

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. 30-015-49739
3a. Address	3b. Phone No. (include area code)	10. Field and Pool, or Exploratory <u>Scanlon Draw, Wolfcamp West</u>
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.
2. A Drilling Plan.
3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office). | 4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
5. Operator certification.
6. Such other site specific information and/or plans as may be requested by the BLM. |
|---|---|

25. Signature	Name (Printed/Typed)	Date
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: NESE / 1396 FSL / 165 FEL / TWSP: 20S / RANGE: 28E / SECTION: 5 / LAT: 32.5992094 / LONG: -104.191471 (TVD: 0 feet, MD: 0 feet)
PPP: NWSW / 2319 FSL / 0 FWL / TWSP: 20S / RANGE: 28E / SECTION: 3 / LAT: 32.6018062 / LONG: -104.1736427 (TVD: 8820 feet, MD: 14125 feet)
PPP: NWSE / 2318 FSL / 0 FWL / TWSP: 20S / RANGE: 28E / SECTION: 4 / LAT: 32.6017713 / LONG: -104.1822816 (TVD: 8820 feet, MD: 11465 feet)
PPP: NESW / 2317 FSL / 0 FWL / TWSP: 20S / RANGE: 28E / SECTION: 4 / LAT: 32.6017537 / LONG: -104.1866009 (TVD: 8820 feet, MD: 10135 feet)
PPP: NWSW / 2315 FSL / 100 FWL / TWSP: 20S / RANGE: 28E / SECTION: 4 / LAT: 32.6017384 / LONG: -104.1905953 (TVD: 8753 feet, MD: 8930 feet)
PPP: NWSW / 2315 FSL / 0 FWL / TWSP: 20S / RANGE: 28E / SECTION: 4 / LAT: 32.6017372 / LONG: -104.1905954 (TVD: 8732 feet, MD: 8888 feet)
BHL: NESE / 2321 FSL / 10 FEL / TWSP: 20S / RANGE: 28E / SECTION: 3 / LAT: 32.6019202 / LONG: -104.1564222 (TVD: 8820 feet, MD: 19428 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 30-015- 49739	2 Pool Code 98315 55540	Scanlon Draw; Wolfcamp West East WC Burton Flat East, Upper Wolfcamp
4 Property Code 333079	5 Property Name DUNDEE 4 FED COM	6 Well Number 202H
7 OGRID No. 371449	8 Operator Name COLGATE ENERGY LLC	9 Elevation 3289.71'

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
I	5	20-S	28-E		1396'	SOUTH	165'	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
I	3	20-S	28-E		2321'	SOUTH	10'	EAST	EDDY

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

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

<p>16</p> <p>SURFACE HOLE LOCATION (SHL) NEW MEXICO EAST - NAD 83 X=585024.74 LAT.= 32.59920943° N Y=581752.27 LONG.= 104.19147105° W NEW MEXICO EAST - NAD 27 X=543844.63 LAT.= 32.59909232° N Y=581690.73 LONG.= -104.19096322° W 1396' FSL, 165' FEL - SECTION 5</p> <p>FIRST TAKE POINT (FTP) NEW MEXICO EAST - NAD 83 X=585293.17 LAT.= 32.60173842° N Y=582672.68 LONG.= 104.19059537° W NEW MEXICO EAST - NAD 27 X=544113.08 LAT.= 32.60162132° N Y=582611.13 LONG.= -104.19008750° W 2315' FSL, 100' FWL - SECTION 4</p> <p>LAST TAKE POINT (LTP) NEW MEXICO EAST - NAD 83 X=595726.58 LAT.= 32.60191841° N Y=582753.83 LONG.= 104.15671450° W NEW MEXICO EAST - NAD 27 X=554546.46 LAT.= 32.60180095° N Y=582692.19 LONG.= -104.15620749° W 2321' FSL, 100' FEL - SECTION 3</p> <p>BOTTOM HOLE LOCATION (BHL) NEW MEXICO EAST - NAD 83 X=595816.58 LAT.= 32.60192021° N Y=582754.63 LONG.= 104.15642224° W NEW MEXICO EAST - NAD 27 X=554636.46 LAT.= 32.60180275° N Y=582692.99 LONG.= -104.15591523° W 2321' FSL, 10' FEL - SECTION 3</p> <p>CORNER DATA 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 1" 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>17 OPERATOR CERTIFICATION I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.</p> <p><i>[Signature]</i> 03.06.2022 Signature Date</p> <p>Mikah Thomas Printed Name</p> <p>mthomas@colgateenergy.com E-mail Address</p> <p>18 SURVEYOR CERTIFICATION I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.</p> <p>Date of Survey: 2/24/2022 Signature and Seal of Professional Surveyor: <i>[Signature]</i></p> <p>12177 Certificate Number</p>
--	--

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

Page 7

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:

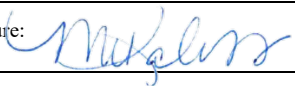
(a) Operator becomes aware that the natural gas gathering system it planned to connect the well(s) to has become unavailable or will not have capacity to transport one hundred percent of the production from the well(s), no later than 20 days after becoming aware of such information, Operator shall submit 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: mthomas@colgateenergy.com
Date: 06.02.2022
Phone: 432-695-4272
OIL CONSERVATION DIVISION (Only applicable when submitted as a standalone form)
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.



Colgate Energy

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

(Permit) Dundee 4 Fed Com

(B06) Dundee 4 Fed Com 202H - Slot B06-D202H

Permit

Plan: APD-Rev01

Standard Planning Report

25 February, 2022



Planning Report

Database:	EDM 5000.14 Single User Db	Local Co-ordinate Reference:	Well (B06) Dundee 4 Fed Com 202H - Slot B06-D202H
Company:	Colgate Energy	TVD Reference:	3290+30 @ 3320.00usft
Project:	(Permit) Eddy County, NM (83-NME)	MD Reference:	3290+30 @ 3320.00usft
Site:	(Permit) Dundee 4 Fed Com	North Reference:	Grid
Well:	(B06) Dundee 4 Fed Com 202H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Permit		
Design:	APD-Rev01		

Project	(Permit) Eddy County, NM (83-NME)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

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

Well	(B06) Dundee 4 Fed Com 202H - Slot B06-D202H			
Well Position	+N/-S	0.00 usft	Northing:	581,752.27 usft
	+E/-W	0.00 usft	Easting:	585,024.74 usft
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft
Grid Convergence:		0.08 °	Ground Level:	3,290.00 usft

Wellbore	Permit				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2020	2/16/2022	6.78	60.13	47,581.92182799

Design	APD-Rev01			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	89.55

Plan Survey Tool Program	Date	2/25/2022		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	19,428.44 APD-Rev01 (Permit)	MWD+IFR1+SAG+FDIR (SQC OWSG MWD + IFR1 + Sag + F	



Planning Report

Database:	EDM 5000.14 Single User Db	Local Co-ordinate Reference:	Well (B06) Dundee 4 Fed Com 202H - Slot B06-D202H
Company:	Colgate Energy	TVD Reference:	3290+30 @ 3320.00usft
Project:	(Permit) Eddy County, NM (83-NME)	MD Reference:	3290+30 @ 3320.00usft
Site:	(Permit) Dundee 4 Fed Com	North Reference:	Grid
Well:	(B06) Dundee 4 Fed Com 202H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Permit		
Design:	APD-Rev01		

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	
1,530.58	7.96	0.00	1,528.87	36.79	0.00	1.50	1.50	0.00	0.00	
7,631.60	7.96	0.00	7,571.13	881.53	0.00	0.00	0.00	0.00	0.00	
8,162.17	0.00	0.00	8,100.00	918.32	0.00	1.50	-1.50	0.00	180.00	
8,309.21	0.00	0.00	8,247.04	918.32	0.00	0.00	0.00	0.00	0.00	
9,209.21	90.00	89.64	8,820.00	921.89	572.95	10.00	10.00	9.96	89.64	
14,125.30	90.00	89.64	8,820.00	952.50	5,488.94	0.00	0.00	0.00	0.00	02-MP(D-202H)
14,134.41	90.00	89.46	8,820.00	952.57	5,498.04	2.00	0.00	-2.00	-89.99	
19,428.44	90.00	89.46	8,820.00	1,002.36	10,791.84	0.00	0.00	0.00	0.00	04-PBHL(D-202H)



Planning Report

Database:	EDM 5000.14 Single User Db	Local Co-ordinate Reference:	Well (B06) Dundee 4 Fed Com 202H - Slot B06-D202H
Company:	Colgate Energy	TVD Reference:	3290+30 @ 3320.00usft
Project:	(Permit) Eddy County, NM (83-NME)	MD Reference:	3290+30 @ 3320.00usft
Site:	(Permit) Dundee 4 Fed Com	North Reference:	Grid
Well:	(B06) Dundee 4 Fed Com 202H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Permit		
Design:	APD-Rev01		

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	
155.00	0.00	0.00	155.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rustler										
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00	
263.00	0.00	0.00	263.00	0.00	0.00	0.00	0.00	0.00	0.00	
Salado										
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	
750.00	0.00	0.00	750.00	0.00	0.00	0.00	0.00	0.00	0.00	
Tansil										
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00	
820.00	0.00	0.00	820.00	0.00	0.00	0.00	0.00	0.00	0.00	
Yates										
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	0.00	1,099.99	1.31	0.00	0.01	1.50	1.50	0.00	
1,200.00	3.00	0.00	1,199.91	5.23	0.00	0.04	1.50	1.50	0.00	
1,252.18	3.78	0.00	1,252.00	8.32	0.00	0.07	1.50	1.50	0.00	
Seven Rivers										
1,300.00	4.50	0.00	1,299.69	11.77	0.00	0.09	1.50	1.50	0.00	
1,400.00	6.00	0.00	1,399.27	20.92	0.00	0.16	1.50	1.50	0.00	
1,500.00	7.50	0.00	1,498.57	32.68	0.00	0.26	1.50	1.50	0.00	
1,530.58	7.96	0.00	1,528.87	36.79	0.00	0.29	1.50	1.50	0.00	
1,600.00	7.96	0.00	1,597.63	46.40	0.00	0.36	0.00	0.00	0.00	
1,700.00	7.96	0.00	1,696.66	60.25	0.00	0.47	0.00	0.00	0.00	
1,769.00	7.96	0.00	1,765.00	69.80	0.00	0.55	0.00	0.00	0.00	
Queen										
1,800.00	7.96	0.00	1,795.70	74.09	0.00	0.58	0.00	0.00	0.00	
1,900.00	7.96	0.00	1,894.74	87.94	0.00	0.69	0.00	0.00	0.00	
1,915.41	7.96	0.00	1,910.00	90.07	0.00	0.71	0.00	0.00	0.00	
Grayburg										
2,000.00	7.96	0.00	1,993.77	101.79	0.00	0.80	0.00	0.00	0.00	
2,100.00	7.96	0.00	2,092.81	115.63	0.00	0.91	0.00	0.00	0.00	
2,200.00	7.96	0.00	2,191.85	129.48	0.00	1.02	0.00	0.00	0.00	
2,300.00	7.96	0.00	2,290.88	143.32	0.00	1.13	0.00	0.00	0.00	
2,332.43	7.96	0.00	2,323.00	147.81	0.00	1.16	0.00	0.00	0.00	
San Andres										
2,400.00	7.96	0.00	2,389.92	157.17	0.00	1.23	0.00	0.00	0.00	
2,500.00	7.96	0.00	2,488.96	171.02	0.00	1.34	0.00	0.00	0.00	
2,600.00	7.96	0.00	2,588.00	184.86	0.00	1.45	0.00	0.00	0.00	
2,700.00	7.96	0.00	2,687.03	198.71	0.00	1.56	0.00	0.00	0.00	
2,800.00	7.96	0.00	2,786.07	212.55	0.00	1.67	0.00	0.00	0.00	
2,900.00	7.96	0.00	2,885.11	226.40	0.00	1.78	0.00	0.00	0.00	
3,000.00	7.96	0.00	2,984.14	240.24	0.00	1.89	0.00	0.00	0.00	
3,016.01	7.96	0.00	3,000.00	242.46	0.00	1.90	0.00	0.00	0.00	
Delaware Sands										
3,100.00	7.96	0.00	3,083.18	254.09	0.00	2.00	0.00	0.00	0.00	
3,200.00	7.96	0.00	3,182.22	267.94	0.00	2.10	0.00	0.00	0.00	



Planning Report

Database:	EDM 5000.14 Single User Db	Local Co-ordinate Reference:	Well (B06) Dundee 4 Fed Com 202H - Slot B06-D202H
Company:	Colgate Energy	TVD Reference:	3290+30 @ 3320.00usft
Project:	(Permit) Eddy County, NM (83-NME)	MD Reference:	3290+30 @ 3320.00usft
Site:	(Permit) Dundee 4 Fed Com	North Reference:	Grid
Well:	(B06) Dundee 4 Fed Com 202H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Permit		
Design:	APD-Rev01		

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	7.96	0.00	3,281.25	281.78	0.00	2.21	0.00	0.00	0.00
3,400.00	7.96	0.00	3,380.29	295.63	0.00	2.32	0.00	0.00	0.00
3,500.00	7.96	0.00	3,479.33	309.47	0.00	2.43	0.00	0.00	0.00
3,600.00	7.96	0.00	3,578.36	323.32	0.00	2.54	0.00	0.00	0.00
3,700.00	7.96	0.00	3,677.40	337.17	0.00	2.65	0.00	0.00	0.00
3,800.00	7.96	0.00	3,776.44	351.01	0.00	2.76	0.00	0.00	0.00
3,900.00	7.96	0.00	3,875.47	364.86	0.00	2.87	0.00	0.00	0.00
4,000.00	7.96	0.00	3,974.51	378.70	0.00	2.97	0.00	0.00	0.00
4,100.00	7.96	0.00	4,073.55	392.55	0.00	3.08	0.00	0.00	0.00
4,200.00	7.96	0.00	4,172.58	406.40	0.00	3.19	0.00	0.00	0.00
4,300.00	7.96	0.00	4,271.62	420.24	0.00	3.30	0.00	0.00	0.00
4,318.56	7.96	0.00	4,290.00	422.81	0.00	3.32	0.00	0.00	0.00
Bone Spring									
4,400.00	7.96	0.00	4,370.66	434.09	0.00	3.41	0.00	0.00	0.00
4,500.00	7.96	0.00	4,469.69	447.93	0.00	3.52	0.00	0.00	0.00
4,600.00	7.96	0.00	4,568.73	461.78	0.00	3.63	0.00	0.00	0.00
4,700.00	7.96	0.00	4,667.77	475.62	0.00	3.74	0.00	0.00	0.00
4,800.00	7.96	0.00	4,766.81	489.47	0.00	3.84	0.00	0.00	0.00
4,900.00	7.96	0.00	4,865.84	503.32	0.00	3.95	0.00	0.00	0.00
5,000.00	7.96	0.00	4,964.88	517.16	0.00	4.06	0.00	0.00	0.00
5,100.00	7.96	0.00	5,063.92	531.01	0.00	4.17	0.00	0.00	0.00
5,200.00	7.96	0.00	5,162.95	544.85	0.00	4.28	0.00	0.00	0.00
5,300.00	7.96	0.00	5,261.99	558.70	0.00	4.39	0.00	0.00	0.00
5,400.00	7.96	0.00	5,361.03	572.55	0.00	4.50	0.00	0.00	0.00
5,500.00	7.96	0.00	5,460.06	586.39	0.00	4.61	0.00	0.00	0.00
5,600.00	7.96	0.00	5,559.10	600.24	0.00	4.71	0.00	0.00	0.00
5,700.00	7.96	0.00	5,658.14	614.08	0.00	4.82	0.00	0.00	0.00
5,800.00	7.96	0.00	5,757.17	627.93	0.00	4.93	0.00	0.00	0.00
5,900.00	7.96	0.00	5,856.21	641.77	0.00	5.04	0.00	0.00	0.00
6,000.00	7.96	0.00	5,955.25	655.62	0.00	5.15	0.00	0.00	0.00
6,089.62	7.96	0.00	6,044.00	668.03	0.00	5.25	0.00	0.00	0.00
FBSG									
6,100.00	7.96	0.00	6,054.28	669.47	0.00	5.26	0.00	0.00	0.00
6,200.00	7.96	0.00	6,153.32	683.31	0.00	5.37	0.00	0.00	0.00
6,300.00	7.96	0.00	6,252.36	697.16	0.00	5.48	0.00	0.00	0.00
6,400.00	7.96	0.00	6,351.39	711.00	0.00	5.58	0.00	0.00	0.00
6,500.00	7.96	0.00	6,450.43	724.85	0.00	5.69	0.00	0.00	0.00
6,600.00	7.96	0.00	6,549.47	738.70	0.00	5.80	0.00	0.00	0.00
6,700.00	7.96	0.00	6,648.50	752.54	0.00	5.91	0.00	0.00	0.00
6,800.00	7.96	0.00	6,747.54	766.39	0.00	6.02	0.00	0.00	0.00
6,900.00	7.96	0.00	6,846.58	780.23	0.00	6.13	0.00	0.00	0.00
7,000.00	7.96	0.00	6,945.62	794.08	0.00	6.24	0.00	0.00	0.00
7,100.00	7.96	0.00	7,044.65	807.93	0.00	6.35	0.00	0.00	0.00
7,152.86	7.96	0.00	7,097.00	815.24	0.00	6.40	0.00	0.00	0.00
DBSG									
7,200.00	7.96	0.00	7,143.69	821.77	0.00	6.45	0.00	0.00	0.00
7,300.00	7.96	0.00	7,242.73	835.62	0.00	6.56	0.00	0.00	0.00
7,400.00	7.96	0.00	7,341.76	849.46	0.00	6.67	0.00	0.00	0.00
7,500.00	7.96	0.00	7,440.80	863.31	0.00	6.78	0.00	0.00	0.00
7,600.00	7.96	0.00	7,539.84	877.15	0.00	6.89	0.00	0.00	0.00
7,631.60	7.96	0.00	7,571.13	881.53	0.00	6.92	0.00	0.00	0.00
7,700.00	6.93	0.00	7,638.95	890.39	0.00	6.99	1.50	-1.50	0.00



Planning Report

Database:	EDM 5000.14 Single User Db	Local Co-ordinate Reference:	Well (B06) Dundee 4 Fed Com 202H - Slot B06-D202H
Company:	Colgate Energy	TVD Reference:	3290+30 @ 3320.00usft
Project:	(Permit) Eddy County, NM (83-NME)	MD Reference:	3290+30 @ 3320.00usft
Site:	(Permit) Dundee 4 Fed Com	North Reference:	Grid
Well:	(B06) Dundee 4 Fed Com 202H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Permit		
Design:	APD-Rev01		

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	5.43	0.00	7,738.37	901.16	0.00	7.08	1.50	-1.50	0.00
7,900.00	3.93	0.00	7,838.03	909.33	0.00	7.14	1.50	-1.50	0.00
8,000.00	2.43	0.00	7,937.88	914.88	0.00	7.19	1.50	-1.50	0.00
8,100.00	0.93	0.00	8,037.83	917.81	0.00	7.21	1.50	-1.50	0.00
8,162.17	0.00	0.00	8,100.00	918.32	0.00	7.21	1.50	-1.50	0.00
8,200.00	0.00	0.00	8,137.83	918.32	0.00	7.21	0.00	0.00	0.00
8,302.17	0.00	0.00	8,240.00	918.32	0.00	7.21	0.00	0.00	0.00
TBSG									
8,309.21	0.00	0.00	8,247.04	918.32	0.00	7.21	0.00	0.00	0.00
KOP: 8309.21' MD, 7.21' VS, 8247.04' TVD									
8,350.00	4.08	89.64	8,287.79	918.33	1.45	8.66	10.00	10.00	0.00
8,400.00	9.08	89.64	8,337.45	918.36	7.18	14.39	10.00	10.00	0.00
8,450.00	14.08	89.64	8,386.41	918.43	17.21	24.42	10.00	10.00	0.00
8,500.00	19.08	89.64	8,434.32	918.52	31.47	38.68	10.00	10.00	0.00
8,550.00	24.08	89.64	8,480.80	918.63	49.85	57.07	10.00	10.00	0.00
8,600.00	29.08	89.64	8,525.50	918.77	72.22	79.43	10.00	10.00	0.00
8,650.00	34.08	89.64	8,568.09	918.93	98.39	105.61	10.00	10.00	0.00
8,700.00	39.08	89.64	8,608.23	919.12	128.18	135.39	10.00	10.00	0.00
8,750.00	44.08	89.64	8,645.62	919.32	161.35	168.57	10.00	10.00	0.00
8,800.00	49.08	89.64	8,679.97	919.55	197.65	204.87	10.00	10.00	0.00
8,850.00	54.08	89.64	8,711.04	919.79	236.81	244.03	10.00	10.00	0.00
8,888.17	57.90	89.64	8,732.38	919.99	268.44	275.66	10.00	10.00	0.00
20-100FWL-NM083580(D-202H)									
8,900.00	59.08	89.64	8,738.57	920.05	278.53	285.75	10.00	10.00	0.00
8,929.89	62.07	89.64	8,753.25	920.22	304.56	311.78	10.00	10.00	0.00
01-FTP(D-202H)									
8,950.00	64.08	89.64	8,762.36	920.33	322.49	329.71	10.00	10.00	0.00
9,000.00	69.08	89.64	8,782.22	920.61	368.36	375.58	10.00	10.00	0.00
9,050.00	74.08	89.64	8,798.02	920.91	415.78	423.00	10.00	10.00	0.00
9,100.00	79.08	89.64	8,809.62	921.21	464.40	471.62	10.00	10.00	0.00
9,150.00	84.08	89.64	8,816.94	921.52	513.84	521.06	10.00	10.00	0.00
9,200.00	89.08	89.64	8,819.92	921.83	563.73	570.96	10.00	10.00	0.00
9,209.21	90.00	89.64	8,820.00	921.89	572.94	580.17	10.00	10.00	0.00
EOC: 9209.21' MD, 580.17' VS, 8820.00' TVD									
9,300.00	90.00	89.64	8,820.00	922.45	663.73	670.96	0.00	0.00	0.00
9,400.00	90.00	89.64	8,820.00	923.08	763.73	770.96	0.00	0.00	0.00
9,500.00	90.00	89.64	8,820.00	923.70	863.73	870.96	0.00	0.00	0.00
9,600.00	90.00	89.64	8,820.00	924.32	963.73	970.96	0.00	0.00	0.00
9,700.00	90.00	89.64	8,820.00	924.94	1,063.72	1,070.96	0.00	0.00	0.00
9,800.00	90.00	89.64	8,820.00	925.57	1,163.72	1,170.96	0.00	0.00	0.00
9,900.00	90.00	89.64	8,820.00	926.19	1,263.72	1,270.96	0.00	0.00	0.00
10,000.00	90.00	89.64	8,820.00	926.81	1,363.72	1,370.96	0.00	0.00	0.00
10,100.00	90.00	89.64	8,820.00	927.43	1,463.72	1,470.96	0.00	0.00	0.00
10,134.80	90.00	89.64	8,820.00	927.65	1,498.52	1,505.76	0.00	0.00	0.00
22-Entry-NM082882(D-202H) - 21-Exit-NM083580(D-202H)									
10,200.00	90.00	89.64	8,820.00	928.06	1,563.71	1,570.96	0.00	0.00	0.00
10,300.00	90.00	89.64	8,820.00	928.68	1,663.71	1,670.96	0.00	0.00	0.00
10,400.00	90.00	89.64	8,820.00	929.30	1,763.71	1,770.96	0.00	0.00	0.00
10,500.00	90.00	89.64	8,820.00	929.93	1,863.71	1,870.95	0.00	0.00	0.00
10,600.00	90.00	89.64	8,820.00	930.55	1,963.71	1,970.95	0.00	0.00	0.00
10,700.00	90.00	89.64	8,820.00	931.17	2,063.71	2,070.95	0.00	0.00	0.00
10,800.00	90.00	89.64	8,820.00	931.79	2,163.70	2,170.95	0.00	0.00	0.00



Planning Report

Database:	EDM 5000.14 Single User Db	Local Co-ordinate Reference:	Well (B06) Dundee 4 Fed Com 202H - Slot B06-D202H
Company:	Colgate Energy	TVD Reference:	3290+30 @ 3320.00usft
Project:	(Permit) Eddy County, NM (83-NME)	MD Reference:	3290+30 @ 3320.00usft
Site:	(Permit) Dundee 4 Fed Com	North Reference:	Grid
Well:	(B06) Dundee 4 Fed Com 202H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Permit		
Design:	APD-Rev01		

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)	
10,900.00	90.00	89.64	8,820.00	932.42	2,263.70	2,270.95	0.00	0.00	0.00	
11,000.00	90.00	89.64	8,820.00	933.04	2,363.70	2,370.95	0.00	0.00	0.00	
11,100.00	90.00	89.64	8,820.00	933.66	2,463.70	2,470.95	0.00	0.00	0.00	
11,200.00	90.00	89.64	8,820.00	934.28	2,563.70	2,570.95	0.00	0.00	0.00	
11,300.00	90.00	89.64	8,820.00	934.91	2,663.69	2,670.95	0.00	0.00	0.00	
11,400.00	90.00	89.64	8,820.00	935.53	2,763.69	2,770.95	0.00	0.00	0.00	
11,464.92	90.00	89.64	8,820.00	935.93	2,828.61	2,835.87	0.00	0.00	0.00	
23-Exit-NM082882(D-202H) - 24-Entry-NM086540(D-202H)										
11,500.00	90.00	89.64	8,820.00	936.15	2,863.69	2,870.95	0.00	0.00	0.00	
11,600.00	90.00	89.64	8,820.00	936.78	2,963.69	2,970.95	0.00	0.00	0.00	
11,700.00	90.00	89.64	8,820.00	937.40	3,063.69	3,070.95	0.00	0.00	0.00	
11,800.00	90.00	89.64	8,820.00	938.02	3,163.68	3,170.95	0.00	0.00	0.00	
11,900.00	90.00	89.64	8,820.00	938.64	3,263.68	3,270.95	0.00	0.00	0.00	
12,000.00	90.00	89.64	8,820.00	939.27	3,363.68	3,370.95	0.00	0.00	0.00	
12,100.00	90.00	89.64	8,820.00	939.89	3,463.68	3,470.95	0.00	0.00	0.00	
12,200.00	90.00	89.64	8,820.00	940.51	3,563.68	3,570.95	0.00	0.00	0.00	
12,300.00	90.00	89.64	8,820.00	941.13	3,663.67	3,670.95	0.00	0.00	0.00	
12,400.00	90.00	89.64	8,820.00	941.76	3,763.67	3,770.95	0.00	0.00	0.00	
12,500.00	90.00	89.64	8,820.00	942.38	3,863.67	3,870.95	0.00	0.00	0.00	
12,600.00	90.00	89.64	8,820.00	943.00	3,963.67	3,970.95	0.00	0.00	0.00	
12,700.00	90.00	89.64	8,820.00	943.62	4,063.67	4,070.95	0.00	0.00	0.00	
12,800.00	90.00	89.64	8,820.00	944.25	4,163.66	4,170.95	0.00	0.00	0.00	
12,900.00	90.00	89.64	8,820.00	944.87	4,263.66	4,270.95	0.00	0.00	0.00	
13,000.00	90.00	89.64	8,820.00	945.49	4,363.66	4,370.95	0.00	0.00	0.00	
13,100.00	90.00	89.64	8,820.00	946.12	4,463.66	4,470.95	0.00	0.00	0.00	
13,200.00	90.00	89.64	8,820.00	946.74	4,563.66	4,570.95	0.00	0.00	0.00	
13,300.00	90.00	89.64	8,820.00	947.36	4,663.65	4,670.95	0.00	0.00	0.00	
13,400.00	90.00	89.64	8,820.00	947.98	4,763.65	4,770.95	0.00	0.00	0.00	
13,500.00	90.00	89.64	8,820.00	948.61	4,863.65	4,870.95	0.00	0.00	0.00	
13,600.00	90.00	89.64	8,820.00	949.23	4,963.65	4,970.95	0.00	0.00	0.00	
13,700.00	90.00	89.64	8,820.00	949.85	5,063.65	5,070.95	0.00	0.00	0.00	
13,800.00	90.00	89.64	8,820.00	950.47	5,163.64	5,170.95	0.00	0.00	0.00	
13,900.00	90.00	89.64	8,820.00	951.10	5,263.64	5,270.95	0.00	0.00	0.00	
14,000.00	90.00	89.64	8,820.00	951.72	5,363.64	5,370.95	0.00	0.00	0.00	
14,100.00	90.00	89.64	8,820.00	952.34	5,463.64	5,470.95	0.00	0.00	0.00	
14,125.28	90.00	89.64	8,820.00	952.50	5,488.91	5,496.23	0.00	0.00	0.00	
26-Entry-NM009818(D-202H) - 25-Exit-NM086540(D-202H)										
14,125.30	90.00	89.64	8,820.00	952.50	5,488.94	5,496.25	0.00	0.00	0.00	
02-MP(D-202H)										
14,134.41	90.00	89.46	8,820.00	952.57	5,498.04	5,505.36	2.00	0.00	-2.00	
14,200.00	90.00	89.46	8,820.00	953.19	5,563.64	5,570.95	0.00	0.00	0.00	
14,300.00	90.00	89.46	8,820.00	954.13	5,663.63	5,670.95	0.00	0.00	0.00	
14,400.00	90.00	89.46	8,820.00	955.07	5,763.63	5,770.95	0.00	0.00	0.00	
14,500.00	90.00	89.46	8,820.00	956.01	5,863.62	5,870.95	0.00	0.00	0.00	
14,600.00	90.00	89.46	8,820.00	956.95	5,963.62	5,970.95	0.00	0.00	0.00	
14,700.00	90.00	89.46	8,820.00	957.89	6,063.61	6,070.95	0.00	0.00	0.00	
14,800.00	90.00	89.46	8,820.00	958.83	6,163.61	6,170.95	0.00	0.00	0.00	
14,900.00	90.00	89.46	8,820.00	959.77	6,263.60	6,270.95	0.00	0.00	0.00	
15,000.00	90.00	89.46	8,820.00	960.71	6,363.60	6,370.95	0.00	0.00	0.00	
15,100.00	90.00	89.46	8,820.00	961.65	6,463.60	6,470.95	0.00	0.00	0.00	
15,200.00	90.00	89.46	8,820.00	962.59	6,563.59	6,570.95	0.00	0.00	0.00	
15,300.00	90.00	89.46	8,820.00	963.53	6,663.59	6,670.95	0.00	0.00	0.00	



Planning Report

Database:	EDM 5000.14 Single User Db	Local Co-ordinate Reference:	Well (B06) Dundee 4 Fed Com 202H - Slot B06-D202H
Company:	Colgate Energy	TVD Reference:	3290+30 @ 3320.00usft
Project:	(Permit) Eddy County, NM (83-NME)	MD Reference:	3290+30 @ 3320.00usft
Site:	(Permit) Dundee 4 Fed Com	North Reference:	Grid
Well:	(B06) Dundee 4 Fed Com 202H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Permit		
Design:	APD-Rev01		

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)	
15,400.00	90.00	89.46	8,820.00	964.47	6,763.58	6,770.95	0.00	0.00	0.00	
15,500.00	90.00	89.46	8,820.00	965.41	6,863.58	6,870.95	0.00	0.00	0.00	
15,600.00	90.00	89.46	8,820.00	966.35	6,963.57	6,970.95	0.00	0.00	0.00	
15,700.00	90.00	89.46	8,820.00	967.30	7,063.57	7,070.95	0.00	0.00	0.00	
15,800.00	90.00	89.46	8,820.00	968.24	7,163.56	7,170.95	0.00	0.00	0.00	
15,900.00	90.00	89.46	8,820.00	969.18	7,263.56	7,270.95	0.00	0.00	0.00	
16,000.00	90.00	89.46	8,820.00	970.12	7,363.56	7,370.95	0.00	0.00	0.00	
16,100.00	90.00	89.46	8,820.00	971.06	7,463.55	7,470.95	0.00	0.00	0.00	
16,200.00	90.00	89.46	8,820.00	972.00	7,563.55	7,570.95	0.00	0.00	0.00	
16,300.00	90.00	89.46	8,820.00	972.94	7,663.54	7,670.95	0.00	0.00	0.00	
16,400.00	90.00	89.46	8,820.00	973.88	7,763.54	7,770.95	0.00	0.00	0.00	
16,500.00	90.00	89.46	8,820.00	974.82	7,863.53	7,870.95	0.00	0.00	0.00	
16,600.00	90.00	89.46	8,820.00	975.76	7,963.53	7,970.95	0.00	0.00	0.00	
16,700.00	90.00	89.46	8,820.00	976.70	8,063.52	8,070.95	0.00	0.00	0.00	
16,800.00	90.00	89.46	8,820.00	977.64	8,163.52	8,170.95	0.00	0.00	0.00	
16,900.00	90.00	89.46	8,820.00	978.58	8,263.52	8,270.95	0.00	0.00	0.00	
17,000.00	90.00	89.46	8,820.00	979.52	8,363.51	8,370.95	0.00	0.00	0.00	
17,100.00	90.00	89.46	8,820.00	980.46	8,463.51	8,470.95	0.00	0.00	0.00	
17,200.00	90.00	89.46	8,820.00	981.40	8,563.50	8,570.95	0.00	0.00	0.00	
17,300.00	90.00	89.46	8,820.00	982.34	8,663.50	8,670.95	0.00	0.00	0.00	
17,400.00	90.00	89.46	8,820.00	983.28	8,763.49	8,770.95	0.00	0.00	0.00	
17,500.00	90.00	89.46	8,820.00	984.22	8,863.49	8,870.95	0.00	0.00	0.00	
17,600.00	90.00	89.46	8,820.00	985.16	8,963.49	8,970.95	0.00	0.00	0.00	
17,700.00	90.00	89.46	8,820.00	986.10	9,063.48	9,070.95	0.00	0.00	0.00	
17,800.00	90.00	89.46	8,820.00	987.05	9,163.48	9,170.95	0.00	0.00	0.00	
17,900.00	90.00	89.46	8,820.00	987.99	9,263.47	9,270.95	0.00	0.00	0.00	
18,000.00	90.00	89.46	8,820.00	988.93	9,363.47	9,370.95	0.00	0.00	0.00	
18,100.00	90.00	89.46	8,820.00	989.87	9,463.46	9,470.95	0.00	0.00	0.00	
18,200.00	90.00	89.46	8,820.00	990.81	9,563.46	9,570.95	0.00	0.00	0.00	
18,300.00	90.00	89.46	8,820.00	991.75	9,663.45	9,670.95	0.00	0.00	0.00	
18,400.00	90.00	89.46	8,820.00	992.69	9,763.45	9,770.95	0.00	0.00	0.00	
18,500.00	90.00	89.46	8,820.00	993.63	9,863.45	9,870.95	0.00	0.00	0.00	
18,600.00	90.00	89.46	8,820.00	994.57	9,963.44	9,970.94	0.00	0.00	0.00	
18,700.00	90.00	89.46	8,820.00	995.51	10,063.44	10,070.94	0.00	0.00	0.00	
18,800.00	90.00	89.46	8,820.00	996.45	10,163.43	10,170.94	0.00	0.00	0.00	
18,900.00	90.00	89.46	8,820.00	997.39	10,263.43	10,270.94	0.00	0.00	0.00	
19,000.00	90.00	89.46	8,820.00	998.33	10,363.42	10,370.94	0.00	0.00	0.00	
19,100.00	90.00	89.46	8,820.00	999.27	10,463.42	10,470.94	0.00	0.00	0.00	
19,200.00	90.00	89.46	8,820.00	1,000.21	10,563.41	10,570.94	0.00	0.00	0.00	
19,300.00	90.00	89.46	8,820.00	1,001.15	10,663.41	10,670.94	0.00	0.00	0.00	
19,338.43	90.00	89.46	8,820.00	1,001.51	10,701.84	10,709.38	0.00	0.00	0.00	
27-100FEL-NM009818(D-202H) - 03-LTP(D-202H)										
19,400.00	90.00	89.46	8,820.00	1,002.09	10,763.41	10,770.94	0.00	0.00	0.00	
19,428.44	90.00	89.46	8,820.00	1,002.36	10,791.84	10,799.38	0.00	0.00	0.00	
TD: 19428.44' MD, 10799.38' VS, 8820.00' TVD - 04-PBHL(D-202H)										



Planning Report

Database:	EDM 5000.14 Single User Db	Local Co-ordinate Reference:	Well (B06) Dundee 4 Fed Com 202H - Slot B06-D202H
Company:	Colgate Energy	TVD Reference:	3290+30 @ 3320.00usft
Project:	(Permit) Eddy County, NM (83-NME)	MD Reference:	3290+30 @ 3320.00usft
Site:	(Permit) Dundee 4 Fed Com	North Reference:	Grid
Well:	(B06) Dundee 4 Fed Com 202H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Permit		
Design:	APD-Rev01		

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	0.00	8,732.38	919.99	268.44	582,672.26	585,293.18	32.60173725	-104.19059535
23-Exit-NM082882(D-20 - plan hits target center - Point	0.00	0.00	8,820.00	935.93	2,828.61	582,688.21	587,853.35	32.60177136	-104.18228163
27-100FEL-NM009818(I - plan hits target center - Point	0.00	0.00	8,820.00	1,001.51	10,701.84	582,753.78	595,726.58	32.60191827	-104.15671449
01-FTP(D-202H) - plan misses target center by 75.90usft at 8929.89usft MD (8753.25 TVD, 920.22 N, 304.56 E) - Point	0.00	0.01	8,820.00	920.41	268.43	582,672.68	585,293.17	32.60173841	-104.19059538
24-Entry-NM086540(D-2 - plan hits target center - Point	0.00	0.00	8,820.00	935.93	2,828.61	582,688.21	587,853.35	32.60177136	-104.18228163
22-Entry-NM082882(D-2 - plan hits target center - Point	0.00	0.00	8,820.00	927.65	1,498.52	582,679.92	586,523.26	32.60175370	-104.18660088
21-Exit-NM083580(D-20 - plan hits target center - Point	0.00	0.00	8,820.00	927.65	1,498.52	582,679.92	586,523.26	32.60175370	-104.18660088
04-PBHL(D-202H) - plan hits target center - Point	0.00	0.00	8,820.00	1,002.36	10,791.84	582,754.63	595,816.58	32.60192019	-104.15642223
03-LTP(D-202H) - plan misses target center by 0.05usft at 19338.43usft MD (8820.00 TVD, 1001.51 N, 10701.84 E) - Point	0.00	0.00	8,820.00	1,001.56	10,701.84	582,753.83	595,726.58	32.60191840	-104.15671449
26-Entry-NM009818(D-2 - plan hits target center - Point	0.00	0.00	8,820.00	952.50	5,488.91	582,704.77	590,513.66	32.60180621	-104.17364272
25-Exit-NM086540(D-20 - plan hits target center - Point	0.00	0.00	8,820.00	952.50	5,488.91	582,704.77	590,513.66	32.60180621	-104.17364272
02-MP(D-202H) - plan hits target center - Point	0.00	0.00	8,820.00	952.50	5,488.94	582,704.77	590,513.68	32.60180621	-104.17364264



Planning Report

Database:	EDM 5000.14 Single User Db	Local Co-ordinate Reference:	Well (B06) Dundee 4 Fed Com 202H - Slot B06-D202H
Company:	Colgate Energy	TVD Reference:	3290+30 @ 3320.00usft
Project:	(Permit) Eddy County, NM (83-NME)	MD Reference:	3290+30 @ 3320.00usft
Site:	(Permit) Dundee 4 Fed Com	North Reference:	Grid
Well:	(B06) Dundee 4 Fed Com 202H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Permit		
Design:	APD-Rev01		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
155.00	155.00	Rustler				
263.00	263.00	Salado				
750.00	750.00	Tansil				
820.00	820.00	Yates				
1,252.18	1,252.00	Seven Rivers				
1,769.00	1,765.00	Queen				
1,915.41	1,910.00	Grayburg				
2,332.43	2,323.00	San Andres				
3,016.01	3,000.00	Delaware Sands				
4,318.56	4,290.00	Bone Spring				
6,089.62	6,044.00	FBSG				
7,152.86	7,097.00	DBSG				
8,302.17	8,240.00	TBSG				

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
8,309.21	8,247.04	918.32	0.00	KOP: 8309.21' MD, 7.21' VS, 8247.04' TVD	
9,209.21	8,820.00	921.89	572.94	EOC: 9209.21' MD, 580.17' VS, 8820.00' TVD	
19,428.44	8,820.00	1,002.36	10,791.84	TD: 19428.44' MD, 10799.38' VS, 8820.00' TVD	

**PECOS DISTRICT
DRILLING CONDITIONS OF APPROVAL**

OPERATOR'S NAME:	Colgate Operating LLC
LEASE NO.:	NMNM083580
LOCATION:	Section 5, T.20 S., R.28 E., NMPM
COUNTY:	Eddy County, New Mexico

WELL NAME & NO.:	Dundee 4 Fed Com 113H
SURFACE HOLE FOOTAGE:	1396'/S & 105'/E
BOTTOM HOLE FOOTAGE	1655'/S & 10'/E
ATS/API ID:	
Sundry ID:	ATS-22-849

WELL NAME & NO.:	Dundee 4 Fed Com 124H
SURFACE HOLE FOOTAGE:	1397'/S & 315'/E
BOTTOM HOLE FOOTAGE	330'/S & 10'/E
ATS/API ID:	
Sundry ID:	ATS-22-858

WELL NAME & NO.:	Dundee 4 Fed Com 202H
SURFACE HOLE FOOTAGE:	1396'/S & 165'/E
BOTTOM HOLE FOOTAGE	2321'/S & 10'/E
ATS/API ID:	
Sundry ID:	ATS-22-864

WELL NAME & NO.:	Dundee 4 Fed Com 203H
SURFACE HOLE FOOTAGE:	1397'/S & 195'/E
BOTTOM HOLE FOOTAGE	995'/S & 10'/E
ATS/API ID:	
Sundry ID:	ATS-22-858

COA

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

A. HYDROGEN SULFIDE

A Hydrogen Sulfide (H2S) Drilling Plan shall be activated 500 feet prior to drilling into the **Delaware** formation. As a result, the Hydrogen Sulfide area must meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, please provide measured values and formations to the BLM.

B. CASING

1. The **13-3/8** inch surface casing shall be set at approximately **400 feet** (a minimum of **70 feet (Eddy County)** into the Rustler Anhydrite, above the salt, and below usable fresh water) and cemented to the surface.
 - a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.
 - b. Wait on cement (WOC) time for a primary cement job will be a minimum of **8 hours** or 500 pounds compressive strength, whichever is greater. (This is to include the lead cement)
 - c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.
 - d. If cement falls back, remedial cementing will be done prior to drilling out that string.

2. The minimum required fill of cement behind the **9-5/8** inch intermediate casing is:
 - Cement to surface. If cement does not circulate see B.1.a, c-d above.
Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst, potash or capitan reef.
 - ❖ In High Cave/Karst Areas if cement does not circulate to surface on the first two casing strings, the cement on the 3rd casing string must come to surface.
 - ❖ In Capitan Reef Areas if cement does not circulate to surface on the first two casing strings, the cement on the 3rd casing string must come to surface.
 - ❖ **Special Capitan Reef requirements.** If lost circulation (50% or greater) occurs below the Base of the Salt, the operator shall do the following:
 - Switch to fresh water mud to protect the Capitan Reef and use fresh water mud until setting the intermediate casing. The appropriate BLM office is to be notified for a PET to witness the switch to fresh water.
 - Daily drilling reports from the Base of the Salt to the setting of the intermediate casing are to be submitted to the BLM CFO engineering staff via e-mail by 0800 hours each morning. Any lost circulation encountered is to be recorded on these drilling reports. The daily drilling report should show mud volume per shift/tour. Failure to submit these reports will result in an Incidence of Non-Compliance being issued for failure to comply with the Conditions of Approval. If not already planned, the operator shall run a caliper survey for the intermediate well bore and submit to the appropriate BLM office.
3. The minimum required fill of cement behind the **5-1/2** inch production casing is:
 - Cement should tie-back at least **50 feet** on top of Capitan Reef top **or 200 feet** into the previous casing, whichever is greater. If cement does not circulate see B.1.a, c-d above.
Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst, potash or capitan reef.
Cement excess is less than 25%, more cement is required if washout occurs. Adjust cement volume and excess based on a fluid caliper or similar method that reflects the as-drilled size of the wellbore.

C. PRESSURE CONTROL

1. Variance approved to use flex line from BOP to choke manifold. Manufacturer's specification to be readily available. No external damage to flex line. Flex line to be installed as straight as possible (no hard bends).'
- 2.

Option 1:

- a. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **3000 (3M)** psi.
- b. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the **9-5/8** inch intermediate casing shoe shall be **5000 (5M)** psi.

Option 2:

Operator has proposed a multi-bowl wellhead assembly. This assembly will only be tested when installed on the **13-3/8** inch surface casing. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **5000 (5M)** psi.

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

D. SPECIAL REQUIREMENT (S)**Communitization Agreement**

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

- In addition, the well sign shall include the surface and bottom hole lease numbers. When the Communitization Agreement number is known, it shall also be on the sign.

GENERAL REQUIREMENTS

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

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

☒ Eddy County

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

☒ Lea County

Call the Hobbs Field Station, 414 West Taylor, Hobbs NM 88240, (575)
689-5981

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

A. CASING

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

B. PRESSURE CONTROL

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

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

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

C. DRILLING MUD

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

D. WASTE MATERIAL AND FLUIDS

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

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

LVO 6/29/2022



H₂S Contingency Plan



Table of Contents

I. EMERGENCY ASSISTANCE TELEPHONE LIST	3
II. H ₂ 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 & 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

Safety Solutions Office (432) 563-0400

Safety Solutions Dispatch (432) 556-2002

Craig Strasner (432) 894-0341 (Cell)

II. H₂S 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 (H₂S).

Objective:

Prevent any and all accidents and prevent the uncontrolled release of H₂S 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 H₂S 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 H₂S 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 H₂S.

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 H₂S drilling operations safety. The release of a potentially hazardous quantity of H₂S 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 H₂S 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 H₂S 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 H₂S 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 H₂S. 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 H₂S 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. H₂S Alarm Drills

The Company Man and/ or designee will conduct frequent H₂S alarm drills for each crew by injecting a trace of H₂S 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 H₂S, 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 (H₂S).
 2. Use and limitations of air equipment.
 3. Use of resuscitator.
 4. Organize Buddy System.
 5. First Aid procedures.
 6. Use of H₂S 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 H₂S 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 H₂S 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 H₂S 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 H₂S 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 H₂S 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 H₂S 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 H₂S 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 H₂S 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 H₂S gas from the formation, the pH will be increased as necessary for corrosion control.

H₂S Scavengers – If necessary H₂S 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 H₂S zones or when H₂S 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 H₂S (10 PPM) or of SO₂ (5 PPM) is reached. If the concentration of H₂S or SO₂ 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 H₂S or SO₂ 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 H₂S can reasonably be expected.
3. When sampling air in areas to determine if toxic concentrations of H₂S exist.
4. When working in areas where 10 PPM or more of H₂S has been detected.
5. At any time, there is doubt as to the H₂S 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 H₂S 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 H₂S 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 H₂S
 - 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 H₂S.
- 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 H₂S.
- 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 H₂S 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, H₂S emergency procedures and etc.
- C. Clean up, recharge, restock, repair, and/ or replace H₂S 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 H₂S 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 (H₂S) 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 (H₂S).
2. Physicals effects of Hydrogen Sulfide on the human body.
3. Toxicity of Hydrogen Sulfide and Sulfur Dioxide.
4. H₂S 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 H₂S, 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 H₂S 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 H₂S 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, H₂S 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 (O₂, LEL H₂S), preferably 4 (O₂, LEL, H₂S, 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 H₂S Provider Safety office.
- Additional personal H₂S 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 st Well	Date & Initial 2 nd Well	Date & Initial 3 rd Well	Date & Initial 4 th 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 ₂ S and well control procedures.				
All outside service contractors advised of potential H ₂ 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 H₂S 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 H₂S 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 H₂S. 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 H₂S 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 H₂S 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 ₂ S	1.192	10 ppm	15 ppm	100 ppm
Sulfide Dioxide	SO ₂	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 ₂	1.52	5000 ppm	30,000 ppm	40,000 ppm
Methane	CH ₄	.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 H₂S 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 H₂S 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 H₂S

<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 in a few minutes .
.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 H₂S

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, H₂S, 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 H₂S 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, H₂S 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 (SO₂), 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 H₂S is dependent on temperature and pressure, but if conditions are right, simply agitating a fluid containing H₂S 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 H₂S.
- B. When breaking out any line where H₂S can reasonably be expected.
- C. When sampling air in areas where H₂S may be present.
- D. When working in areas where the concentration of H₂S exceeds the Threshold Limit Value for H₂S (10 ppm).
- E. At any time where there is a doubt as to the H₂S level in the area to be entered.

EMERGENCY RESCUE PROCEDURES

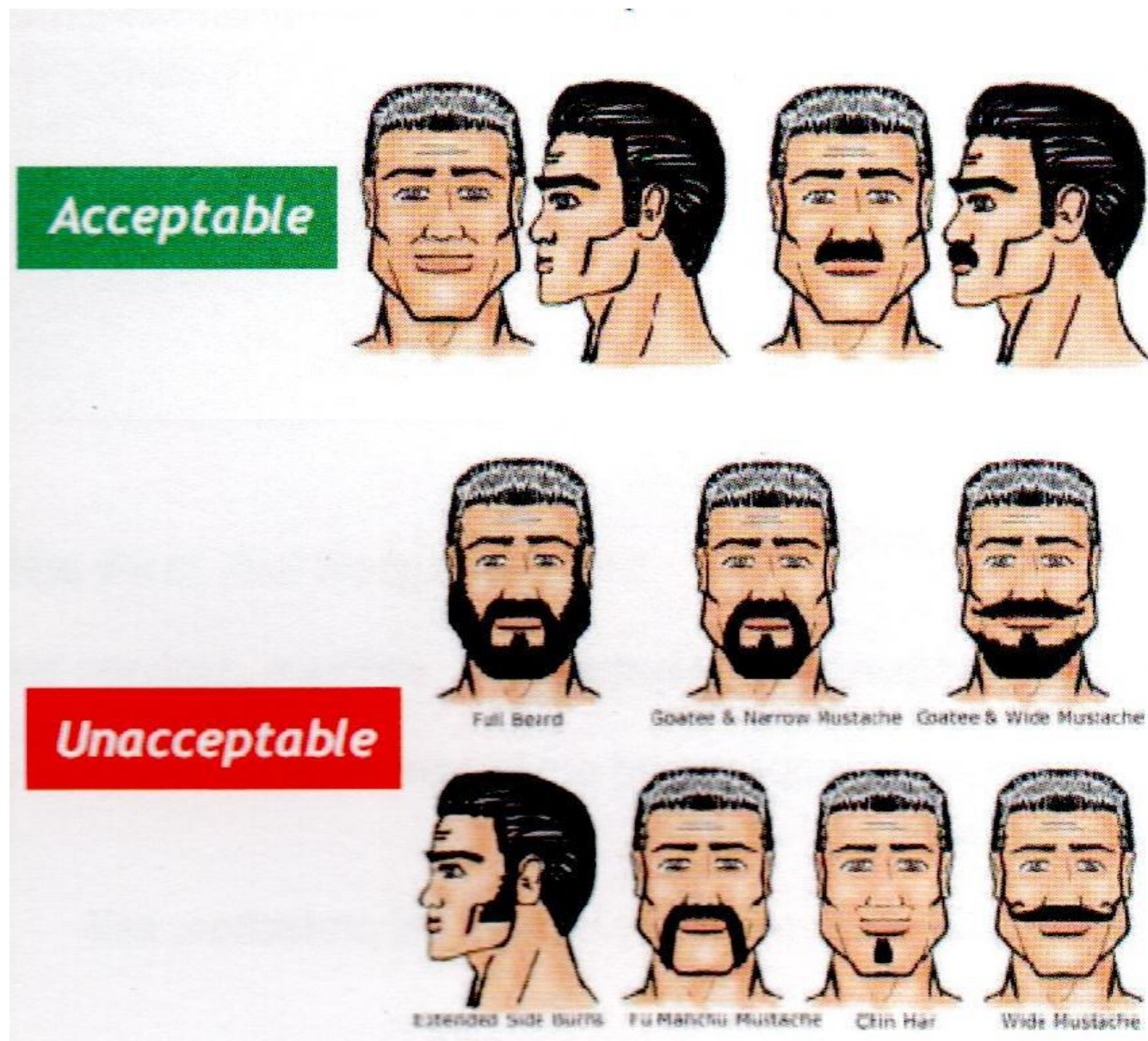
DO NOT PANIC!!!

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 H₂S, 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 H₂S 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 H₂S 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 126634

CONDITIONS

Operator: COLGATE OPERATING, LLC 300 North Marienfeld Street Midland, TX 79701	OGRID: 371449
	Action Number: 126634
	Action Type: [C-101] BLM - Federal/Indian Land Lease (Form 3160-3)

CONDITIONS

Created By	Condition	Condition Date
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
kpickford	The pool assignment for this well has been corrected on the C-102. Subsequent sundries must reflect the correct pool.	7/21/2022