,724.81	0.00	0.00	0.00	
16,200.00	90.00	89.55	8,475.00	-1,261.77	7,834.97	7,824.81	0.00	0.00	0.00	
16,300.00	90.00	89.55	8,475.00	-1,260.99	7,934.96	7,924.81	0.00	0.00	0.00	
16,400.00	90.00	89.55	8,475.00	-1,260.21	8,034.96	8,024.81	0.00	0.00	0.00	
16,500.00	90.00	89.55	8,475.00	-1,259.42	8,134.96	8,124.81	0.00	0.00	0.00	
16,596.66	90.00	89.55	8,475.00	-1,258.67	8,231.61	8,221.47	0.00	0.00	0.00	
<b>24-Entry-NM009818(D-132H) - 23-Exit-NM013232A(D-132H)</b>										
16,600.00	90.00	89.55	8,475.00	-1,258.64	8,234.95	8,224.81	0.00	0.00	0.00	
16,700.00	90.00	89.55	8,475.00	-1,257.86	8,334.95	8,324.81	0.00	0.00	0.00	
16,800.00	90.00	89.55	8,475.00	-1,257.08	8,434.95	8,424.81	0.00	0.00	0.00	
16,900.00	90.00	89.55	8,475.00	-1,256.29	8,534.94	8,524.81	0.00	0.00	0.00	
17,000.00	90.00	89.55	8,475.00	-1,255.51	8,634.94	8,624.81	0.00	0.00	0.00	
17,100.00	90.00	89.55	8,475.00	-1,254.73	8,734.94	8,724.81	0.00	0.00	0.00	
17,200.00	90.00	89.55	8,475.00	-1,253.95	8,834.94	8,824.81	0.00	0.00	0.00	
17,300.00	90.00	89.55	8,475.00	-1,253.16	8,934.93	8,924.81	0.00	0.00	0.00	
17,400.00	90.00	89.55	8,475.00	-1,252.38	9,034.93	9,024.81	0.00	0.00	0.00	
17,500.00	90.00	89.55	8,475.00	-1,251.60	9,134.93	9,124.81	0.00	0.00	0.00	
17,600.00	90.00	89.55	8,475.00	-1,250.82	9,234.92	9,224.81	0.00	0.00	0.00	
17,700.00	90.00	89.55	8,475.00	-1,250.03	9,334.92	9,324.81	0.00	0.00	0.00	
17,800.00	90.00	89.55	8,475.00	-1,249.25	9,434.92	9,424.81	0.00	0.00	0.00	
17,900.00	90.00	89.55	8,475.00	-1,248.47	9,534.91	9,524.81	0.00	0.00	0.00	
18,000.00	90.00	89.55	8,475.00	-1,247.69	9,634.91	9,624.81	0.00	0.00	0.00	
18,100.00	90.00	89.55	8,475.00	-1,246.91	9,734.91	9,724.81	0.00	0.00	0.00	
18,200.00	90.00	89.55	8,475.00	-1,246.12	9,834.91	9,824.81	0.00	0.00	0.00	
18,300.00	90.00	89.55	8,475.00	-1,245.34	9,934.90	9,924.81	0.00	0.00	0.00	
18,400.00	90.00	89.55	8,475.00	-1,244.56	10,034.90	10,024.81	0.00	0.00	0.00	
18,500.00	90.00	89.55	8,475.00	-1,243.78	10,134.90	10,124.81	0.00	0.00	0.00	
18,600.00	90.00	89.55	8,475.00	-1,242.99	10,234.89	10,224.81	0.00	0.00	0.00	
18,700.00	90.00	89.55	8,475.00	-1,242.21	10,334.89	10,324.81	0.00	0.00	0.00	
18,800.00	90.00	89.55	8,475.00	-1,241.43	10,434.89	10,424.81	0.00	0.00	0.00	
18,900.00	90.00	89.55	8,475.00	-1,240.65	10,534.88	10,524.81	0.00	0.00	0.00	
19,000.00	90.00	89.55	8,475.00	-1,239.86	10,634.88	10,624.81	0.00	0.00	0.00	
19,100.00	90.00	89.55	8,475.00	-1,239.08	10,734.88	10,724.81	0.00	0.00	0.00	
19,153.34	90.00	89.55	8,475.00	-1,238.66	10,788.22	10,778.16	0.00	0.00	0.00	
<b>02-LTP(D-132H) - 25-100FEL-NM009818(D-132H)</b>										
19,200.00	90.00	89.55	8,475.00	-1,238.30	10,834.87	10,824.81	0.00	0.00	0.00	
19,243.35	90.00	89.55	8,475.00	-1,237.96	10,878.22	10,868.16	0.00	0.00	0.00	
<b>TD: 19243.35' MD, 10868.16' VS, 8475.00' TVD - 03-PBHL(D-132H)</b>										



## Planning Report

<b>Database:</b>	EDM 5000.14 Single User Db	<b>Local Co-ordinate Reference:</b>	Well (A03) Dundee 4 Fed Com 132H - Slot A03-D132H
<b>Company:</b>	Colgate Energy	<b>TVD Reference:</b>	3318+30 @ 3348.00usft
<b>Project:</b>	(Permit) Eddy County, NM (83-NME)	<b>MD Reference:</b>	3318+30 @ 3348.00usft
<b>Site:</b>	(Permit) Dundee 4 Fed Com	<b>North Reference:</b>	Grid
<b>Well:</b>	(A03) Dundee 4 Fed Com 132H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Permit		
<b>Design:</b>	APD-Rev00		

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
20-100FWL-NM083580( - plan hits target center - Point	0.00	0.01	8,432.43	-1,318.16	356.41	583,334.46	585,295.26	32.60355746	-104.19058571
01-FTP(D-132H) - plan misses target center by 39.66usft at 8731.15usft MD (8438.08 TVD, -1318.33 N, 370.80 E) - Point	0.00	0.00	8,475.00	-1,319.91	356.40	583,332.71	585,295.25	32.60355265	-104.19058575
02-LTP(D-132H) - plan misses target center by 0.10usft at 19153.34usft MD (8475.00 TVD, -1238.66 N, 10788.22 E) - Point	0.00	0.00	8,475.00	-1,238.76	10,788.22	583,413.86	595,727.07	32.60373265	-104.15670934
24-Entry-NM009818(D-1 - plan hits target center - Point	0.00	0.00	8,475.00	-1,258.67	8,231.61	583,393.95	593,170.46	32.60368932	-104.16501171
21-Exit-NM083580(D-13 - plan hits target center - Point	0.00	0.00	8,475.00	-1,300.26	2,915.61	583,352.36	587,854.46	32.60359694	-104.18227495
03-PBHL(D-132H) - plan hits target center - Point	0.00	0.00	8,475.00	-1,237.96	10,878.22	583,414.66	595,817.07	32.60373443	-104.15641707
23-Exit-NM013232A(D-1 - plan hits target center - Point	0.00	0.00	8,475.00	-1,258.67	8,231.61	583,393.95	593,170.46	32.60368932	-104.16501171
22-Entry-NM013232A(D - plan hits target center - Point	0.00	0.00	8,475.00	-1,300.26	2,915.61	583,352.36	587,854.46	32.60359694	-104.18227495
25-100FEL-NM009818(I - plan hits target center - Point	0.00	0.00	8,475.00	-1,238.66	10,788.22	583,413.96	595,727.07	32.60373292	-104.15670934

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
183.00	183.00	Rustler				
291.00	291.00	Salado				
778.00	778.00	Tansil				
848.00	848.00	Yates				
1,280.25	1,280.00	Seven Rivers				
1,798.81	1,793.00	Queen				
1,947.24	1,938.00	Grayburg				
2,370.08	2,351.00	San Andres				
3,063.19	3,028.00	Delaware Sands				
4,383.91	4,318.00	Bone Spring				
6,179.67	6,072.00	FBSG				
7,257.16	7,125.00	DBSG				
8,434.78	8,268.00	TBSG				





## Planning Report

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<b>Company:</b>	Colgate Energy	<b>TVD Reference:</b>	3318+30 @ 3348.00usft
<b>Project:</b>	(Permit) Eddy County, NM (83-NME)	<b>MD Reference:</b>	3318+30 @ 3348.00usft
<b>Site:</b>	(Permit) Dundee 4 Fed Com	<b>North Reference:</b>	Grid
<b>Well:</b>	(A03) Dundee 4 Fed Com 132H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Permit		
<b>Design:</b>	APD-Rev00		

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
8,037.67	7,901.93	-1,311.00	0.00	KOP: 8037.67' MD, -10.30' VS,7901.93' TVD	
8,938.08	8,475.00	-1,318.59	573.27	EOC: 8938.08' MD, 562.89' VS,8475.00' TVD	
19,243.35	8,475.00	-1,237.96	10,878.22	TD: 19243.35' MD, 10868.16' VS,8475.00' TVD	

**PECOS DISTRICT  
SURFACE USE  
CONDITIONS OF APPROVAL**

**Colgate Energy, LLC**

**Dundee 4 Fed Com Wells, Well Pad, Pipelines, and  
Access Roads  
NMNM- 0039468**

**TABLE OF CONTENTS**

Standard Conditions of Approval (COA) apply to this APD. If any deviations to these standards exist or special COAs are required, the section with the deviation or requirement will be checked below.

- ☐ **General Provisions**
- ☐ **Permit Expiration**
- ☐ **Archaeology, Paleontology, and Historical Sites**
- ☐ **Noxious Weeds**
- ☐ **Special Requirements**
  - Cave/Karst
- ☐ **Construction**
  - Notification
  - Topsoil
  - Closed Loop System
  - Federal Mineral Material Pits
  - Well Pads
  - Roads
- ☐ **Road Section Diagram**
- ☐ **Production (Post Drilling)**
  - Well Structures & Facilities
  - Pipelines
  - Electric Lines
- ☐ **Interim Reclamation**
- ☐ **Final Abandonment & Reclamation**

## **I. GENERAL PROVISIONS**

The approval of the Application For Permit To Drill (APD) is in compliance with all applicable laws and regulations: 43 Code of Federal Regulations 3160, the lease terms, Onshore Oil and Gas Orders, Notices To Lessees, New Mexico Oil Conservation Division (NMOCD) Rules, National Historical Preservation Act As Amended, and instructions and orders of the Authorized Officer. Any request for a variance shall be submitted to the Authorized Officer on Form 3160-5, Sundry Notices and Report on Wells.

## **II. PERMIT EXPIRATION**

If the permit terminates prior to drilling and drilling cannot be commenced within 60 days after expiration, an operator is required to submit Form 3160-5, Sundry Notices and Reports on Wells, requesting surface reclamation requirements for any surface disturbance. However, if the operator will be able to initiate drilling within 60 days after the expiration of the permit, the operator must have set the conductor pipe in order to allow for an extension of 60 days beyond the expiration date of the APD. (Filing of a Sundry Notice is required for this 60 day extension.)

## **III. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES**

Any cultural resource (historic or prehistoric site or object) discovered by the holder, or any person working on the holder's behalf, on public or Federal land shall be immediately reported to the Authorized Officer. The holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery will be made by the Authorized Officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to the proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

OR

If the entire project is covered under the Permian Basin Programmatic Agreement (cultural resources only):

The proponent has contributed funds commensurate to the undertaking into an account for offsite mitigation. Participation in the PA serves as mitigation for the effects of this project on cultural resources. If any human skeletal remains, funerary objects, sacred objects, or objects of cultural patrimony are discovered at any time during construction, all construction activities shall halt and the BLM will be notified as soon as possible within 24 hours. Work shall not resume until a Notice to Proceed is issued by the BLM. See information below discussing NAGPRA.



If the proposed project is split between a Class III inventory and a Permian Basin Programmatic Agreement contribution, the portion of the project covered under Class III inventory should default to the first paragraph stipulations.

The holder is hereby obligated to comply with procedures established in the Native American Graves Protection and Repatriation Act (NAGPRA) to protect such cultural items as human remains, associated funerary objects, sacred objects, and objects of cultural patrimony discovered inadvertently during the course of project implementation. In the event that any of the cultural items listed above are discovered during the course of project work, the proponent shall immediately halt the disturbance and contact the BLM within 24 hours for instructions. The proponent or initiator of any project shall be held responsible for protecting, evaluating, reporting, excavating, treating, and disposing of these cultural items according to the procedures established by the BLM in consultation with Indian Tribes."

Any paleontological resource (historic or prehistoric site or object) discovered by the holder, or any person working on the holder's behalf, on public or Federal land shall be immediately reported to the Authorized Officer. The holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery will be made by the Authorized Officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to the proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

#### **IV. NOXIOUS WEEDS**

The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes the roads, pads, associated pipeline corridor, and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policies.

## V. SPECIAL REQUIREMENT(S)

### Cave/Karst Surface Mitigation

The following stipulations will be applied to minimize impacts during construction, drilling and production:

#### Construction:

##### **General Construction:**

- No blasting
- The BLM, Carlsbad Field Office, will be informed immediately if any subsurface drainage channels, cave passages, or voids are penetrated during construction, and no additional construction shall occur until clearance has been issued by the Authorized Officer.
- All linear surface disturbance activities will avoid sinkholes and other karst features to lessen the possibility of encountering near surface voids during construction, minimize changes to runoff, and prevent untimely leaks and spills from entering the karst drainage system.
- All spills or leaks will be reported to the BLM immediately for their immediate and proper treatment.

##### **Pad Construction:**

- The pad will be constructed and leveled by adding the necessary fill and caliche – no blasting.
- The entire perimeter of the well pad will be bermed to prevent oil, salt, and other chemical contaminants from leaving the well pad.
- The compacted berm shall be constructed at a minimum of 12 inches high with impermeable mineral material (e.g., caliche).
- No water flow from the uphill side(s) of the pad shall be allowed to enter the well pad.
- The topsoil stockpile shall be located outside the bermed well pad.
- Topsoil, either from the well pad or surrounding area, shall not be used to construct the berm.
- No storm drains, tubing or openings shall be placed in the berm.
- If fluid collects within the bermed area, the fluid must be vacuumed into a safe container and disposed of properly at a state approved facility.
- The integrity of the berm shall be maintained around the surfaced pad throughout the life of the well and around the downsized pad after interim reclamation has been completed.
- Any access road entering the well pad shall be constructed so that the integrity of the berm height surrounding the well pad is not compromised (i.e. an access road crossing the berm cannot be lower than the berm height).
- Following a rain event, all fluids will vacuumed off of the pad and hauled off-site and disposed at a proper disposal facility.



**Tank Battery Construction:**

- The pad will be constructed and leveled by adding the necessary fill and caliche – no blasting.
- All tank battery locations and facilities will be lined and bermed.
- The liner should be at least 20 mil in thickness and installed with a 4 oz. felt backing, or equivalent, to prevent tears or punctures.
- Tank battery berms must be large enough to contain 1 ½ times the content of the largest tank.

**Road Construction:**

- Turnout ditches and drainage leadoffs will not be constructed in such a manner as to alter the natural flow of water into or out of cave or karst features.
- Special restoration stipulations or realignment may be required if subsurface features are discovered during construction.

**Buried Pipeline/Cable Construction:**

- Rerouting of the buried line(s) may be required if a subsurface void is encountered during construction to minimize the potential subsidence/collapse of the feature(s) as well as the possibility of leaks/spills entering the karst drainage system.

**Powerline Construction:**

- Smaller powerlines will be routed around sinkholes and other karst features to avoid or lessen the possibility of encountering near surface voids and to minimize changes to runoff or possible leaks and spills from entering karst systems.
- Larger powerlines will adjust their pole spacing to avoid cave and karst features.
- Special restoration stipulations or realignment may be required if subsurface voids are encountered.

**Surface Flowlines Installation:**

- Flowlines will be routed around sinkholes and other karst features to minimize the possibility of leaks/spills from entering the karst drainage system.

**Leak Detection System:**

- A method of detecting leaks is required. The method could incorporate gauges to measure loss, siting valves and lines so they can be visually inspected, or installing electronic sensors to alarm when a leak is present.
- A leak detection plan will be submitted to BLM that incorporates an automatic shut off system (see below) to minimize the effects of an undesirable event that could negatively sensitive cave/karst resources.
- Well heads, pipelines (surface and buried), storage tanks, and all supporting equipment should be monitored regularly after installation to promptly identify and fix leaks.

**Automatic Shut-off Systems:**

- Automatic shut off, check valves, or similar systems will be installed for pipelines and tanks to minimize the effects of catastrophic line failures used in production or drilling.

### **Cave/Karst Subsurface Mitigation**

The following stipulations will be applied to protect cave/karst and groundwater concerns:

#### **Closed Loop System:**

- A closed loop system using steel tanks will be utilized during drilling – no pits
- All fluids and cuttings will be hauled off-site and disposed of properly at an authorized site

#### **Rotary Drilling with Fresh Water:**

- Fresh water will be used as a circulating medium in zones where caves or karst features are expected. SEE ALSO: Drilling COAs for this well.

#### **Directional Drilling:**

- The kick off point for directional drilling will occur at least 100 feet below the bottom of the cave occurrence zone. SEE ALSO: Drilling COAs for this well.

#### **Lost Circulation:**

- ALL lost circulation zones between surface and the base of the cave occurrence zone will be logged and reported in the drilling report.
- If a void of four feet or more and circulation losses greater than 70 percent occur simultaneously while drilling in any cave-bearing zone, regardless of the type of drilling machinery used, the BLM will be notified immediately by the operator. The BLM will assess the situation and work with the operator on corrective actions to resolve the problem.

#### **Abandonment Cementing:**

- Additional plugging conditions of approval may be required upon well abandonment in high and medium karst potential occurrence zones.
- The BLM will assess the situation and work with the operator to ensure proper plugging of the wellbore.

#### **Pressure Testing:**

- The operator will perform annual pressure monitoring on all casing annuli and reported in a sundry notice.
- If the test results indicated a casing failure has occurred, remedial action will be undertaken to correct the problem to the BLM's approval.

## **VI. CONSTRUCTION**



**A. NOTIFICATION**

The BLM shall administer compliance and monitor construction of the access road and well pad. Notify the Carlsbad Field Office at (575) 234-5909 at least 3 working days prior to commencing construction of the access road and/or well pad.

When construction operations are being conducted on this well, the operator shall have the approved APD and Conditions of Approval (COA) on the well site and they shall be made available upon request by the Authorized Officer.

**B. TOPSOIL**

The operator shall strip the top portion of the soil (root zone) from the entire well pad area and stockpile the topsoil along the edge of the well pad as depicted in the APD. The root zone is typically six (6) inches in depth. All the stockpiled topsoil will be redistributed over the interim reclamation areas. Topsoil shall not be used for berming the pad or facilities. For final reclamation, the topsoil shall be spread over the entire pad area for seeding preparation.

Other subsoil (below six inches) stockpiles must be completely segregated from the topsoil stockpile. Large rocks or subsoil clods (not evident in the surrounding terrain) must be buried within the approved area for interim and final reclamation.

**C. CLOSED LOOP SYSTEM**

Tanks are required for drilling operations: No Pits.

The operator shall properly dispose of drilling contents at an authorized disposal site.

**D. FEDERAL MINERAL MATERIALS PIT**

Payment shall be made to the BLM prior to removal of any federal mineral materials. Call the Carlsbad Field Office at (575) 234-5972.

**E. WELL PAD SURFACING**

Surfacing of the well pad is not required.

If the operator elects to surface the well pad, the surfacing material may be required to be removed at the time of reclamation. The well pad shall be constructed in a manner which creates the smallest possible surface disturbance, consistent with safety and operational needs.

**F. EXCLOSURE FENCING (CELLARS & PITS)**

**Exclosure Fencing**



The operator will install and maintain enclosure fencing for all open well cellars to prevent access to public, livestock, and large forms of wildlife before and after drilling operations until the pit is free of fluids and the operator initiates backfilling. (For examples of enclosure fencing design, refer to BLM's Oil and Gas Gold Book, Enclosure Fence Illustrations, Figure 1, Page 18.)

## **G. ON LEASE ACCESS ROADS**

### **Road Width**

The access road shall have a driving surface that creates the smallest possible surface disturbance and does not exceed fourteen (14) feet in width. The maximum width of surface disturbance, when constructing the access road, shall not exceed twenty-five (25) feet.

### **Surfacing**

Surfacing material is not required on the new access road driving surface. If the operator elects to surface the new access road or pad, the surfacing material may be required to be removed at the time of reclamation.

Where possible, no improvements should be made on the unsurfaced access road other than to remove vegetation as necessary, road irregularities, safety issues, or to fill low areas that may sustain standing water.

The Authorized Officer reserves the right to require surfacing of any portion of the access road at any time deemed necessary. Surfacing may be required in the event the road deteriorates, erodes, road traffic increases, or it is determined to be beneficial for future field development. The surfacing depth and type of material will be determined at the time of notification.

### **Crowning**

Crowning shall be done on the access road driving surface. The road crown shall have a grade of approximately 2% (i.e., a 1" crown on a 14' wide road). The road shall conform to Figure 1; cross section and plans for typical road construction.

### **Ditching**

Ditching shall be required on both sides of the road.

### **Turnouts**

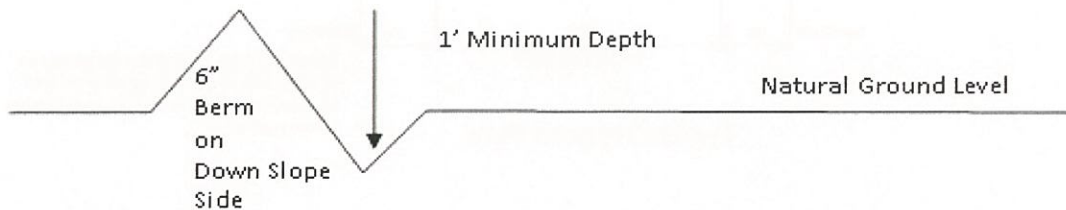
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall conform to Figure 1; cross section and plans for typical road construction.

### **Drainage**

Drainage control systems shall be constructed on the entire length of road (e.g. ditches, sidehill outslowing and inslowning, lead-off ditches, culvert installation, and low water crossings).

A typical lead-off ditch has a minimum depth of 1 foot below and a berm of 6 inches above natural ground level. The berm shall be on the down-slope side of the lead-off ditch.

#### Cross Section of a Typical Lead-off Ditch



All lead-off ditches shall be graded to drain water with a 1 percent minimum to 3 percent maximum ditch slope. The spacing interval are variable for lead-off ditches and shall be determined according to the formula for spacing intervals of lead-off ditches, but may be amended depending upon existing soil types and centerline road slope (in %);

#### Formula for Spacing Interval of Lead-off Ditches

Example - On a 4% road slope that is 400 feet long, the water flow shall drain water into a lead-off ditch. Spacing interval shall be determined by the following formula:

$$400 \text{ foot road with } 4\% \text{ road slope: } \frac{400'}{4\%} + 100' = 200' \text{ lead-off ditch interval}$$

#### Cattle guards

An appropriately sized cattle guard sufficient to carry out the project shall be installed and maintained at fence/road crossings. Any existing cattle guards on the access road route shall be repaired or replaced if they are damaged or have deteriorated beyond practical use. The operator shall be responsible for the condition of the existing cattle guards that are in place and are utilized during lease operations.

#### Fence Requirement

Where entry is granted across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting. The operator shall notify the private surface landowner or the grazing allotment holder prior to crossing any fences.

#### Public Access

Public access on this road shall not be restricted by the operator without specific written approval granted by the Authorized Officer.

**Construction Steps**

1. Salvage topsoil
2. Construct road

3. Redistribute topsoil
4. Revegetate slopes

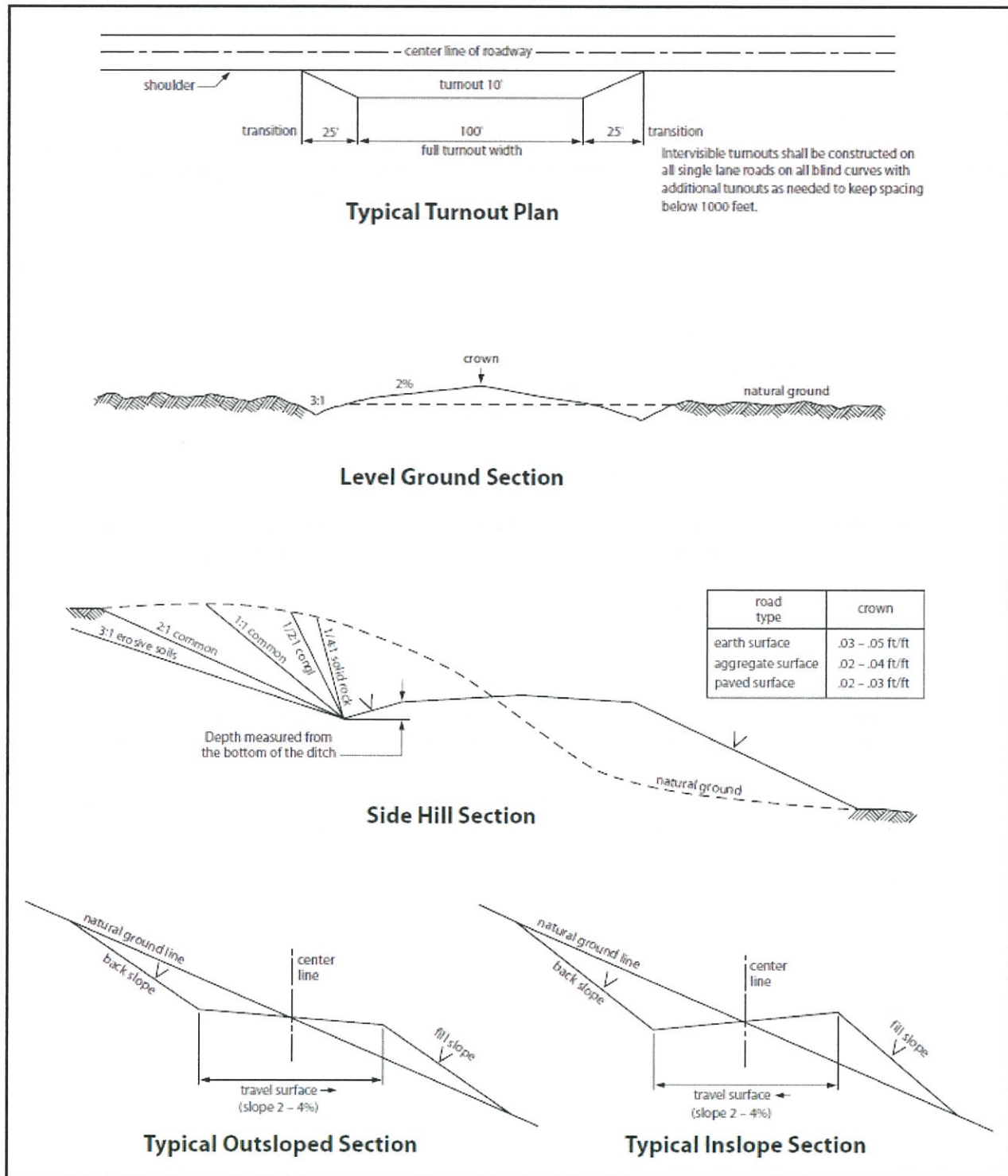


Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.



## VII. PRODUCTION (POST DRILLING)

### A. WELL STRUCTURES & FACILITIES

#### **Placement of Production Facilities**

Production facilities should be placed on the well pad to allow for maximum interim recontouring and revegetation of the well location.

#### **Exclosure Netting (Open-top Tanks)**

Immediately following active drilling or completion operations, the operator will take actions necessary to prevent wildlife and livestock access, including avian wildlife, to all open-topped tanks that contain or have the potential to contain salinity sufficient to cause harm to wildlife or livestock, hydrocarbons, or Resource Conservation and Recovery Act of 1976-exempt hazardous substances. At a minimum, the operator will net, screen, or cover open-topped tanks to exclude wildlife and livestock and prevent mortality. If the operator uses netting, the operator will cover and secure the open portion of the tank to prevent wildlife entry. The operator will net, screen, or cover the tanks until the operator removes the tanks from the location or the tanks no longer contain substances that could be harmful to wildlife or livestock. Use a maximum netting mesh size of 1 ½ inches. The netting must not be in contact with fluids and must not have holes or gaps.

#### **Chemical and Fuel Secondary Containment and Exclosure Screening**

The operator will prevent all hazardous, poisonous, flammable, and toxic substances from coming into contact with soil and water. At a minimum, the operator will install and maintain an impervious secondary containment system for any tank or barrel containing hazardous, poisonous, flammable, or toxic substances sufficient to contain the contents of the tank or barrel and any drips, leaks, and anticipated precipitation. The operator will dispose of fluids within the containment system that do not meet applicable state or U. S. Environmental Protection Agency livestock water standards in accordance with state law; the operator must not drain the fluids to the soil or ground. The operator will design, construct, and maintain all secondary containment systems to prevent wildlife and livestock exposure to harmful substances. At a minimum, the operator will install effective wildlife and livestock exclosure systems such as fencing, netting, expanded metal mesh, lids, and grate covers. Use a maximum netting mesh size of 1 ½ inches.

#### **Open-Vent Exhaust Stack Exclosures**

The operator will construct, modify, equip, and maintain all open-vent exhaust stacks on production equipment to prevent birds and bats from entering, and to discourage perching, roosting, and nesting. (*Recommended exclosure structures on open-vent exhaust stacks are in the shape of a cone.*) Production equipment includes, but may not be limited to, tanks, heater-treaters, separators, dehydrators, flare stacks, in-line units, and compressor mufflers.

#### **Containment Structures**

Proposed production facilities such as storage tanks and other vessels will have a secondary containment structure that is constructed to hold the capacity of 1.5 times the

largest tank, plus freeboard to account for precipitation, unless more stringent protective requirements are deemed necessary.

#### **Painting Requirement**

All above-ground structures including meter housing that are not subject to safety requirements shall be painted a flat non-reflective paint color, **Shale Green** from the BLM Standard Environmental Color Chart (CC-001: June 2008).

### **B. PIPELINES**

#### **STANDARD STIPULATIONS FOR SURFACE INSTALLED PIPELINES**

**A copy of the Grant and attachments, including stipulations, survey plat(s) and/or map(s), shall be on location during construction. BLM personnel may request to review a copy of your permit during construction to ensure compliance with all stipulations.**

Holder agrees to comply with the following stipulations to the satisfaction of the Authorized Officer:

1. Holder shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this grant.
2. Holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, Holder shall comply with the Toxic Substances Control Act of 1976 as amended, 15 USC § 2601 *et seq.* (1982) with regard to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized under this right-of-way grant (*see* 40 CFR, Part 702-799 and in particular, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193). Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR, Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act, section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the Authorized Officer concurrent with the filing of the reports to the involved Federal agency or State government.
3. Holder agrees to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. § 9601, *et seq.* or the Resource Conservation and Recovery Act, 42 U.S.C. 6901, *et seq.*) on the Right-of-Way (unless the release or threatened release is wholly unrelated to activity of the Right-of-Way Holder's activity on the Right-of-Way), or resulting from the activity of the Right-of-Way Holder on the Right-of-Way. This provision applies without regard to whether a release is caused by Holder, its agent, or unrelated third parties.
4. Holder shall be liable for damage or injury to the United States to the extent provided by 43 CFR Sec. 2883.1-4. Holder shall be held to a standard of strict liability for damage or injury to the United States resulting from pipe rupture, fire, or spills caused or substantially aggravated by any of the following within the right-of-way or permit area:
  - a. Activities of Holder including, but not limited to: construction, operation, maintenance, and termination of the facility;
  - b. Activities of other parties including, but not limited to:



- (1) Land clearing
- (2) Earth-disturbing and earth-moving work
- (3) Blasting
- (4) Vandalism and sabotage;

c. Acts of God.

The maximum limitation for such strict liability damages shall not exceed one million dollars (\$1,000,000) for any one event, and any liability in excess of such amount shall be determined by the ordinary rules of negligence of the jurisdiction in which the damage or injury occurred.

This section shall not impose strict liability for damage or injury resulting primarily from an act of war or from the negligent acts or omissions of the United States.

5. If, during any phase of the construction, operation, maintenance, or termination of the pipeline, any oil, salt water, or other pollutant should be discharged from the pipeline system, impacting Federal lands, the control and total removal, disposal, and cleaning up of such oil, salt water, or other pollutant, wherever found, shall be the responsibility of Holder, regardless of fault. Upon failure of Holder to control, dispose of, or clean up such discharge on or affecting Federal lands, or to repair all damages resulting therefrom, on the Federal lands, the Authorized Officer may take such measures as he/she deems necessary to control and clean up the discharge and restore the area, including, where appropriate, the aquatic environment and fish and wildlife habitats, at the full expense of Holder. Such action by the Authorized Officer shall not relieve Holder of any responsibility as provided herein.

6. All construction and maintenance activity shall be confined to the authorized right-of-way width of 30 feet. If the pipeline route follows an existing road or buried pipeline right-of-way, the surface pipeline shall be installed no farther than 10 feet from the edge of the road or buried pipeline right-of-way. If existing surface pipelines prevent this distance, the proposed surface pipeline shall be installed immediately adjacent to the outer surface pipeline. All construction and maintenance activity shall be confined to existing roads or right-of-ways.

7. No blading or clearing of any vegetation shall be allowed unless approved in writing by the Authorized Officer.

8. Holder shall install the pipeline on the surface in such a manner that will minimize suspension of the pipeline across low areas in the terrain. In hummocky or dune areas, the pipeline shall be "snaked" around hummocks and dunes rather than suspended across these features.

9. The pipeline shall be buried with a minimum of 6 inches under all roads, "two-tracks," and trails. Burial of the pipe will continue for 20 feet on each side of each crossing. The condition of the road, upon completion of construction, shall be returned to at least its former state with no bumps or dips remaining in the road surface.

10. The holder shall minimize disturbance to existing fences and other improvements on public lands. The holder is required to promptly repair improvements to at least their former state. Functional use of these improvements will be maintained at all times. The holder will contact the owner of any improvements prior to disturbing them. When necessary to pass through a fence line, the fence shall be braced on both sides of the passageway prior to cutting of the fence. No permanent gates will be allowed unless approved by the Authorized Officer.

11. In those areas where erosion control structures are required to stabilize soil conditions, the holder will install such structures as are suitable for the specific soil conditions being encountered and which are in accordance with sound resource management practices.

12. Excluding the pipe, all above-ground structures not subject to safety requirement shall be



painted by the holder to blend with the natural color of the landscape. The paint used shall be a color which simulates "Standard Environmental Colors" – **Shale Green**, Munsell Soil Color No. 5Y 4/2; designated by the Rocky Mountain Five State Interagency Committee.

13. The pipeline will be identified by signs at the point of origin and completion of the right-of-way and at all road crossings. At a minimum, signs will state the holder's name, BLM serial number, and the product being transported. Signs will be maintained in a legible condition for the life of the pipeline.

14. The holder shall not use the pipeline route as a road for purposes other than routine maintenance as determined necessary by the Authorized Officer in consultation with the holder. The holder will take whatever steps are necessary to ensure that the pipeline route is not used as a roadway.

15. Any cultural resource (historic or prehistoric site or object) discovered by the holder, or any person working on the holder's behalf, on public or Federal land shall be immediately reported to the Authorized Officer. The holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery will be made by the Authorized Officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to the proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

OR

If the entire project is covered under the Permian Basin Programmatic Agreement (cultural resources only):

The proponent has contributed funds commensurate to the undertaking into an account for offsite mitigation. Participation in the PA serves as mitigation for the effects of this project on cultural resources. If any human skeletal remains, funerary objects, sacred objects, or objects of cultural patrimony are discovered at any time during construction, all construction activities shall halt and the BLM will be notified as soon as possible within 24 hours. Work shall not resume until a Notice to Proceed is issued by the BLM. See Stipulation 16 for more information.

If the proposed project is split between a Class III inventory and a Permian Basin Programmatic Agreement contribution, the portion of the project covered under Class III inventory should default to the first paragraph stipulations.

16. The holder is hereby obligated to comply with procedures established in the Native American Graves Protection and Repatriation Act (NAGPRA) to protect such cultural items as human remains, associated funerary objects, sacred objects, and objects of cultural patrimony discovered inadvertently during the course of project implementation. In the event that any of the cultural items listed above are discovered during the course of project work, the proponent shall immediately halt the disturbance and contact the BLM within 24 hours for instructions. The proponent or initiator of any project shall be held responsible for protecting, evaluating, reporting, excavating, treating, and disposing of these cultural items according to the procedures established by the BLM in consultation with Indian Tribes."

17. Any paleontological resource (historic or prehistoric site or object) discovered by the holder, or any person working on the holder's behalf, on public or Federal land shall be immediately reported to the Authorized Officer. The holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery will be made by the Authorized Officer to determine appropriate actions



to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to the proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

18. The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes the roads, powerline corridor, and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policies.

19. Surface pipelines shall be less than or equal to 4 inches and a working pressure below 125 psi.

### BURIED PIPELINE STIPULATIONS

A copy of the application (Grant, APD, or Sundry Notice) and attachments, including conditions of approval, survey plat and/or map, will be on location during construction. BLM personnel may request to you a copy of your permit during construction to ensure compliance with all stipulations.

Holder agrees to comply with the following stipulations to the satisfaction of the Authorized Officer:

1. The Holder shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this grant.

2. The Holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the holder shall comply with the Toxic Substances Control Act of 1976 as amended, 15 USC 2601 et seq. (1982) with regards to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized under this right-of-way grant. (See 40 CFR Part 702-799 and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193.) Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act, section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the authorized officer concurrent with the filing of the reports to the involved Federal agency or State government.

3. The holder agrees to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. 9601, et seq. or the Resource Conservation and Recovery Act, 42 U.S.C. 6901, et seq.) on the Right-of-Way (unless the release or threatened release is wholly unrelated to the Right-of-Way holder's activity on the Right-of-Way), or resulting from the activity of the Right-of-Way holder on the Right-of-Way. This agreement applies without regard to whether a release is caused by the holder, its agent, or unrelated third parties.



4. If, during any phase of the construction, operation, maintenance, or termination of the pipeline, any oil or other pollutant should be discharged from the pipeline system, impacting Federal lands, the control and total removal, disposal, and cleaning up of such oil or other pollutant, wherever found, shall be the responsibility of holder, regardless of fault. Upon failure of holder to control, dispose of, or clean up such discharge on or affecting Federal lands, or to repair all damages resulting therefrom, on the Federal lands, the Authorized Officer may take such measures as he deems necessary to control and clean up the discharge and restore the area, including where appropriate, the aquatic environment and fish and wildlife habitats, at the full expense of the holder. Such action by the Authorized Officer shall not relieve holder of any responsibility as provided herein.
5. All construction and maintenance activity will be confined to the authorized right-of-way.
6. The pipeline will be buried with a minimum cover of 36 inches between the top of the pipe and ground level.
7. The maximum allowable disturbance for construction in this right-of-way will be 30 feet:
  - Blading of vegetation within the right-of-way will be allowed: maximum width of blading operations will not exceed 20 feet. The trench is included in this area. (*Blading is defined as the complete removal of brush and ground vegetation.*)
  - Clearing of brush species within the right-of-way will be allowed: maximum width of clearing operations will not exceed 30 feet. The trench and bladed area are included in this area. (*Clearing is defined as the removal of brush while leaving ground vegetation (grasses, weeds, etc.) intact. Clearing is best accomplished by holding the blade 4 to 6 inches above the ground surface.*)
  - The remaining area of the right-of-way (if any) shall only be disturbed by compressing the vegetation. (*Compressing can be caused by vehicle tires, placement of equipment, etc.*)
8. The holder shall stockpile an adequate amount of topsoil where blading is allowed. The topsoil to be stripped is approximately 6 inches in depth. The topsoil will be segregated from other spoil piles from trench construction. The topsoil will be evenly distributed over the bladed area for the preparation of seeding.
9. The holder shall minimize disturbance to existing fences and other improvements on public lands. The holder is required to promptly repair improvements to at least their former state. Functional use of these improvements will be maintained at all times. The holder will contact the owner of any improvements prior to disturbing them. When necessary to pass through a fence line, the fence shall be braced on both sides of the passageway prior to cutting of the fence. No permanent gates will be allowed unless approved by the Authorized Officer.
10. Vegetation, soil, and rocks left as a result of construction or maintenance activity will be randomly scattered on this right-of-way and will not be left in rows, piles, or berms, unless otherwise approved by the Authorized Officer. The entire right-of-way shall be recontoured to match the surrounding landscape. The backfilled soil shall be compacted and a 6 inch berm will be left over the ditch line to allow for settling back to grade.

11. In those areas where erosion control structures are required to stabilize soil conditions, the holder will install such structures as are suitable for the specific soil conditions being encountered and which are in accordance with sound resource management practices.

12. The holder will reseed all disturbed areas. Seeding will be done according to the attached seeding requirements, using the following seed mix.

- |  |  |
|--|--|
| <input type="checkbox"/> seed mixture 1            | <input type="checkbox"/> seed mixture 3          |
| <input checked="" type="checkbox"/> seed mixture 2 | <input type="checkbox"/> seed mixture 4          |
| <input type="checkbox"/> seed mixture 2/LPC        | <input type="checkbox"/> Aplomado Falcon Mixture |

13. All above-ground structures not subject to safety requirements shall be painted by the holder to blend with the natural color of the landscape. The paint used shall be color which simulates "Standard Environmental Colors" – **Shale Green**, Munsell Soil Color No. 5Y 4/2.

14. The pipeline will be identified by signs at the point of origin and completion of the right-of-way and at all road crossings. At a minimum, signs will state the holder's name, BLM serial number, and the product being transported. All signs and information thereon will be posted in a permanent, conspicuous manner, and will be maintained in a legible condition for the life of the pipeline.

15. The holder shall not use the pipeline route as a road for purposes other than routine maintenance as determined necessary by the Authorized Officer in consultation with the holder before maintenance begins. The holder will take whatever steps are necessary to ensure that the pipeline route is not used as a roadway. As determined necessary during the life of the pipeline, the Authorized Officer may ask the holder to construct temporary deterrence structures.

16. Any cultural resource (historic or prehistoric site or object) discovered by the holder, or any person working on the holder's behalf, on public or Federal land shall be immediately reported to the Authorized Officer. The holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery will be made by the Authorized Officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to the proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

OR

If the entire project is covered under the Permian Basin Programmatic Agreement (cultural resources only):

The proponent has contributed funds commensurate to the undertaking into an account for offsite mitigation. Participation in the PA serves as mitigation for the effects of this project on cultural resources. If any human skeletal remains, funerary objects, sacred objects, or objects of cultural patrimony are discovered at any time during construction, all construction activities shall halt and the BLM will be notified as soon as possible within 24 hours. Work shall not resume until a Notice to Proceed is issued by the BLM. See Stipulation 17 for more information.



If the proposed project is split between a Class III inventory and a Permian Basin Programmatic Agreement contribution, the portion of the project covered under Class III inventory should default to the first paragraph stipulations.

17. The holder is hereby obligated to comply with procedures established in the Native American Graves Protection and Repatriation Act (NAGPRA) to protect such cultural items as human remains, associated funerary objects, sacred objects, and objects of cultural patrimony discovered inadvertently during the course of project implementation. In the event that any of the cultural items listed above are discovered during the course of project work, the proponent shall immediately halt the disturbance and contact the BLM within 24 hours for instructions. The proponent or initiator of any project shall be held responsible for protecting, evaluating, reporting, excavating, treating, and disposing of these cultural items according to the procedures established by the BLM in consultation with Indian Tribes."

18. Any paleontological resource (historic or prehistoric site or object) discovered by the holder, or any person working on the holder's behalf, on public or Federal land shall be immediately reported to the Authorized Officer. The holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery will be made by the Authorized Officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to the proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

19. The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes associated roads, pipeline corridor and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policies.

20. Escape Ramps - The operator will construct and maintain pipeline/utility trenches [that are not otherwise fenced, screened, or netted] to prevent livestock, wildlife, and humans from becoming entrapped. At a minimum, the operator will construct and maintain escape ramps, ladders, or other methods of avian and terrestrial wildlife escape in the trenches according to the following criteria:

- a. Any trench left open for eight (8) hours or less is not required to have escape ramps; however, before the trench is backfilled, the contractor/operator shall inspect the trench for wildlife, remove all trapped wildlife, and release them at least 100 yards from the trench.
- b. For trenches left open for eight (8) hours or more, earthen escape ramps (built at no more than a 30 degree slope and spaced no more than 500 feet apart) shall be placed in the trench.

## C. ELECTRIC LINES

### STANDARD STIPULATIONS FOR OVERHEAD ELECTRIC DISTRIBUTION LINES

**A copy of the grant and attachments, including stipulations, survey plat and/or map, will be on location during construction. BLM personnel may request to you a copy of your permit during construction to ensure compliance with all stipulations.**

Holder agrees to comply with the following stipulations to the satisfaction of the Authorized Officer:

1. The holder shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this grant.
2. The holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the holder shall comply with the Toxic Substances Control Act of 1976 as amended, 15 USC 2601 et seq. (1982) with regards to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized under this right-of-way grant. (See 40 CFR, Part 702-799 and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193.) Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR, Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act, section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the authorized officer concurrent with the filing of the reports to the involved Federal agency or State government.
3. The holder agrees to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. 9601, et seq. or the Resource Conservation and Recovery Act, 42 U.S.C. 6901, et seq.) on the Right-of-Way (unless the release or threatened release is wholly unrelated to the Right-of-Way holder's activity on the Right-of-Way), or resulting from the activity of the Right-of-Way holder on the Right-of-Way. This agreement applies without regard to whether a release is caused by the holder, its agent, or unrelated third parties.
4. There will be no clearing or blading of the right-of-way unless otherwise agreed to in writing by the Authorized Officer.
5. Power lines shall be constructed and designed in accordance to standards outlined in "Suggested Practices for Avian Protection on Power lines: The State of the Art in 2006" Edison Electric Institute, APLIC, and the California Energy Commission 2006. The holder shall assume the burden and expense of proving that pole designs not shown in the above publication deter raptor perching, roosting, and nesting. Such proof shall be provided by a raptor expert approved by the Authorized Officer. The BLM reserves the right to require modification or additions to all powerline structures placed on this right-of-way, should they be necessary to ensure the safety of large perching birds. Such modifications and/or additions shall be made by the holder without liability or expense to the United States.

Raptor deterrence will consist of but not limited to the following: triangle perch discouragers shall be placed on each side of the cross arms and a nonconductive perching deterrence shall be placed on all vertical poles that extend past the cross arms.
6. The holder shall minimize disturbance to existing fences and other improvements on public lands. The holder is required to promptly repair improvements to at least their former state. Functional use of these improvements will be maintained at all times. The holder will contact the owner of any improvements prior to disturbing them. When necessary to pass through a fence line, the fence shall be braced on both sides of the passageway prior to cutting the fence. No permanent gates will be allowed unless approved by the Authorized Officer.
7. The BLM serial number assigned to this authorization shall be posted in a permanent, conspicuous manner where the power line crosses roads and at all serviced facilities. Numbers



will be at least two inches high and will be affixed to the pole nearest the road crossing and at the facilities served.

8. Upon cancellation, relinquishment, or expiration of this grant, the holder shall comply with those abandonment procedures as prescribed by the Authorized Officer.

9. All surface structures (poles, lines, transformers, etc.) shall be removed within 180 days of abandonment, relinquishment, or termination of use of the serviced facility or facilities or within 180 days of abandonment, relinquishment, cancellation, or expiration of this grant, whichever comes first. This will not apply where the power line extends service to an active, adjoining facility or facilities.

10. Any cultural resource (historic or prehistoric site or object) discovered by the holder, or any person working on the holder's behalf, on public or Federal land shall be immediately reported to the Authorized Officer. The holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery will be made by the Authorized Officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to the proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

OR

If the entire project is covered under the Permian Basin Programmatic Agreement (cultural resources only):

The proponent has contributed funds commensurate to the undertaking into an account for offsite mitigation. Participation in the PA serves as mitigation for the effects of this project on cultural resources. If any human skeletal remains, funerary objects, sacred objects, or objects of cultural patrimony are discovered at any time during construction, all construction activities shall halt and the BLM will be notified as soon as possible within 24 hours. Work shall not resume until a Notice to Proceed is issued by the BLM. See Stipulation 11 for more information.

If the proposed project is split between a Class III inventory and a Permian Basin Programmatic Agreement contribution, the portion of the project covered under Class III inventory should default to the first paragraph stipulations.

11. The holder is hereby obligated to comply with procedures established in the Native American Graves Protection and Repatriation Act (NAGPRA) to protect such cultural items as human remains, associated funerary objects, sacred objects, and objects of cultural patrimony discovered inadvertently during the course of project implementation. In the event that any of the cultural items listed above are discovered during the course of project work, the proponent shall immediately halt the disturbance and contact the BLM within 24 hours for instructions. The proponent or initiator of any project shall be held responsible for protecting, evaluating, reporting, excavating, treating, and disposing of these cultural items according to the procedures established by the BLM in consultation with Indian Tribes."

12. Any paleontological resource (historic or prehistoric site or object) discovered by the holder, or any person working on the holder's behalf, on public or Federal land shall be immediately reported to the Authorized Officer. The holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery will be made by the Authorized Officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to the proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

**13. Special Stipulations:**

For reclamation remove poles, lines, transformer, etc. and dispose of properly.  
Fill in any holes from the poles removed.

**VIII. INTERIM RECLAMATION**

During the life of the development, all disturbed areas not needed for active support of production operations should undergo interim reclamation in order to minimize the environmental impacts of development on other resources and uses.

Within six (6) months of well completion, operators should work with BLM surface management specialists (Jim Amos: 575-234-5909) to devise the best strategies to reduce the size of the location. Interim reclamation should allow for remedial well operations, as well as safe and efficient removal of oil and gas.

During reclamation, the removal of caliche is important to increasing the success of revegetating the site. Removed caliche that is free of contaminants may be used for road repairs, fire walls or for building other roads and locations. In order to operate the well or complete workover operations, it may be necessary to drive, park and operate on restored interim vegetation within the previously disturbed area. Disturbing revegetated areas for production or workover operations will be allowed. If there is significant disturbance and loss of vegetation, the area will need to be revegetated. Communicate with the appropriate BLM office for any exceptions/exemptions if needed.

All disturbed areas after they have been satisfactorily prepared need to be reseeded with the seed mixture provided below.

Upon completion of interim reclamation, the operator shall submit a Sundry Notices and Reports on Wells, Subsequent Report of Reclamation (Form 3160-5).

**IX. FINAL ABANDONMENT & RECLAMATION**

At final abandonment, well locations, production facilities, and access roads must undergo "final" reclamation so that the character and productivity of the land are restored.

Earthwork for final reclamation must be completed within six (6) months of well plugging. All pads, pits, facility locations and roads must be reclaimed to a satisfactory revegetated, safe, and stable condition, unless an agreement is made with the landowner or BLM to keep the road and/or pad intact.

After all disturbed areas have been satisfactorily prepared, these areas need to be revegetated with the seed mixture provided below. Seeding should be accomplished by drilling on the contour whenever practical or by other approved methods. Seeding may need to be repeated until revegetation is successful, as determined by the BLM.

Operators shall contact a BLM surface protection specialist prior to surface abandonment operations for site specific objectives (Jim Amos: 575-234-5909).

Ground-level Abandoned Well Marker to avoid raptor perching: Upon the plugging and subsequent abandonment of the well, the well marker will be installed at ground level on a plate containing the pertinent information for the plugged well.



**Exhibit A-1**  
**Seed Mixture 2. for Sandy Sites**

The holder shall seed all disturbed areas with the seed mixture listed below. The seed mixture shall be planted in the amounts specified in pounds of pure live seed (PLS)\* per acre. There shall be no primary or secondary noxious weeds in the seed mixture. Seed will be tested and the viability testing of seed will be done in accordance with State law (s) and within nine (9) months prior to purchase. Commercial seed will be either certified or registered seed. The seed container will be tagged in accordance with State law(s) and available for inspection by the authorized officer.

Seed will be planted using a drill equipped with a depth regulator to ensure proper depth of planting where drilling is possible. The seed mixture will be evenly and uniformly planted over the disturbed area (smaller/heavier seeds have a tendency to drop the bottom of the drill and are planted first). The holder shall take appropriate measures to ensure this does not occur. Where drilling is not possible, seed will be broadcast and the area shall be raked or chained to cover the seed. When broadcasting the seed, the pounds per acre are to be doubled. The seeding will be repeated until a satisfactory stand is established as determined by the authorized officer. Evaluation of growth will not be made before completion of at least one full growing season after seeding.

Species to be planted in pounds of pure live seed\* per acre:

Species

	<u>lb/acre</u>
Sand dropseed ( <i>Sporobolus cryptandrus</i> )	1.0
Sand love grass ( <i>Eragrostis trichodes</i> )	1.0
Plains bristlegass ( <i>Setaria macrostachya</i> )	2.0

\*Pounds of pure live seed:

Pounds of seed x percent purity x percent germination = pounds pure live seed







# H<sub>2</sub>S Contingency Plan



## Table of Contents

I. EMERGENCY ASSISTANCE TELEPHONE LIST .....	3
II. H <sub>2</sub> S CONTINGENCY PLAN SECTION .....	5
III. OPERATING PROCEDURES .....	7
IV. OPERATING CONDITIONS .....	10
V. EMERGENCY PROCEDURES .....	11
VI. POST EMERGENCY ACTIONS .....	14
VII. IGNITION PROCEDURES .....	15
VIII. TRAINING PROGRAM .....	16
IX. EMERGENCY EQUIPMENT .....	16
X. CHECKLISTS .....	20
XI. BRIEFING PROCEDURES .....	22
XII. EVACUATION PLAN .....	23
XIII. APPENDICES AND GENERAL INFORMATION .....	24

**I. EMERGENCY ASSISTANCE TELEPHONE LIST****PUBLIC SAFETY****911 or****Sheriff's Department:**

Eddy County Sherriff's Office (575) 887-7551

**Fire Department:**

Carlsbad Fire Department (575) 885-3125

Artesia Fire Department (575) 746-5051

**Ambulance:**

Elite Medical Transport (Carlsbad) (915) 542-1144

Trans Aero MedEvac (Artesia) (970) 657-7449

**Hospitals:**

Carlsbad Medical Center (575) 887-4100

Artesia General Hospital (575) 748-3333

**New Mexico Dept. of Transportation:**

Highway &amp; Transportation Department (505) 795- 1401

**New Mexico Railroad Commission:**

Main Line (505) 476-3441

**OSHA 24 Hr. Reporting**

(800) 321-6742

(8 hrs. after death or 24 hrs. after in-patient, amputation, loss of an eye)

**Office Contacts****911 or**


---

Colgate Energy LLC. (432) 695-4222
**Vice President of Operations:**

Casey McCain (432) 664-6140

**Drilling Engineering Supervisor**

Rafael Madrid (432) 556-6387

**Drilling Engineering Technical Adviser**

Steven Segrest (405) 550-0277

**Operations Superintendent**

Rick Lawson (432) 530- 3188

**Drilling Superintendent**

Daniel Cameron (405) 933-0435

**Onsite Supervision (H&P 481 Rig Managers)**

Juan Gutierrez (970)394-4768

Jonathan Jackson (970)394-4768

**Onsite Supervision (H&P 481 Company Men)**

Pierre Dupuis (432)438-0114

Eric Rutherford (432)438-0114

Rolando Torres (432)438-0114

Trevor Hein (432)438-0114

**Emergency Accommodations**


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Safety Solutions Office (432) 563-0400

Safety Solutions Dispatch (432) 556-2002

Craig Strasner (432) 894-0341 (Cell)

## II. H<sub>2</sub>S CONTINGENCY PLAN SECTION

### Scope:

This contingency plan provides an organized plan of action for alerting and protecting the public within an area of exposure prior to an intentional release or following the accidental release of a potentially hazardous volume of hydrogen sulfide. The plan establishes guidelines for all personnel whose work activity may involve exposure to Hydrogen Sulfide Gas (H<sub>2</sub>S).

### Objective:

Prevent any and all accidents and prevent the uncontrolled release of H<sub>2</sub>S into the atmosphere.

Provide proper evacuation procedures to cope with emergencies.

Provide immediate and adequate medical attention should an injury occur.

### Purpose, Distribution and Updating of Contingency Plan:

The Purpose of this contingency plan is to protect the general public from the harmful effects of H<sub>2</sub>S accidentally escaping from the subject producing well. This plan is designed to accomplish its purpose by assuring the preparedness necessary to:

1. Minimize the possibility of releasing H<sub>2</sub>S into the atmosphere during related operations.
2. Provide for the logical, efficient, and safe emergency actions required to protect the general public in the event of an accidental release of a potentially hazardous quantity of H<sub>2</sub>S.

Supplemental information is included with this plan and is intended as reference material for anyone needing a more detailed understanding of the many factors pertinent to H<sub>2</sub>S drilling operations safety. The release of a potentially hazardous quantity of H<sub>2</sub>S is highly unlikely. If such a release should occur however, obviously the exact time, rate, duration, and other pertinent facts will be known in advance thus, this contingency plan must necessarily be somewhat general. The plan does review in detail, as is reasonably possible, the type of accidental release that could possibly endanger the general public, the probable extent of such danger, and the emergency actions generally appropriate. In the event of such an accidental release, the specific actions to be taken will have to be determined at the time of release by the responsible personnel at the drilling location. Complete familiarity with this plan will help such personnel make the proper decisions rapidly. Familiarity with this plan is so required all operators, operator representatives, and drilling contractor supervisory personnel who could possibly be on duty at the drilling location at the time of an H<sub>2</sub>S emergency.

**IT IS THE RESPONSIBILITY OF THE OPERATOR TO ASSURE SUCH FAMILIARITY BEFORE DRILLING WITHIN 1000' OR THREE DAYS PRIOR TO PENETRATION OF THE SHALLOWEST FORMATION KNOWN OR SUSPECTED TO CONTAIN H<sub>2</sub>S IN POTENTIALLY HAZARDOUS QUANTITIES, AND ALSO TO ASSURE THE TIMELY ACCOMPLISHMENT OF ALL THE OTHER ACTION SPECIFIED HERE IN.**

As this contingency plan was prepared considerably in advance of the anticipated H<sub>2</sub>S operation, the plan must be kept current if it is to effectively serve its purpose. The operators will be responsible for seeing that all copies are updated. Updating the plan is required when any changes to the personnel Call List (Section ) including telephone numbers occur or when any pertinent data or plans for the well are altered. The plan must also be updated when any changes in the general public likely to be within the exposure area in the event of an

accidental release from the well bore of a potentially hazardous quantity of H<sub>2</sub>S. Two copies of this plan shall be retained at the office of Colgate Energy. Two copies shall be retained at the drilling location.

**Discussion of Plan:**

**Suspected Problem Zones:**

**Implementation:** This plan, with all details, is to be fully implemented 1000' before drilling into the first sour zone.

**Emergency Response Procedure:** This section outlines the conditions and denotes steps to be taken in the event of an emergency.

**Emergency Equipment and Procedure:** This section outlines the safety and emergency equipment that will be required for the drilling of this well.

**Training Provisions:** This section outlines the training provisions that must be adhered to 1000' before drilling into the first sour zone.

**Emergency call list:** Included are the telephone numbers of all persons that would need to be contacted, should an H<sub>2</sub>S emergency occur.

**Briefing:** This section deals with the briefing of all persons involved with the drilling of this well.

**Public Safety:** Public Safety Personnel will be made aware of the drilling of this well.

**Check Lists:** Status check lists and procedural check lists have been included to ensure adherence to the plan.

**General Information:** A general information section has been included to supply support information.

### III. OPERATING PROCEDURES

#### A. Blowout Preventer Drills

Due to the special piping and Mani folding necessary to handle poisonous gas, particular care will be taken to ensure that all rig personnel are completely familiar with their jobs during the drills. The Drilling Consultant and Tool Pusher (Rig Superintendent) are thoroughly familiar with the additional controls and piping necessary.

#### B. H<sub>2</sub>S Alarm Drills

The Company Man and/ or designee will conduct frequent H<sub>2</sub>S alarm drills for each crew by injecting a trace of H<sub>2</sub>S where the detector will give an alarm. Under these conditions all personnel on location will put on air equipment and remain masked until all clear is announced.

#### C. Surface Annular Preventer/ Diverter System Testing

After installation of the surface annular preventer, Hydraulic Control Valve and diverter system, both are to be function tested. They also should be function tested frequently while drilling surface hole.

#### D. Blowout Preventer

After installation of the Blowout Preventer Stack, the stack will be pressure tested. The Choke manifold is also to be pressure tested at this time. This procedure will be repeated as required by the NMOCD, the BLM, or if any of the stack is nipped down. Also, at this time, the Blind and Pipe Rams are checked for correct operation.

#### E. Well Control Practice Drills and Safety Meeting for Crew Members

Pit drills are for the purpose of acquainting each member of the drilling crew with his duties in the event of an emergency. Drills will be held with each crew as frequently as required to thoroughly familiarize each man with his duties. Drills are to be held at least weekly from that time forward.

##### 1. BOP Drill while on Bottom Drilling:

A. Signal will be three or more long blast given by driller on the horn.

B. Procedure will be as follows:

1. Tool Pusher: Supervises entire operation.

2. Driller

a. Gives signal.

b. Picks up Kelly.

c. Stops pumps.

d. Observes flow.

e. Signal to close (pipe rams if necessary).

f. Check that Choke Manifold is closed.

g. Record drill pipe pressure, casing pressure and determine mud volume gain.

3. Motorman

a. Go to closing unit and standby for signal to close BOP.

b. Close BOP in signal.

c. Check on BOP closing.

d. Go to floor to assist driller. (NOTE: During test drills the BOP



need not be completely closed at the discretion of the supervisor. Supervisor should make it very clear that it is a test drill only!)

4. Derrickman
    - a. Check pumps.
    - b. Go to floor for directions from the driller.
  5. Floorman
    - a. Go to manifold.
    - b. Observe and record pressure.
    - c. Check manifold and BOP for leaks.
    - d. Check with driller for additional instructions.
2. BOP Drill While Making Trip:
- A. During trip driller will fill hole every five (5) stands and check the pits to be sure hole is taking mud.
  - B. Drill Procedure is as follows:
    1. Driller
      - a. Order Safety valve installed.
      - b. Alert those not on the floor.
      - c. Go to stations as described in above drill.
3. Safety Meetings
- A. Every person involved in the operating will be informed of the characteristics of H<sub>2</sub>S, its danger and safety procedures to be used when it is encountered, and recommended first-aid procedure for regular rig personnel. This will be done through a series of talks made before spud.
  - B. The Safety Advisor or Drilling Supervisor will conduct these training sessions and will repeat them as deemed necessary by him or as instructed by Colgate Energy. Talks may include the following subjects:
    1. Dangers of Hydrogen Sulfide (H<sub>2</sub>S).
    2. Use and limitations of air equipment.
    3. Use of resuscitator.
    4. Organize Buddy System.
    5. First Aid procedures.
    6. Use of H<sub>2</sub>S detection devices.
    7. Designate responsible people.
    8. Explain rig layout and policy to visitors.
      - a. Designate smoking and safety or Muster area.
      - b. Emphasize the importance of wind directions.
    9. Describe and explain operation of BOP stack, manifold, separator, and pit piping. Include maximum allowable pressure for casing procedure.
    10. Explain functions of Safety Supervisor.
    11. Explain organize H<sub>2</sub>S Drills.
    12. Explain the overall emergency plan with emphasis given to the evacuation phase of the plans.

- Note: The above talks will be attended by every person involved in the operation. When drilling has reached a depth where H<sub>2</sub>S is anticipated, temporary service personnel and visitors will be directed to the Drilling Consultant, who will designate the air equipment to be used by them in case of emergency, acquaint them with the dangers involved and be sure of their safety while they are in the area. He will point out the Briefing Areas, Windsocks, and Smoking Areas. He may refuse entrance to anyone, who in his opinion should not be admitted because of lack of safety equipment, special operations in progress or for other reasons involving personnel safety.

#### **F. Outside Service Personnel**

All service people such as cementing crews, logging crews, specialist, mechanics, and welders will furnish their own safety equipment. The Company Man/ or designee will be sure that the number of people on location does not exceed the number of masks on location, and they have been briefed regarding safety procedures. He will also be sure each of these people know about smoking and "Briefing Areas" and know what to do in case of an emergency alert or drill. Visitors will be restricted, except with special permission from the Drilling Consultant, when H<sub>2</sub>S might be encountered. They will be briefed as to what to do in case of an alert or drill.

#### **G. Onsite/ off shift workers**

All workers that are staying on site must be identified as to where they are staying while off tour. If a drill/ or emergency takes place related to an H<sub>2</sub>S release, each crew must have a designated person(s) that will wake them up and ensure that they are cleared to the appropriate muster area immediately.

#### **H. Simultaneous Operations (SIMOPS)**

If work is going on adjacent to the location is the responsibility of the Drilling Consultant or designee to communicate any applicable risks that may affect personnel working on that adjacent location. In the case of an H<sub>2</sub>S drill or event, there should be a designated crew member that is responsible for contacting personnel on adjacent locations. This could include just communication on potential events or in case of an event, notification to evacuate location. Drilling Consultant or designee are the Point of Contact and oversee all activities at such point of an H<sub>2</sub>S event occurrence.

#### **I. Area Residences/ Occupied Locations/ Public Roads**

Any occupied residences/ businesses that are within a reasonable perimeter of the location (attached map will identify a 3000' radius around location) should be identified as part of this contingency and a reasonable effort will be made to gain contact information for them. As part of the briefing of the contingency plan, the team reviewing should identify where these potential receptors are and plan on who will contact them in case of a release that may impact that area.

#### **J. Drilling Fluids**

Drilling Fluid Monitoring – On Any Hazardous H<sub>2</sub>S gas well, the earlier the warning of danger the better chance to control operations. Mud Company will be in daily contact with Colgate Energy Consultant. The Mud Engineer will take samples of the mud, analyze these samples, and make necessary recommendations to prevent H<sub>2</sub>S gas from the formation, the pH will be increased as necessary for corrosion control.

pH Control – For normal drilling, pH of 10.5 – 11.5. Would be enough for corrosion protection. If there is an influx of H<sub>2</sub>S gas from the formation, the pH will be increased as necessary for corrosion control.

H<sub>2</sub>S Scavengers – If necessary H<sub>2</sub>S scavengers will be added to the drilling mud.

#### IV. OPERATING CONDITIONS

##### A. Posting Well Condition Flags

Post the green, yellow or red well condition flag, as appropriate, on the well condition sign at the location entrance, and take necessary precautions as indicated below:

1. **Green Flag:** Potential Danger- When Drilling in known H<sub>2</sub>S zones or when H<sub>2</sub>S has been detected in the drilling fluid atmosphere. Protective breathing equipment shall be inspected, and all personnel on duty shall be alerted to be ready to use this equipment.
2. **Yellow Flag:** Potential Danger- When the threshold limit value of H<sub>2</sub>S (10 PPM) or of SO<sub>2</sub> (5 PPM) is reached. If the concentration of H<sub>2</sub>S or SO<sub>2</sub> reaches 10 PPM, protective breathing equipment shall be worn by all working personnel, and non-working personnel shall go to the upwind Safe Briefing Area.
3. **Red Flag:** Extreme danger\*- When the ambient concentration of H<sub>2</sub>S or SO<sub>2</sub> is reasonably believed or determined to have exceeded the potentially hazardous level. All non-essential personnel shall leave the drilling location taking the route most likely to exposure to escaping gas.

##### B. Requiring Air Masks Conditions

1. Whenever air masks are used, the person must be clean shaven as shown in the APC Guidelines
2. When breaking out any line where H<sub>2</sub>S can reasonably be expected.
3. When sampling air in areas to determine if toxic concentrations of H<sub>2</sub>S exist.
4. When working in areas where 10 PPM or more of H<sub>2</sub>S has been detected.
5. At any time, there is doubt as to the H<sub>2</sub>S level in the area to be entered.

##### C. Kick Procedure

1. It is very important that the driller be continuously alert, especially when approaching a gas formation.
2. Should gas come into the well bore, it is very important to be aware of a kick at the earliest time.
3. If a kick is identified, follow appropriate diverter or shut in procedures according to the situation that is presented utilizing appropriate kick procedures.

## V. EMERGENCY PROCEDURES

- I. In the event of any evidence of H<sub>2</sub>S level above 10ppm, take the following steps immediately:
  - a. Secure breathing apparatus.
  - b. Order non-essential personnel out of the danger zone.
  - c. Take steps to determine if the H<sub>2</sub>S level can be corrected or suppressed, and if so, proceed with normal operations.
- II. If uncontrollable conditions occur, proceed with the following:
  - a. Take steps to protect and/or remove any public downwind of the rig, including partial evacuation or isolation. Notify necessary public safety personnel.
  - b. Remove all personnel to the Safe Briefing Area.
  - c. Notify public safety personnel for help with maintaining roadblocks, thus limiting traffic and implementing evacuation.
  - d. Determine and proceed with the best possible plan to regain control of the well. Maintain tight security and safety measures.
- III. Responsibility
  - a. The Company Approved Supervisor shall be responsible for the total implementation of the plan.
  - b. The Company Approved Supervisor shall be in complete command during any emergency.
  - c. The Company Approved Supervisor shall designate a backup Supervisor if he/she is not available.
- IV. Actions to be taken
  - a. Assign specific tasks to drilling location personnel
  - b. Evacuate the general public from the exposure area
  - c. Cordon off the exposure area to prevent entry by unauthorized persons
  - d. Request assistance if and as needed and initiate emergency notifications
  - e. Stop the dispersion of H<sub>2</sub>S
  - f. Complete emergency notifications as required
  - g. Return the situation to normal

**EMERGENCY PROCEDURE IMPLEMENTATION****I. Drilling or Tripping****a. All Personnel**

- i. When alarm sounds, don escape unit and report to upwind Safe Briefing Area.
- ii. Check status of other personnel (buddy system).
- iii. Secure breathing apparatus.
- iv. Wait for orders from supervisor.

**b. Drilling Consultant**

- i. Report to the upwind Safe Briefing Area.
- ii. Don Breathing Apparatus and return to the point of release with the Tool Pusher or Driller (buddy system).
- iii. Determine the concentration of H<sub>2</sub>S.
- iv. Assess the situation and take appropriate control measures.

**c. Tool Pusher**

- i. Report to the upwind Safe Briefing Area.
- ii. Don Breathing Apparatus and return to the point of release with the Drilling Consultant or the Driller (buddy system).
- iii. Determine the concentration of H<sub>2</sub>S.
- iv. Assess the situation and take appropriate control measures.

**d. Driller**

- i. Check the status of other personnel (in a rescue attempt, always use the buddy system).
- ii. Assign the least essential person to notify the Drilling Consultant and Tool Pusher, in the event of their absence.
- iii. Assume the responsibility of the Drilling Consultant and the Tool Pusher until they arrive, in the event of their absence.

**e. Derrick Man and Floor Hands**

- i. Remain in the upwind Safe Briefing Area until otherwise instructed by a supervisor.

**f. Mud Engineer**

- i. Report to the upwind Safe Briefing Area.
- ii. When instructed, begin check of mud for pH level and H<sub>2</sub>S level.

**g. Safety Personnel**

- i. Don Breathing Apparatus.
- ii. Check status of personnel.
- iii. Wait for instructions from Drilling Consultant or Tool Pusher.

**II. Taking a Kick**

- a.* All Personnel report to the upwind Safe Briefing Area.
- b.* Follow standard BOP/ diverter procedures.

**III. Open Hole Logging**

- a.* All unnecessary personnel should leave the rig floor.
- b.* Drilling Consultant and Safety Personnel should monitor the conditions and make necessary safety equipment recommendations.

**IV. Running Casing or Plugging**

- a.* Follow "Drilling or Tripping" procedures.
- b.* Assure that all personnel have access to protective equipment.



## VI. POST EMERGENCY ACTIONS

In the event this plan is activated, the following post emergency actions shall be taken in an effort to reduce the possibility of a reoccurrence of the type of problem that required its activation, and/or assure that any future activation of a similar plan will be as effective as possible.

- A. Review the factors that caused or permitted the emergency occur, and if the need is indicated, modify operating, maintenance and/or surveillance procedures.
- B. If the need is indicated, retrain employees in blowout prevention, H<sub>2</sub>S emergency procedures and etc.
- C. Clean up, recharge, restock, repair, and/ or replace H<sub>2</sub>S emergency equipment as necessary, and return it to its proper place. (For whatever rental equipment is used, this will be the responsibility of Rental Company).
- D. See that future H<sub>2</sub>S drilling contingency plans are modified accordingly, if the need is indicated.

## VII. IGNITION PROCEDURES

### Responsibilities:

The decision to ignite the well is the responsibility of the DRILLING CONSULTANT in concurrence with the STATE POLICE. In the event the Drilling Consultant is incapacitated, it becomes the responsibility of the RIG TOOL PUSHER. This decision should be made only as a last resort and in a situation where it is clear that:

1. Human life and property are endangered.
2. There is no hope of controlling the blowout under the prevailing conditions.

If time permits, notify the main office, but do not delay if human life is in danger. Initiate the first phase of the evacuation plan.

### Instructions for Igniting the Well:

1. Two people are required for the actual igniting operation. Both men must wear self-contained breathing apparatus and must use a full body harness and attach a retrievable safety line to the D-Ring in the back. One man must monitor the atmosphere for explosive gases with the LEL monitor, while the Drilling Consultant is responsible for igniting the well.
2. The primary method to ignite is a 25mm flare gun with a range of approximately 500 feet.
3. Ignite from upwind and do not approach any closer than is warranted.
4. Select the ignition site best suited for protection and which offers an easy escape route.
5. Before igniting, check for the presence of combustible gases.
6. After igniting, continue emergency actions and procedures as before.
7. All unassigned personnel will limit their actions to those directed by the Drilling Consultant.

**Note:** After the well is ignited, burning Hydrogen Sulfide will convert to Sulfur Dioxide, which is also highly toxic. Also, both are heavier than air. Do not assume the area is safe even after the well is ignited.

## VIII. TRAINING PROGRAM

When working in an area where Hydrogen Sulfide (H<sub>2</sub>S) might be encountered, definite training requirements must be carried out. The Company Supervisor will ensure that all personnel, at the well site, have had adequate training in the following:

1. Hazards and characteristics of Hydrogen Sulfide (H<sub>2</sub>S).
2. Physicals effects of Hydrogen Sulfide on the human body.
3. Toxicity of Hydrogen Sulfide and Sulfur Dioxide.
4. H<sub>2</sub>S detection, Emergency alarm and sensor location.
5. Don and Doff of SCBA and be clean shaven.
6. Emergency rescue.
7. Resuscitators.
8. First aid and artificial resuscitation.
9. The effects of Hydrogen Sulfide on metals.
10. Location safety.

Service company personnel and visiting personnel must be notified if the zone contains H<sub>2</sub>S, and each service company must provide adequate training and equipment for their employees before they arrive at the well site.

## IX. EMERGENCY EQUIPMENT

### Lease Entrance Sign:

Should be located at the lease entrance with the following information:

CAUTION – POTENTIAL POISON GAS  
HYDROGEN SULFIDE  
NO ADMITTANCE WITHOUT AUTHORIZATION

### Respiratory Equipment:

- Fresh air breathing equipment should be placed at the safe briefing areas and should include the following:
- Two SCBA's at each briefing area.
- Enough airline units to operate safely, anytime the H<sub>2</sub>S concentration reaches the IDLH level (100 ppm).

- Cascade system with enough breathing air hose and manifolds to reach the rig floor, the derrickman and the other operation areas.

**Windssocks or Wind Streamers:**

- A minimum of two 10" windssocks located at strategic locations so that they may be seen from any point on location.
- Wind streamers (if preferred) should always be placed at various locations on the well site to ensure wind consciousness. (Corners of location).

**Hydrogen Sulfide Detector and Alarms:**

- 1 - Four channel H<sub>2</sub>S monitor with alarms.
- Three (3) sensors located as follows: #1 – Rig Floor, #2 – Shale Shaker, #3 – Cellar.
- Gastec or Draeger pump with tubes.
- Sensor test gas.

**Well Condition Sign and Flags:**

The Well Condition Sign w/flags should be placed a minimum of 150' before you enter the location. It should have three (3) color coded flags (green, yellow and red) that will be used to denote the following location conditions:

GREEN – Normal Operating Conditions  
YELLOW – Potential Danger  
RED – Danger, H<sub>2</sub>S Gas Present

**Auxiliary Rescue Equipment:**

- Stretcher
- 2 – 100' Rescue lines.
- First Aid kit properly stocked.

**Mud Inspection Equipment:**

Garret Gas Train or Hach Tester for inspection of Hydrogen Sulfide in the drilling mud system.

**Fire Extinguishers:**

Adequate fire extinguishers shall be located at strategic locations.

**Blowout Preventer:**

- The well shall have hydraulic BOP equipment for the anticipated bottom hole pressure (BHP).
- The BOP should be tested upon installation.
- BOP, Choke Line and Kill Line will be tested as specified by Operator.

**Confined Space Monitor:**

There should be a portable multi-gas monitor with at least 3 sensors (O<sub>2</sub>, LEL H<sub>2</sub>S), preferably 4 (O<sub>2</sub>, LEL, H<sub>2</sub>S, CO). This instrument should be used to test the atmosphere of any confined space before entering. It should also be used for atmospheric testing for LEL gas before beginning any type of Hot Work. Proper calibration documentation will need to be provided.

**Communication Equipment:**

- Proper communication equipment such as cell phones or 2-way radios should be available at the rig.
- Radio communication shall be available for communication between the company man's trailer, rig floor and the tool pusher's trailer.
- Communication equipment shall be available on the vehicles.

**Special Control Equipment:**

- Hydraulic BOP equipment with remote control on the ground.
- Rotating head at the surface casing point.

**Evacuation Plan:**

- Evacuation routes should be established prior to spudding the well.
- Should be discussed with all rig personnel.

**Designated Areas:*****Parking and Visitor area:***

- All vehicles are to be parked at a pre-determined safe distance from the wellhead.
- Designated smoking area.

**Safe Briefing Areas:**

- Two Safe Briefing Areas shall be designated on either side of the location at the maximum allowable distance from the well bore so they offset prevailing winds, or they are at a 180-degree angle if wind directions tend to shift in the area.
- Personal protective equipment should be stored at both briefing areas and if a moveable cascade trailer is used, it should be kept upwind of existing winds. When wind is from the prevailing direction, both briefing areas should be accessible.

**Note:**

- Additional equipment will be available at the H<sub>2</sub>S Provider Safety office.
- Additional personal H<sub>2</sub>S monitors are available for all employees on location.
- Automatic Flare Igniters are recommended for installation on the rig.



**X. CHECKLISTS****Rig-up & Equipment Status Check List**

Note: Initial & Date each item as they are implemented. Multiple wells require additional Columns to be Dated/ Initialed

	Date & Initial 1 <sup>st</sup> Well	Date & Initial 2 <sup>nd</sup> Well	Date & Initial 3 <sup>rd</sup> Well	Date & Initial 4 <sup>th</sup> Well
Sign at location entrance.				
Two (2) windsocks (in required locations).				
Wind Streamers (if required).				
SCBA's on location (Minimum of 2 @ each Muster Area)				
Air packs (working packs and escape packs), inspected and ready for use.				
Spare bottles for each air pack (if required).				
Cascade system and hose line hook up.				
Choke manifold hooked-up and tested. (before drilling out surface casing.)				
Remote Hydraulic BOP control tested (before drilling out surface casing).				
BOP tested (before drilling out surface casing).				
Safe Briefing Areas set-up				
Well Condition sign and flags on location and ready.				
Hydrogen Sulfide detection/ alarm system hooked-up & tested.				
Stretcher on location				
2 – 100' Lifelines on location.				
1 – 20# Fire Extinguisher in safety trailer.				
Confined Space monitor on location and tested.				
All rig crews and supervisor trained (as required).				
All rig crews and supervision medically qualified and fit tested on proper respirators				
Access restricted for unauthorized personnel.				
Pre-spud meeting held reviewing Contingencies				
Drills on H <sub>2</sub> S and well control procedures.				
All outside service contractors advised of potential H <sub>2</sub> S on the well.				
25mm Flare Gun on location w/flares.				

## Procedural Check List

Perform the following on each tour:

1. Check fire extinguishers to see that they have the proper charge.
2. Check breathing equipment to ensure that they have not been tampered with.
3. Check pressure on the supply air bottles to make sure they are capable of recharging.
4. Make sure all the Hydrogen Sulfide detection systems are operative.
5. Ensure that all BOP/ Surface Annular/ Diverter systems are functioning and operational.

Perform the following each week:

1. Check each piece of breathing equipment to make sure that they are fully charged and operational. This requires that the air cylinder be opened, and the mask assembly be put on and tested to make sure that the regulators and masks are properly working. Negative and Positive pressure should be conducted on all masks.
2. BOP skills.
3. Check supply pressure on BOP accumulator stand-by source.
4. Check all breathing air mask assemblies to see that straps are loosened and turned back, ready for use.
5. Check pressure on cascade air cylinders to make sure they are fully charged and ready to use for refill purposes if necessary.
6. Check all cascade system regulators to make sure they work properly.
7. Perform breathing drills with on-site personnel.
8. Check the following supplies for availability (may be with H<sub>2</sub>S Techs On-call):
  - Stretcher
  - Safety Belts and Ropes
  - Spare air Bottles
  - Spare Oxygen Bottles (if resuscitator required)
  - Gas Detector Pump and Tubes
  - Emergency telephone lists
  - Test the Confined Space Monitor to verify the batteries are good.

## XI. BRIEFING PROCEDURES

The following scheduled briefings will be held to ensure the effective drilling and operation of this project:

### Pre-Spud Meeting

Date: Prior to spudding the well.

Attendance:   Drilling Supervisor  
                  Drilling Engineer  
                  Drilling Consultant  
                  Rig Tool Pushers  
                  Rig Drillers  
                  Mud Engineer  
                  All Safety Personnel  
                  Key Service Company Personnel

Purpose:       Review and discuss the well program, step-by-step, to insure complete understanding of assignments and responsibilities.

## **XII. EVACUATION PLAN**

### **General Plan**

The direct lines of action prepared by Colgate Energy to protect the public from hazardous gas situations are as follows:

1. When the company approved supervisor (Drilling Consultant, Tool Pusher or Driller) determine that Hydrogen Sulfide gas cannot be limited to the well location, and the public will be involved, he will activate the evacuation plan. Escape routes are noted on the area map.
2. Company safety personnel or designee will notify the appropriate local government agency that a hazardous condition exists, and evacuation needs to be implemented.
3. Company approved safety personnel that have been trained in the use of the proper emergency equipment will be utilized.
4. Law enforcement personnel (State Police, Local Police Department, Fire Department, and the Sheriff's Department) will be called to aid in setting up and maintaining roadblocks. Also, they will aid in evacuation of the public if necessary.

NOTE: Law enforcement personnel will not be asked to come into a contaminated area. Their assistance will be limited to uncontaminated areas. Constant radio contact will be maintained with them.

5. After the discharge of gas has been controlled, "Company" personnel will determine when the area is safe for re-entry.
6. If a major release is secured, all exposed housing, vehicles, rig buildings, and low-lying areas and other structures downwind must be tested and clear with SCBAs donned to ensure that all residual H<sub>2</sub>S is cleared. Fans, or opening of doors is recommended to ensure that areas are cleared out as part of this process.



### **XIII. APPENDICES AND GENERAL INFORMATION**

#### **Radius of Exposure Affected Notification List**

**(within a 65' radius of exposure @100ppm)**

The geologic zones that will be encountered during drilling are known to contain hazardous quantities of H<sub>2</sub>S. The accompanying map illustrates the affected areas of the community. The residents within this radius will be notified via a hand delivered written notice describing the activities, potential hazards, conditions of evacuation, evacuation drill siren alarms and other precautionary measures.

#### **Evacuee Description: Residents:**

#### **Notification Process:**

A continuous siren audible to all residence will be activated, signaling evacuation of previously notified and informed residents.

#### **Evacuation Plan:**

All evacuees will migrate lateral to the wind direction.

The Operating Company will identify all home bound or highly susceptible individuals and make special evacuation preparations, interfacing with the local and emergency medical service as necessary.

### Toxic Effects of H<sub>2</sub>S Poisoning

Hydrogen Sulfide is extremely toxic. The acceptable ceiling concentration for eight-hour exposure is 10 PPM, which is .001% by volume. Hydrogen Sulfide is heavier than air (specific gravity – 1.192) and is colorless and transparent. Hydrogen Sulfide is almost as toxic as Hydrogen Cyanide and is 5-6 times more toxic than Carbon Monoxide. Occupational exposure limits for Hydrogen Sulfide and other gases are compared below in Table 1. Toxicity table for H<sub>2</sub>S and physical effects are shown in Table 2.

Table 1  
Permissible Exposure Limits of Various Gases

<u>Common Name</u>	<u>Symbol</u>	<u>Sp. Gravity</u>	<u>TLV</u>	<u>STEL</u>	<u>IDLH</u>
Hydrogen Cyanide	HCN	.94	4.7 ppm	4.7 ppm	50 ppm
Hydrogen Sulfide	H <sub>2</sub> S	1.192	10 ppm	15 ppm	100 ppm
Sulfide Dioxide	SO <sub>2</sub>	2.21	2 ppm	5 ppm	100 ppm
Chlorine	CL	2.45	.5 ppm	1 ppm	10 ppm
Carbon Monoxide	CO	.97	25 ppm	200 ppm	1200 ppm
Carbon Dioxide	CO <sub>2</sub>	1.52	5000 ppm	30,000 ppm	40,000 ppm
Methane	CH <sub>4</sub>	.55	5% LEL	15% UEL	

## Definitions

- A. TLV – Threshold Limit Value is the concentration employees may be exposed based on a TWA (time weighted average) for eight (8) hours in one day for 40 hours in one (1) week. This is set by ACGIH (American Conference of Governmental Hygienists) and regulated by OSHA.
- B. STEL – Short Term Exposure Limit is the 15-minute average concentration an employee may be exposed to providing that the highest exposure never exceeds the OEL (Occupational Exposure Limit). The OEL for H<sub>2</sub>S is 20 PPM.
- C. IDLH – Immediately Dangerous to Life and Health is the concentration that has been determined by the ACGIH to cause serious health problems or death if exposed to this level. The IDLH for H<sub>2</sub>S is 100 PPM.
- D. TWA – Time Weighted Average is the average concentration of any chemical or gas for an eight (8) hour period. This is the concentration that any employee may be exposed based on a TWA.

**Toxicity Table of H<sub>2</sub>S**

<u>Percent %</u>	<u>PPM</u>	<u>Physical Effects</u>
.0001	1	Can smell less than 1 ppm.
.001	10	TLV for 8 hours of exposure.
.0015	15	STEL for 15 minutes of exposure.
.01	100	Immediately Dangerous to Life & Health. Kills sense of smell in 3 to 5 minutes.
.02	200	Kills sense of smell quickly, may burn eyes and throat.
.05	500	Dizziness, cessation of breathing begins <b>in a few minutes</b> .
.07	700	Unconscious quickly, death will result if not rescued promptly.
.10	1000	Death will result unless rescued promptly. Artificial resuscitation may be necessary.



## PHYSICAL PROPERTIES OF H<sub>2</sub>S

The properties of all gases are usually described in the context of seven major categories:

- COLOR
- ODOR
- VAPOR DENSITY
- EXPLOSIVE LIMITS
- FLAMMABILITY
- SOLUBILITY (IN WATER)
- BOILING POINT

Hydrogen Sulfide is no exception. Information from these categories should be considered in order to provide a complete picture of the properties of the gas.

### ***COLOR – TRANSPARENT***

Hydrogen Sulfide is colorless, so it is invisible. This fact simply means that you can't rely on your eyes to detect its presence. In fact, that makes this gas extremely dangerous to be around.

### ***ODOR – ROTTEN EGGS***

Hydrogen Sulfide has a distinctive offensive smell, like "rotten eggs". For this reason, it earned its common name "sour gas". However, H<sub>2</sub>S, even in low concentrations, is so toxic that it attacks and quickly impairs a victim's sense of smell, so it could be fatal to rely on your nose as a detection device.

### ***VAPOR DENSITY – SPECIFIC GRAVITY OF 1.192***

Hydrogen Sulfide is heavier than air, so it tends to settle in low-lying areas like pits, cellars or tanks. If you find yourself in a location where H<sub>2</sub>S is known to exist, protect yourself. Whenever possible, work in an area upwind and keep to higher ground.

### ***EXPLOSIVE LIMITS – 4.0% TO 44%***

Mixed with the right proportion of air or oxygen, H<sub>2</sub>S will ignite and burn or explode, producing another alarming element of danger besides poisoning.

### ***FLAMMABILITY***

Hydrogen Sulfide will burn readily with a distinctive clear blue flame, producing Sulfur Dioxide (SO<sub>2</sub>), another hazardous gas that irritates the eyes and lungs.

### ***SOLUBILITY – 4 TO 1 RATIO WITH WATER***

Hydrogen Sulfide can be dissolved in liquids, which means that it can be present in any container or vessel used to carry or hold well fluids including oil, water, emulsion and sludge. The solubility of H<sub>2</sub>S is dependent on temperature and pressure, but if conditions are right, simply agitating a fluid containing H<sub>2</sub>S may release the gas into the air.

### ***BOILING POINT – (-77° Fahrenheit)***

Liquefied Hydrogen Sulfide boils at a very low temperature, so it is usually found as a gas.

## RESPIRATOR USE

The Occupational Safety and Health Administration (OSHA) regulate the use of respiratory protection to protect the health of employees. OSHA's requirements are written in the Code of Federal Regulations, Title 29, Part 1910, Section 134, Respiratory Protection. This regulation requires that all employees who might be required to wear respirators, shall complete an OSHA mandated medical evaluation questionnaire. The employee then should be fit tested prior to wearing any respirator while being exposed to hazardous gases.

Written procedures shall be prepared covering safe use of respirators in dangerous atmospheric situations, which might be encountered in normal operations or in emergencies. Personnel shall be familiar with these procedures and the available respirators.

Respirators shall be inspected prior to and after each use to make sure that the respirator has been properly cleaned, disinfected and that the respirator works properly. The unit should be fully charged prior to being used.

Anyone who may use respirators shall be properly trained in how to properly seal the face piece. They shall wear respirators in normal air and then in a test atmosphere. (Note: Such items as facial hair (beard or sideburns) and eyeglass temple pieces will not allow a proper seal.) Anyone who may be expected to wear respirators should have these items removed before entering a toxic atmosphere. A special mask must be obtained for anyone who must wear eyeglasses. Contact lenses should not be allowed.

Respirators shall be worn during the following conditions:

- A. Any employee who works near the top or on the top of any tank unless tests reveal less than 20 ppm of H<sub>2</sub>S.
- B. When breaking out any line where H<sub>2</sub>S can reasonably be expected.
- C. When sampling air in areas where H<sub>2</sub>S may be present.
- D. When working in areas where the concentration of H<sub>2</sub>S exceeds the Threshold Limit Value for H<sub>2</sub>S (10 ppm).
- E. At any time where there is a doubt as to the H<sub>2</sub>S level in the area to be entered.

## EMERGENCY RESCUE PROCEDURES

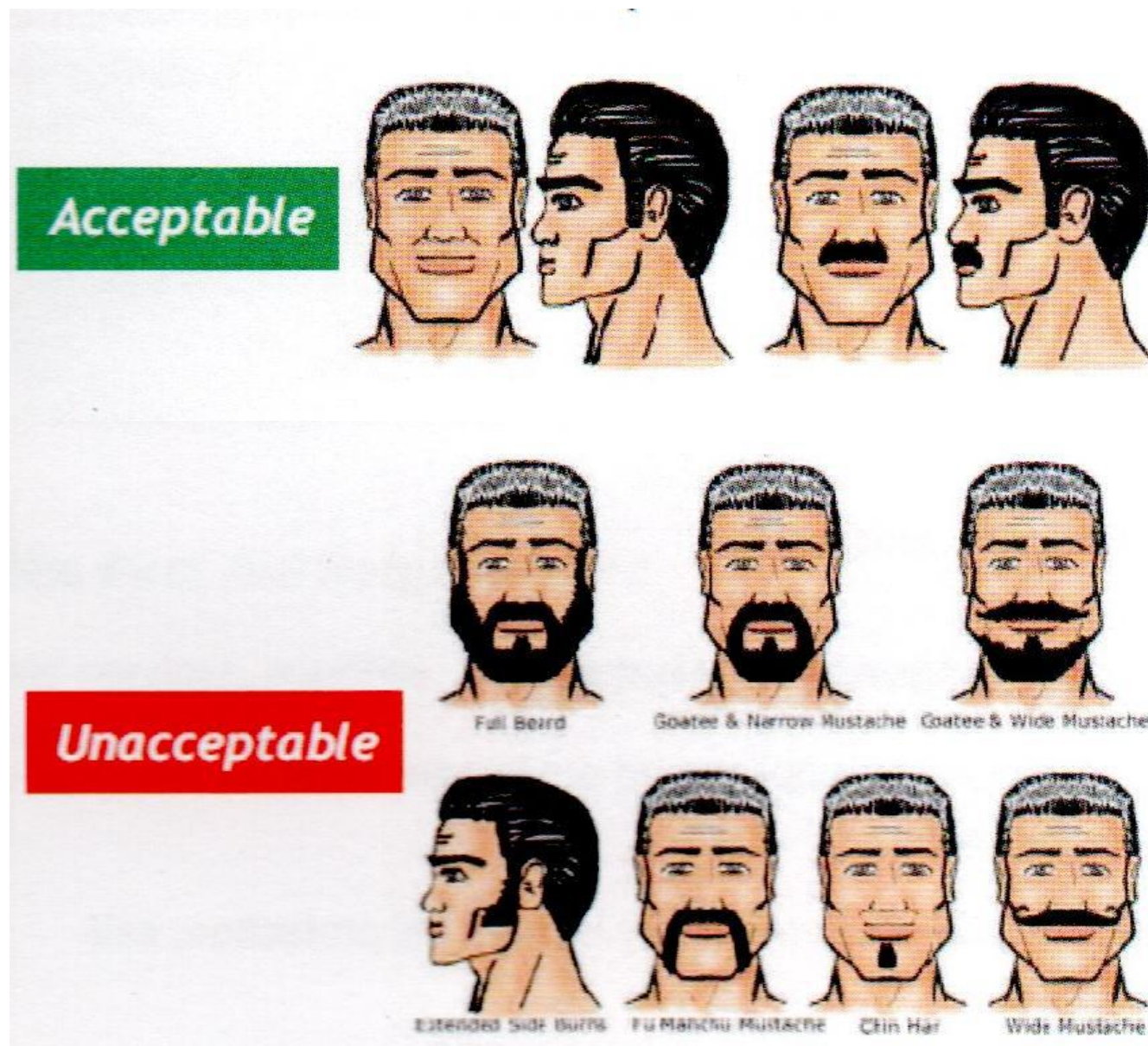
### ***DO NOT PANIC!!!***

#### **Remain Calm – Think**

1. Before attempting any rescue, you must first get out of the hazardous area yourself. Go to a safe briefing area.
2. Sound alarm and activate the 911 system.
3. Put on breathing apparatus. At least two persons should do this, when available use the buddy system.
4. Rescue the victim and return them to a safe briefing area.
5. Perform an initial assessment and begin proper First Aid/CPR procedures.
6. Keep victim lying down with a blanket or coat, etc., under the shoulders to keep airway open. Conserve body heat and do not leave unattended.
7. If the eyes are affected by H<sub>2</sub>S, wash them thoroughly with potable water. For slight irritation, cold compresses are helpful.
8. In case a person has only minor exposure and does not lose consciousness totally, it's best if he doesn't return to work until the following day.
9. Any personnel overcome by H<sub>2</sub>S should always be examined by medical personnel. They should always be transported to a hospital or doctor.

## Facial Hair – Clean Shaven Examples

Purpose: To define clean shaven expectations in the field for: 1) Respirator Use, if applicable and 2) First Aid Administration, if situation occurs related to H<sub>2</sub>S exposure, having no facial hair can greatly benefit response time and treatment ability.



**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 126637

**CONDITIONS**

Operator: COLGATE OPERATING, LLC 300 North Marienfeld Street Midland, TX 79701	OGRID:
	371449
	Action Number:
	126637
Action Type:	
[C-101] BLM - Federal/Indian Land Lease (Form 3160-3)	

**CONDITIONS**

Created By	Condition	Condition Date
kpickford	The pool assignment for this well has been corrected on the C-102. Subsequent sundries must reflect the correct pool.	7/21/2022
kpickford	Notify OCD 24 hours prior to casing & cement	7/21/2022
kpickford	Will require a File As Drilled C-102 and a Directional Survey with the C-104	7/21/2022
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	7/21/2022
kpickford	Cement is required to circulate on both surface and intermediate1 strings of casing	7/21/2022
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	7/21/2022