

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

State of New Mexico
Energy, Minerals & Natural Resources

Form C-104
Revised August 1, 2011

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

Submit one copy to appropriate District Office

☐ AMENDED REPORT

I. REQUEST FOR ALLOWABLE AND AUTHORIZATION TO TRANSPORT

¹ Operator name and Address Colgate Operating, LLC 300 N Marienfeld Street, Suite 1000 Midland, Tx 79701		² OGRID Number 371449	
		³ Reason for Filing Code/ Effective Date RT	
⁴ API Number 30 – 015 – 47824	⁵ Pool Name PARKWAY; BONE SPRING		⁶ Pool Code 49622
⁷ Property Code 329892	⁸ Property Name BLACK DIAMOND 34 FED		⁹ Well Number 133H

II. ¹⁰ Surface Location

UL or lot no. P	Section 34	Township 19S	Range 29E	Lot Idn	Feet from the 1135	North/South Line South	Feet from the 359	East/West line East	County Eddy
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¹¹ Bottom Hole Location

UL or lot no. J	Section 33	Township 19S	Range 29E	Lot Idn	Feet from the 1707	North/South line South	Feet from the 2601	East/West line East	County Eddy
¹² Lse Code F	¹³ Producing Method Code		¹⁴ Gas Connection Date 01/01/2021		¹⁵ C-129 Permit Number		¹⁶ C-129 Effective Date		¹⁷ C-129 Expiration Date

III. Oil and Gas Transporters

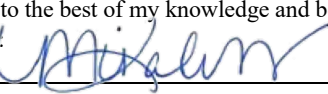
¹⁸ Transporter OGRID	¹⁹ Transporter Name and Address	²⁰ O/G/W
329097	LM TOUCHDOWN, LLC	O
329097	LM TOUCHDOWN, LLC	G

IV. Well Completion Data

²¹ Spud Date 11/20/2021	²² Ready Date 03/04/2022	²³ TD 16,660 MD 9,086 TVD	²⁴ PBTD 16,560 MD 8,998 TVD	²⁵ Perforations 9,009 – 16,660	²⁶ DHC, MC
²⁷ Hole Size		²⁸ Casing & Tubing Size		²⁹ Depth Set	³⁰ Sacks Cement
22.375		18.625		349	620
14.75		11.75		1,481	273 Lead 250 Tail
10.625		8.625		3,387	500 Lead 155 Tail
7.875		5.5		16,650	530 Lead 915 Tail

V. Well Test Data

³¹ Date New Oil	³² Gas Delivery Date	³³ Test Date	³⁴ Test Length	³⁵ Tbg. Pressure	³⁶ Csg. Pressure
³⁷ Choke Size	³⁸ Oil	³⁹ Water	⁴⁰ Gas		⁴¹ Test Method

⁴² I hereby certify that the rules of the Oil Conservation Division have been complied with and that the information given above is true and complete to the best of my knowledge and belief. Signature: 		OIL CONSERVATION DIVISION	
Printed name: Mikah Thomas		Approved by: PATRICIA MARTINEZ	
Title: Operations Tech		Title: PETROLEUM SPECIALIST	
E-mail Address: mthomas@colgateenergy.com		Approval Date: 3/15/2022	
Date: 01/17/2022	Phone: 432-695-4272	RT EXPIRES 6/4/2022	

DISTRICT I
1825 N. French Dr., Hobbs, N.M. 88240
Phone: (575) 393-6161 Fax: (575) 393-0720

State of New Mexico
Energy, Minerals & Natural Resources Department

Form C-102

DISTRICT II
811 S. First St., Artesia, N.M. 88210
Phone: (575) 748-1283 Fax: (575) 748-9720

OIL CONSERVATION DIVISION

Revised August 1, 2011

DISTRICT III
1000 Rio Brazos Rd., Aztec, N.M. 87410
Phone: (505) 334-6178 Fax: (505) 334-6170

1220 South St. Francis Dr.
Santa Fe, N.M. 87505

Submit one copy to appropriate

District Office

DISTRICT IV
1220 S. St. Francis Dr., Santa Fe, N.M. 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

AS-DRILLED

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-015-47824	² Pool Code 49622	³ Pool Name PARKWAY; BONE SPRING
⁴ Property Code 329892	⁵ Property Name Black Diamond 34 Fed	⁶ Well Number 133H
⁷ OGRD No. 371449	⁸ Operator Name Colgate Operating, LLC	⁹ Elevation 3330

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
P	34	19 S	29 E		1135	South	359	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
J	33	19 S	29 E		1707	South	2601	East	Eddy

¹² Dedicated Acres 240	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.
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NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED
OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

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Legend:

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

SURFACE LOCATION
NAD 83 NMSPC ZONE 3001
Y= 586862.09 N
X= 626938.85 E
LAT.= 32.6130274° N
LONG.= 104.0553242° W

KICK OFF POINT
NAD 83 NMSPC ZONE 3001
Y= 587383.39 N
X= 627236.62 E
LAT.= 32.6144582° N
LONG.= 104.0543527° W

FIRST TAKE POINT
NAD 83 NMSPC ZONE 3001
Y= 587430.98 N
X= 627010.50 E
LAT.= 32.6145906° N
LONG.= 104.0550866° W

LAST TAKE POINT
NAD 83 NMSPC ZONE 3001
Y= 587450.49 N
X= 619479.91 E
LAT.= 32.6146961° N
LONG.= 104.0795439° W

BOTTOM HOLE LOCATION
NAD 83 NMSPC ZONE 3001
Y= 587449.27 N
X= 619414.10 E
LAT.= 32.6146931° N
LONG.= 104.0797577° W

17 OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Mikah Thomas 01.18.2022
Signature Date
Mikah Thomas
Printed Name
mthomas@colgateenergy.com
E-mail Address

18 SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

1/10/22
Date of Survey
Signature and Seal of Professional Surveyor
Marshall W. Lindeen
MARSHALL W. LINDEEN
NEW MEXICO
17078
1-17-22
PROFESSIONAL SURVEYOR
17078
Certificate Number



Colgate Energy

Eddy County, NM (N83-NME)

Black Diamond 34 Fed Com

Black Diamond 34 Fed Com 133H

30-015-47824

133H

Design: DRL

Standard Survey Report

23 December, 2021



Survey Report

Company:	Colgate Energy	Local Co-ordinate Reference:	Well Black Diamond 34 Fed Com 133H
Project:	Eddy County, NM (N83-NME)	TVD Reference:	3330+22 @ 3352.00usft
Site:	Black Diamond 34 Fed Com	MD Reference:	3330+22 @ 3352.00usft
Well:	Black Diamond 34 Fed Com 133H	North Reference:	Grid
Wellbore:	133H	Survey Calculation Method:	Minimum Curvature
Design:	DRL	Database:	EDM 5000.14 Single User Db

Project	Eddy County, NM (N83-NME)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site	Black Diamond 34 Fed Com		
Site Position:		Northing:	589,010.96 usft
From:	Map	Easting:	627,173.41 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	32.61893234
		Longitude:	-104.05454408

Well	Black Diamond 34 Fed Com 133H		
Well Position	+N/-S	0.00 usft	Northing: 586,862.09 usft
	+E/-W	0.00 usft	Easting: 626,938.85 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	usft
Grid Convergence:	0.15 °	Ground Level:	3,330.00 usft

Wellbore	133H		
Magnetics	Model Name	Sample Date	Declination (°)
	IFR	11/18/2021	6.94
			Dip Angle (°)
			60.32
			Field Strength (nT)
			47,795.60000000

Design	DRL		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)
	0.00	0.00	0.00
			Direction (°)
			270.11

Survey Program	Date	12/23/2021		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
14.58	16,602.00	Survey #1_Gordon (133H)	MWD+IFR1+SAG+FDIR (SQ OWSG MWD + IFR1 + Sag + FDIR Correction	
16,660.00	16,660.00	Survey #2_PTB (133H)	BLIND	BLIND

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	
14.58	0.11	252.86	14.58	0.00	-0.01	0.01	0.75	0.75	0.00	
29.17	0.22	252.87	29.17	-0.02	-0.05	0.05	0.75	0.75	0.07	
43.75	0.32	252.88	43.75	-0.04	-0.12	0.12	0.69	0.69	0.07	
58.33	0.43	252.89	58.33	-0.06	-0.21	0.21	0.75	0.75	0.07	
72.92	0.54	252.89	72.92	-0.10	-0.33	0.33	0.75	0.75	0.00	
87.50	0.65	252.90	87.50	-0.15	-0.47	0.47	0.75	0.75	0.07	
102.08	0.75	252.91	102.08	-0.20	-0.64	0.64	0.69	0.69	0.07	
116.67	0.86	252.92	116.67	-0.26	-0.84	0.84	0.75	0.75	0.07	



Survey Report

Company:	Colgate Energy	Local Co-ordinate Reference:	Well Black Diamond 34 Fed Com 133H
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Site:	Black Diamond 34 Fed Com	MD Reference:	3330+22 @ 3352.00usft
Well:	Black Diamond 34 Fed Com 133H	North Reference:	Grid
Wellbore:	133H	Survey Calculation Method:	Minimum Curvature
Design:	DRL	Database:	EDM 5000.14 Single User Db

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)
131.25	0.97	252.93	131.24	-0.33	-1.06	1.06	0.75	0.75	0.07
145.83	1.08	252.94	145.82	-0.40	-1.31	1.31	0.75	0.75	0.07
160.42	1.19	252.95	160.41	-0.49	-1.59	1.59	0.75	0.75	0.07
167.01	1.24	252.95	167.00	-0.53	-1.72	1.72	0.75	0.75	0.07
Rustler									
175.00	1.30	252.96	174.99	-0.58	-1.89	1.89	0.75	0.75	0.07
188.14	1.28	251.97	188.12	-0.67	-2.17	2.17	0.23	-0.15	-7.53
201.29	1.26	250.82	201.27	-0.76	-2.45	2.45	0.25	-0.15	-8.75
214.43	1.25	249.56	214.41	-0.86	-2.72	2.72	0.22	-0.08	-9.59
227.57	1.23	248.25	227.54	-0.96	-2.98	2.98	0.26	-0.15	-9.97
240.71	1.22	246.92	240.68	-1.07	-3.24	3.24	0.23	-0.08	-10.12
253.86	1.21	245.63	253.83	-1.18	-3.50	3.50	0.22	-0.08	-9.81
267.00	1.20	244.46	266.96	-1.30	-3.75	3.75	0.20	-0.08	-8.90
281.22	1.20	243.44	281.18	-1.43	-4.02	4.01	0.15	0.00	-7.17
295.44	1.21	242.56	295.40	-1.57	-4.28	4.28	0.15	0.07	-6.19
309.67	1.22	241.80	309.62	-1.71	-4.55	4.55	0.13	0.07	-5.34
323.89	1.23	241.13	323.84	-1.85	-4.82	4.81	0.12	0.07	-4.71
338.11	1.24	240.55	338.06	-2.00	-5.09	5.08	0.11	0.07	-4.08
352.33	1.24	240.06	352.27	-2.15	-5.35	5.35	0.07	0.00	-3.45
366.56	1.24	239.65	366.50	-2.31	-5.62	5.61	0.06	0.00	-2.88
380.78	1.23	239.35	380.72	-2.46	-5.88	5.88	0.08	-0.07	-2.11
395.00	1.21	239.18	394.93	-2.62	-6.14	6.14	0.14	-0.14	-1.20
402.07	1.19	239.20	402.00	-2.69	-6.27	6.27	0.28	-0.28	0.34
Top of Salt									
409.46	1.17	239.23	409.39	-2.77	-6.40	6.40	0.28	-0.28	0.35
423.92	1.12	239.45	423.85	-2.92	-6.65	6.64	0.35	-0.35	1.52
438.38	1.06	239.81	438.31	-3.06	-6.89	6.88	0.42	-0.41	2.49
452.85	0.99	240.32	452.77	-3.19	-7.11	7.11	0.49	-0.48	3.52
467.31	0.92	240.99	467.23	-3.31	-7.32	7.32	0.49	-0.48	4.63
481.77	0.85	241.84	481.69	-3.41	-7.52	7.51	0.49	-0.48	5.88
496.23	0.78	242.89	496.15	-3.51	-7.70	7.69	0.49	-0.48	7.26
510.69	0.70	244.20	510.61	-3.59	-7.87	7.86	0.57	-0.55	9.06
525.15	0.63	245.83	525.07	-3.66	-8.02	8.01	0.50	-0.48	11.27
539.62	0.56	247.85	539.54	-3.72	-8.16	8.15	0.50	-0.48	13.96
554.08	0.49	250.35	553.99	-3.77	-8.28	8.27	0.51	-0.48	17.29
568.54	0.43	253.36	568.45	-3.81	-8.39	8.38	0.45	-0.41	20.82
583.00	0.38	256.81	582.91	-3.83	-8.49	8.48	0.38	-0.35	23.86
597.46	0.32	254.17	597.37	-3.85	-8.58	8.57	0.43	-0.41	-18.26
611.92	0.26	250.39	611.83	-3.88	-8.65	8.64	0.44	-0.41	-26.14
626.38	0.21	244.59	626.29	-3.90	-8.70	8.69	0.38	-0.35	-40.11
640.85	0.16	234.88	640.76	-3.92	-8.74	8.73	0.41	-0.35	-67.10
655.31	0.11	217.08	655.22	-3.94	-8.77	8.76	0.45	-0.35	-123.10
669.77	0.09	186.08	669.68	-3.97	-8.77	8.77	0.39	-0.14	-214.38



Survey Report

Company:	Colgate Energy	Local Co-ordinate Reference:	Well Black Diamond 34 Fed Com 133H
Project:	Eddy County, NM (N83-NME)	TVD Reference:	3330+22 @ 3352.00usft
Site:	Black Diamond 34 Fed Com	MD Reference:	3330+22 @ 3352.00usft
Well:	Black Diamond 34 Fed Com 133H	North Reference:	Grid
Wellbore:	133H	Survey Calculation Method:	Minimum Curvature
Design:	DRL	Database:	EDM 5000.14 Single User Db

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)	
684.23	0.11	152.23	684.14	-3.99	-8.77	8.76	0.42	0.14	-234.09	
698.69	0.14	131.15	698.60	-4.01	-8.75	8.74	0.38	0.21	-145.78	
713.15	0.19	119.79	713.06	-4.04	-8.72	8.71	0.41	0.35	-78.56	
727.62	0.25	113.19	727.53	-4.06	-8.67	8.66	0.45	0.41	-45.61	
742.08	0.30	108.97	741.99	-4.09	-8.60	8.59	0.37	0.35	-29.18	
756.54	0.36	106.08	756.45	-4.11	-8.52	8.51	0.43	0.41	-19.99	
771.00	0.41	103.98	770.91	-4.14	-8.43	8.42	0.36	0.35	-14.52	
784.63	0.46	99.07	784.54	-4.16	-8.33	8.32	0.46	0.37	-36.02	
798.25	0.51	95.10	798.16	-4.17	-8.21	8.20	0.44	0.37	-29.15	
811.88	0.56	91.86	811.79	-4.18	-8.09	8.08	0.43	0.37	-23.77	
825.50	0.62	89.18	825.41	-4.18	-7.94	7.94	0.48	0.44	-19.68	
839.13	0.67	86.92	839.04	-4.17	-7.79	7.78	0.41	0.37	-16.58	
852.75	0.73	85.01	852.66	-4.16	-7.63	7.62	0.47	0.44	-14.02	
866.38	0.78	83.37	866.29	-4.14	-7.45	7.44	0.40	0.37	-12.03	
880.00	0.84	81.95	879.91	-4.12	-7.26	7.25	0.46	0.44	-10.43	
894.46	0.95	84.16	894.36	-4.09	-7.03	7.02	0.80	0.76	15.28	
908.92	1.06	85.90	908.82	-4.07	-6.78	6.77	0.79	0.76	12.03	
923.38	1.17	87.32	923.28	-4.05	-6.50	6.49	0.78	0.76	9.82	
937.85	1.29	88.48	937.75	-4.04	-6.19	6.18	0.85	0.83	8.02	
952.31	1.40	89.47	952.20	-4.04	-5.85	5.84	0.78	0.76	6.85	
966.77	1.51	90.30	966.66	-4.04	-5.48	5.47	0.77	0.76	5.74	
981.23	1.62	91.02	981.11	-4.04	-5.09	5.08	0.77	0.76	4.98	
995.69	1.74	91.64	995.57	-4.05	-4.66	4.65	0.84	0.83	4.29	
1,010.15	1.85	92.19	1,010.02	-4.07	-4.21	4.20	0.77	0.76	3.80	
1,024.62	1.96	92.68	1,024.48	-4.09	-3.73	3.72	0.77	0.76	3.39	
1,039.08	2.07	93.11	1,038.93	-4.11	-3.22	3.21	0.77	0.76	2.97	
1,053.54	2.19	93.50	1,053.38	-4.14	-2.69	2.68	0.84	0.83	2.70	
1,068.00	2.30	93.85	1,067.83	-4.18	-2.12	2.11	0.77	0.76	2.42	
1,082.38	2.27	92.90	1,082.20	-4.21	-1.55	1.54	0.34	-0.21	-6.61	
1,096.77	2.24	91.76	1,096.58	-4.24	-0.98	0.97	0.37	-0.21	-7.92	
1,111.15	2.22	90.49	1,110.95	-4.25	-0.42	0.41	0.37	-0.14	-8.83	
1,125.54	2.19	89.13	1,125.33	-4.25	0.13	-0.14	0.42	-0.21	-9.45	
1,139.92	2.16	87.71	1,139.70	-4.23	0.68	-0.68	0.43	-0.21	-9.87	
1,154.31	2.14	86.26	1,154.08	-4.20	1.22	-1.22	0.40	-0.14	-10.08	
1,157.24	2.13	85.97	1,157.00	-4.19	1.32	-1.33	0.43	-0.21	-10.05	
Base of Salt										
1,168.69	2.11	84.80	1,168.45	-4.16	1.75	-1.76	0.43	-0.21	-10.18	
1,183.08	2.09	83.36	1,182.83	-4.11	2.27	-2.28	0.39	-0.14	-10.01	
1,197.46	2.06	81.96	1,197.20	-4.04	2.79	-2.80	0.41	-0.21	-9.74	
1,211.85	2.04	80.64	1,211.58	-3.96	3.30	-3.30	0.36	-0.14	-9.17	
1,226.23	2.01	79.44	1,225.95	-3.87	3.80	-3.80	0.36	-0.21	-8.34	
1,240.62	1.98	78.44	1,240.33	-3.78	4.29	-4.30	0.32	-0.21	-6.95	
1,255.00	1.95	77.75	1,254.70	-3.68	4.77	-4.78	0.27	-0.21	-4.80	
1,269.30	1.90	77.97	1,268.99	-3.58	5.24	-5.25	0.35	-0.35	1.54	



Survey Report

Company:	Colgate Energy	Local Co-ordinate Reference:	Well Black Diamond 34 Fed Com 133H
Project:	Eddy County, NM (N83-NME)	TVD Reference:	3330+22 @ 3352.00usft
Site:	Black Diamond 34 Fed Com	MD Reference:	3330+22 @ 3352.00usft
Well:	Black Diamond 34 Fed Com 133H	North Reference:	Grid
Wellbore:	133H	Survey Calculation Method:	Minimum Curvature
Design:	DRL	Database:	EDM 5000.14 Single User Db

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)	
1,283.60	1.86	78.61	1,283.29	-3.48	5.70	-5.71	0.32	-0.28	4.48	
1,297.90	1.81	79.58	1,297.58	-3.39	6.15	-6.16	0.41	-0.35	6.78	
1,312.20	1.76	80.83	1,311.87	-3.32	6.59	-6.60	0.44	-0.35	8.74	
1,326.50	1.72	82.33	1,326.16	-3.25	7.02	-7.02	0.42	-0.28	10.49	
1,340.80	1.68	84.05	1,340.46	-3.20	7.44	-7.45	0.45	-0.28	12.03	
1,355.10	1.64	85.99	1,354.75	-3.17	7.85	-7.86	0.48	-0.28	13.57	
1,369.40	1.61	88.12	1,369.05	-3.15	8.26	-8.26	0.47	-0.21	14.90	
1,383.70	1.59	90.46	1,383.34	-3.14	8.66	-8.66	0.48	-0.14	16.36	
1,398.00	1.58	92.98	1,397.64	-3.15	9.05	-9.06	0.49	-0.07	17.62	
1,407.37	1.57	94.68	1,407.00	-3.17	9.31	-9.31	0.52	-0.14	18.10	
Yates										
1,412.30	1.56	95.58	1,411.93	-3.18	9.44	-9.45	0.52	-0.13	18.33	
1,426.60	1.55	98.42	1,426.22	-3.23	9.83	-9.83	0.54	-0.07	19.86	
1,440.90	1.54	101.39	1,440.52	-3.30	10.21	-10.21	0.56	-0.07	20.77	
1,455.20	1.55	104.40	1,454.81	-3.38	10.58	-10.59	0.57	0.07	21.05	
1,469.50	1.56	107.38	1,469.11	-3.49	10.96	-10.96	0.57	0.07	20.84	
1,483.80	1.57	110.25	1,483.40	-3.61	11.33	-11.33	0.55	0.07	20.07	
1,498.10	1.59	112.94	1,497.70	-3.76	11.69	-11.70	0.54	0.14	18.81	
1,512.40	1.62	115.37	1,511.99	-3.92	12.06	-12.06	0.52	0.21	16.99	
1,526.70	1.64	117.42	1,526.29	-4.10	12.42	-12.43	0.43	0.14	14.34	
1,541.00	1.67	118.98	1,540.58	-4.30	12.79	-12.79	0.38	0.21	10.91	
1,555.46	1.68	120.01	1,555.03	-4.51	13.15	-13.16	0.22	0.07	7.12	
1,569.92	1.69	120.59	1,569.49	-4.72	13.52	-13.53	0.14	0.07	4.01	
1,584.38	1.70	120.87	1,583.94	-4.94	13.89	-13.90	0.09	0.07	1.94	
1,598.85	1.71	120.97	1,598.41	-5.16	14.26	-14.27	0.07	0.07	0.69	
1,613.31	1.73	120.94	1,612.86	-5.38	14.63	-14.64	0.14	0.14	-0.21	
1,627.77	1.74	120.84	1,627.31	-5.61	15.01	-15.02	0.07	0.07	-0.69	
1,642.23	1.76	120.70	1,641.77	-5.84	15.38	-15.40	0.14	0.14	-0.97	
1,656.69	1.77	120.55	1,656.22	-6.06	15.77	-15.78	0.08	0.07	-1.04	
1,671.15	1.79	120.42	1,670.67	-6.29	16.15	-16.17	0.14	0.14	-0.90	
1,685.62	1.80	120.34	1,685.13	-6.52	16.55	-16.56	0.07	0.07	-0.55	
1,700.08	1.81	120.34	1,699.59	-6.75	16.94	-16.95	0.07	0.07	0.00	
1,712.50	1.82	120.41	1,712.00	-6.95	17.28	-17.29	0.05	0.04	0.58	
Capitan										
1,714.54	1.82	120.47	1,714.04	-6.98	17.33	-17.35	0.24	0.22	2.84	
1,729.00	1.83	120.80	1,728.49	-7.22	17.73	-17.74	0.10	0.07	2.28	
1,743.46	1.84	121.42	1,742.95	-7.46	18.13	-18.14	0.15	0.07	4.29	
1,757.92	1.85	122.26	1,757.40	-7.70	18.52	-18.54	0.20	0.07	5.81	
1,772.38	1.86	123.23	1,771.85	-7.95	18.92	-18.93	0.23	0.07	6.71	
1,786.85	1.86	124.29	1,786.31	-8.22	19.31	-19.32	0.24	0.00	7.33	
1,801.31	1.87	125.40	1,800.77	-8.48	19.69	-19.71	0.26	0.07	7.68	
1,815.77	1.88	126.55	1,815.22	-8.76	20.08	-20.09	0.27	0.07	7.95	
1,830.23	1.88	127.71	1,829.67	-9.05	20.45	-20.47	0.26	0.00	8.02	
1,844.69	1.89	128.87	1,844.12	-9.34	20.83	-20.84	0.27	0.07	8.02	



Survey Report

Company:	Colgate Energy	Local Co-ordinate Reference:	Well Black Diamond 34 Fed Com 133H
Project:	Eddy County, NM (N83-NME)	TVD Reference:	3330+22 @ 3352.00usft
Site:	Black Diamond 34 Fed Com	MD Reference:	3330+22 @ 3352.00usft
Well:	Black Diamond 34 Fed Com 133H	North Reference:	Grid
Wellbore:	133H	Survey Calculation Method:	Minimum Curvature
Design:	DRL	Database:	EDM 5000.14 Single User Db

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)
1,859.15	1.90	130.01	1,858.57	-9.65	21.20	-21.21	0.27	0.07	7.88
1,873.62	1.91	131.13	1,873.04	-9.96	21.56	-21.58	0.27	0.07	7.74
1,888.08	1.92	132.19	1,887.49	-10.28	21.92	-21.94	0.25	0.07	7.33
1,902.54	1.92	133.17	1,901.94	-10.61	22.28	-22.30	0.23	0.00	6.78
1,917.00	1.93	134.03	1,916.39	-10.94	22.63	-22.65	0.21	0.07	5.95
1,931.54	1.93	134.70	1,930.92	-11.29	22.98	-23.00	0.16	0.00	4.61
1,946.08	1.93	135.26	1,945.46	-11.63	23.33	-23.35	0.13	0.00	3.85
1,960.62	1.93	135.74	1,959.99	-11.98	23.67	-23.69	0.11	0.00	3.30
1,975.15	1.92	136.19	1,974.51	-12.33	24.01	-24.03	0.12	-0.07	3.10
1,989.69	1.92	136.63	1,989.04	-12.69	24.34	-24.37	0.10	0.00	3.03
2,004.23	1.92	137.09	2,003.57	-13.04	24.68	-24.70	0.11	0.00	3.16
2,018.77	1.91	137.59	2,018.10	-13.40	25.01	-25.03	0.13	-0.07	3.44
2,033.31	1.58	121.86	2,032.64	-13.68	25.34	-25.37	3.98	-2.27	-108.18
2,047.85	1.48	74.01	2,047.17	-13.74	25.69	-25.72	8.56	-0.69	-329.09
2,062.38	2.26	42.94	2,061.70	-13.48	26.07	-26.09	8.62	5.37	-213.83
2,076.92	2.48	40.39	2,076.22	-13.03	26.47	-26.49	1.68	1.51	-17.54
2,091.46	2.47	41.10	2,090.75	-12.55	26.88	-26.90	0.22	-0.07	4.88
2,106.00	2.46	41.94	2,105.28	-12.08	27.29	-27.31	0.26	-0.07	5.78
2,120.46	2.46	43.03	2,119.72	-11.62	27.71	-27.73	0.32	0.00	7.54
2,134.92	2.45	44.26	2,134.17	-11.18	28.14	-28.16	0.37	-0.07	8.51
2,149.38	2.44	45.58	2,148.62	-10.74	28.57	-28.59	0.40	-0.07	9.13
2,163.85	2.44	46.96	2,163.07	-10.31	29.02	-29.04	0.41	0.00	9.54
2,178.31	2.43	48.35	2,177.52	-9.90	29.47	-29.49	0.41	-0.07	9.61
2,192.77	2.42	49.74	2,191.97	-9.50	29.93	-29.95	0.41	-0.07	9.61
2,207.23	2.42	51.09	2,206.41	-9.11	30.40	-30.42	0.39	0.00	9.34
2,221.69	2.42	52.37	2,220.86	-8.73	30.88	-30.90	0.37	0.00	8.85
2,236.15	3.27	41.35	2,235.30	-8.24	31.40	-31.41	6.96	5.88	-76.21
2,250.62	4.16	31.38	2,249.74	-7.48	31.94	-31.96	7.58	6.15	-68.90
2,265.08	4.27	30.84	2,264.16	-6.57	32.49	-32.51	0.81	0.76	-3.73
2,279.54	4.25	31.47	2,278.58	-5.65	33.05	-33.06	0.35	-0.14	4.36
2,294.00	4.23	32.09	2,293.00	-4.74	33.61	-33.62	0.35	-0.14	4.29
2,308.38	4.20	32.61	2,307.35	-3.85	34.18	-34.18	0.34	-0.21	3.62
2,322.77	4.17	33.10	2,321.70	-2.97	34.75	-34.75	0.32	-0.21	3.41
2,337.15	4.14	33.56	2,336.04	-2.09	35.32	-35.32	0.31	-0.21	3.20
2,351.54	4.11	34.00	2,350.39	-1.23	35.90	-35.90	0.30	-0.21	3.06
2,365.92	4.08	34.41	2,364.74	-0.38	36.47	-36.47	0.29	-0.21	2.85
2,380.31	4.05	34.81	2,379.09	0.45	37.05	-37.05	0.29	-0.21	2.78
2,394.69	4.02	35.18	2,393.43	1.28	37.63	-37.63	0.28	-0.21	2.57
2,409.08	4.29	34.19	2,407.79	2.14	38.23	-38.22	1.94	1.88	-6.88
2,423.46	5.33	29.12	2,422.12	3.17	38.85	-38.85	7.81	7.23	-35.26
2,437.85	5.73	23.86	2,436.44	4.41	39.47	-39.46	4.48	2.78	-36.55
2,452.23	5.71	24.02	2,450.75	5.72	40.05	-40.04	0.18	-0.14	1.11
2,466.62	5.69	24.15	2,465.07	7.03	40.63	-40.62	0.17	-0.14	0.90



Survey Report

Company:	Colgate Energy	Local Co-ordinate Reference:	Well Black Diamond 34 Fed Com 133H
Project:	Eddy County, NM (N83-NME)	TVD Reference:	3330+22 @ 3352.00usft
Site:	Black Diamond 34 Fed Com	MD Reference:	3330+22 @ 3352.00usft
Well:	Black Diamond 34 Fed Com 133H	North Reference:	Grid
Wellbore:	133H	Survey Calculation Method:	Minimum Curvature
Design:	DRL	Database:	EDM 5000.14 Single User Db

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)	
2,481.00	5.68	24.26	2,479.37	8.32	41.22	-41.20	0.10	-0.07	0.76	
2,495.46	5.68	24.35	2,493.76	9.63	41.81	-41.79	0.06	0.00	0.62	
2,509.92	5.68	24.42	2,508.15	10.93	42.40	-42.38	0.05	0.00	0.48	
2,524.38	5.69	24.47	2,522.54	12.24	42.99	-42.97	0.08	0.07	0.35	
2,538.85	5.70	24.50	2,536.94	13.54	43.58	-43.56	0.07	0.07	0.21	
2,553.31	5.72	24.52	2,551.33	14.85	44.18	-44.15	0.14	0.14	0.14	
2,567.77	5.73	24.54	2,565.72	16.16	44.78	-44.75	0.07	0.07	0.14	
2,582.23	5.75	24.54	2,580.10	17.48	45.38	-45.35	0.14	0.14	0.00	
2,596.69	5.77	24.53	2,594.49	18.80	45.98	-45.95	0.14	0.14	-0.07	
2,611.15	5.78	24.52	2,608.88	20.12	46.59	-46.55	0.07	0.07	-0.07	
2,625.62	5.80	24.50	2,623.27	21.45	47.19	-47.15	0.14	0.14	-0.14	
2,640.08	5.82	24.47	2,637.66	22.78	47.80	-47.76	0.14	0.14	-0.21	
2,654.54	5.84	24.43	2,652.04	24.12	48.41	-48.36	0.14	0.14	-0.28	
2,669.00	5.86	24.39	2,666.43	25.46	49.02	-48.97	0.14	0.14	-0.28	
2,683.46	5.88	24.35	2,680.81	26.81	49.63	-49.58	0.14	0.14	-0.28	
2,697.92	5.89	24.29	2,695.20	28.16	50.24	-50.18	0.08	0.07	-0.41	
2,712.38	5.91	24.24	2,709.58	29.52	50.85	-50.79	0.14	0.14	-0.35	
2,726.85	5.92	24.18	2,723.97	30.88	51.46	-51.40	0.08	0.07	-0.41	
2,741.31	5.94	24.11	2,738.36	32.24	52.07	-52.01	0.15	0.14	-0.48	
2,755.77	5.95	24.04	2,752.74	33.61	52.68	-52.62	0.09	0.07	-0.48	
2,770.23	5.97	23.96	2,767.12	34.98	53.29	-53.23	0.15	0.14	-0.55	
2,784.69	5.99	23.88	2,781.50	36.36	53.90	-53.83	0.15	0.14	-0.55	
2,799.15	6.00	23.79	2,795.88	37.74	54.51	-54.44	0.09	0.07	-0.62	
2,813.62	6.02	23.70	2,810.27	39.12	55.12	-55.05	0.15	0.14	-0.62	
2,828.08	6.04	23.61	2,824.65	40.52	55.73	-55.66	0.15	0.14	-0.62	
2,842.54	6.06	23.50	2,839.03	41.91	56.34	-56.26	0.16	0.14	-0.76	
2,857.00	6.08	23.39	2,853.41	43.32	56.95	-56.87	0.16	0.14	-0.76	
2,871.38	6.11	23.27	2,867.71	44.72	57.56	-57.47	0.23	0.21	-0.83	
2,885.77	6.14	23.13	2,882.02	46.13	58.16	-58.07	0.23	0.21	-0.97	
2,900.15	6.17	22.99	2,896.31	47.55	58.76	-58.67	0.23	0.21	-0.97	
2,914.54	6.20	22.85	2,910.62	48.97	59.37	-59.27	0.23	0.21	-0.97	
2,928.92	6.24	22.71	2,924.92	50.41	59.97	-59.87	0.30	0.28	-0.97	
2,943.31	6.27	22.57	2,939.22	51.86	60.57	-60.48	0.23	0.21	-0.97	
2,957.69	6.30	22.43	2,953.51	53.31	61.18	-61.07	0.23	0.21	-0.97	
2,972.08	6.33	22.30	2,967.82	54.78	61.78	-61.67	0.23	0.21	-0.90	
2,986.46	6.36	22.17	2,982.11	56.25	62.38	-62.27	0.23	0.21	-0.90	
3,000.85	6.39	22.05	2,996.41	57.73	62.98	-62.87	0.23	0.21	-0.83	
3,015.23	6.42	21.94	3,010.70	59.22	63.58	-63.47	0.23	0.21	-0.76	
3,029.62	6.44	21.86	3,025.00	60.71	64.18	-64.07	0.15	0.14	-0.56	
3,044.00	6.46	21.81	3,039.29	62.21	64.79	-64.67	0.14	0.14	-0.35	
3,058.54	6.47	21.81	3,053.74	63.73	65.39	-65.27	0.07	0.07	0.00	
3,073.08	6.47	21.84	3,068.18	65.25	66.00	-65.88	0.02	0.00	0.21	
3,087.62	6.48	21.90	3,082.63	66.77	66.61	-66.48	0.08	0.07	0.41	



Survey Report

Company:	Colgate Energy	Local Co-ordinate Reference:	Well Black Diamond 34 Fed Com 133H
Project:	Eddy County, NM (N83-NME)	TVD Reference:	3330+22 @ 3352.00usft
Site:	Black Diamond 34 Fed Com	MD Reference:	3330+22 @ 3352.00usft
Well:	Black Diamond 34 Fed Com 133H	North Reference:	Grid
Wellbore:	133H	Survey Calculation Method:	Minimum Curvature
Design:	DRL	Database:	EDM 5000.14 Single User Db

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)	
3,102.15	6.47	21.96	3,097.07	68.29	67.23	-67.09	0.08	-0.07	0.41	
3,116.69	6.47	22.04	3,111.52	69.81	67.84	-67.70	0.06	0.00	0.55	
3,131.23	6.47	22.11	3,125.96	71.33	68.45	-68.32	0.05	0.00	0.48	
3,145.77	6.46	22.19	3,140.41	72.85	69.07	-68.93	0.09	-0.07	0.55	
3,160.31	6.46	22.27	3,154.86	74.36	69.69	-69.55	0.06	0.00	0.55	
3,174.85	6.46	22.34	3,169.31	75.87	70.31	-70.17	0.05	0.00	0.48	
3,189.38	6.45	22.40	3,183.74	77.38	70.93	-70.78	0.08	-0.07	0.41	
3,203.92	6.45	22.45	3,198.19	78.89	71.56	-71.40	0.04	0.00	0.34	
3,218.46	6.46	22.49	3,212.64	80.41	72.18	-72.03	0.08	0.07	0.28	
3,233.00	6.48	22.49	3,227.09	81.92	72.81	-72.65	0.14	0.14	0.00	
3,246.00	6.50	22.47	3,240.00	83.28	73.37	-73.21	0.15	0.15	-0.15	
3,259.00	6.53	22.42	3,252.92	84.64	73.93	-73.77	0.23	0.23	-0.38	
3,272.00	6.57	22.36	3,265.83	86.01	74.50	-74.33	0.31	0.31	-0.46	
3,285.00	6.61	22.28	3,278.75	87.39	75.06	-74.90	0.32	0.31	-0.62	
3,298.00	6.65	22.20	3,291.66	88.78	75.63	-75.46	0.32	0.31	-0.62	
3,311.00	6.68	22.10	3,304.57	90.18	76.20	-76.03	0.25	0.23	-0.77	
3,324.63	6.72	21.99	3,318.11	91.65	76.80	-76.62	0.31	0.29	-0.81	
3,338.25	6.76	21.87	3,331.64	93.13	77.40	-77.22	0.31	0.29	-0.88	
3,351.88	6.79	21.74	3,345.17	94.63	77.99	-77.81	0.25	0.22	-0.95	
3,365.50	6.82	21.61	3,358.70	96.13	78.59	-78.40	0.25	0.22	-0.95	
3,379.13	6.84	21.46	3,372.23	97.64	79.18	-79.00	0.20	0.15	-1.10	
3,392.75	6.86	21.31	3,385.75	99.15	79.78	-79.59	0.20	0.15	-1.10	
3,406.38	6.87	21.14	3,399.28	100.67	80.37	-80.17	0.17	0.07	-1.25	
3,420.00	6.86	20.95	3,412.81	102.19	80.95	-80.75	0.18	-0.07	-1.40	
3,434.54	6.84	20.72	3,427.24	103.81	81.57	-81.37	0.23	-0.14	-1.58	
3,449.08	6.79	20.47	3,441.68	105.42	82.17	-81.97	0.40	-0.34	-1.72	
3,463.62	6.74	20.21	3,456.12	107.03	82.77	-82.56	0.40	-0.34	-1.79	
3,478.15	6.68	19.93	3,470.55	108.62	83.35	-83.14	0.47	-0.41	-1.93	
3,492.69	6.61	19.64	3,484.99	110.21	83.92	-83.71	0.53	-0.48	-1.99	
3,507.23	6.55	19.35	3,499.44	111.78	84.48	-84.26	0.47	-0.41	-1.99	
3,519.88	6.49	19.10	3,512.00	113.13	84.95	-84.73	0.53	-0.48	-1.99	
DLWR Mnt. Group										
3,521.77	6.48	19.06	3,513.88	113.33	85.02	-84.80	0.53	-0.48	-2.01	
3,536.31	6.41	18.76	3,528.33	114.88	85.55	-85.33	0.53	-0.48	-2.06	
3,550.85	6.34	18.47	3,542.78	116.41	86.06	-85.84	0.53	-0.48	-1.99	
3,565.38	6.27	18.18	3,557.22	117.92	86.57	-86.34	0.53	-0.48	-2.00	
3,579.92	6.20	17.92	3,571.68	119.42	87.06	-86.83	0.52	-0.48	-1.79	
3,594.46	6.13	17.68	3,586.13	120.91	87.53	-87.30	0.51	-0.48	-1.65	
3,609.00	6.08	17.49	3,600.59	122.39	88.00	-87.77	0.37	-0.34	-1.31	
3,623.46	6.03	17.41	3,614.97	123.84	88.46	-88.22	0.35	-0.35	-0.55	
3,637.92	6.00	17.37	3,629.35	125.29	88.91	-88.67	0.21	-0.21	-0.28	
3,652.38	5.96	17.37	3,643.73	126.72	89.36	-89.12	0.28	-0.28	0.00	
3,666.85	5.93	17.40	3,658.12	128.15	89.81	-89.56	0.21	-0.21	0.21	
3,681.31	5.90	17.45	3,672.51	129.58	90.25	-90.01	0.21	-0.21	0.35	



Survey Report

Company:	Colgate Energy	Local Co-ordinate Reference:	Well Black Diamond 34 Fed Com 133H
Project:	Eddy County, NM (N83-NME)	TVD Reference:	3330+22 @ 3352.00usft
Site:	Black Diamond 34 Fed Com	MD Reference:	3330+22 @ 3352.00usft
Well:	Black Diamond 34 Fed Com 133H	North Reference:	Grid
Wellbore:	133H	Survey Calculation Method:	Minimum Curvature
Design:	DRL	Database:	EDM 5000.14 Single User Db

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)	
3,695.77	5.87	17.51	3,686.89	130.99	90.70	-90.45	0.21	-0.21	0.41	
3,710.23	5.85	17.58	3,701.27	132.40	91.14	-90.89	0.15	-0.14	0.48	
3,724.69	5.82	17.66	3,715.66	133.80	91.59	-91.33	0.21	-0.21	0.55	
3,739.15	5.79	17.75	3,730.05	135.19	92.03	-91.77	0.22	-0.21	0.62	
3,753.62	5.76	17.83	3,744.44	136.58	92.48	-92.22	0.21	-0.21	0.55	
3,768.08	5.72	17.91	3,758.83	137.95	92.92	-92.66	0.28	-0.28	0.55	
3,782.54	5.68	17.98	3,773.22	139.32	93.37	-93.10	0.28	-0.28	0.48	
3,797.00	5.63	18.02	3,787.61	140.68	93.81	-93.54	0.35	-0.35	0.28	
3,811.38	5.57	17.99	3,801.92	142.01	94.24	-93.97	0.42	-0.42	-0.21	
3,825.77	5.49	17.92	3,816.24	143.33	94.67	-94.39	0.56	-0.56	-0.49	
3,840.15	5.41	17.84	3,830.56	144.63	95.09	-94.81	0.56	-0.56	-0.56	
3,854.54	5.33	17.75	3,844.88	145.91	95.50	-95.22	0.56	-0.56	-0.63	
3,868.92	5.25	17.66	3,859.20	147.18	95.90	-95.62	0.56	-0.56	-0.63	
3,883.31	5.17	17.57	3,873.53	148.42	96.30	-96.01	0.56	-0.56	-0.63	
3,897.69	5.09	17.51	3,887.86	149.65	96.68	-96.40	0.56	-0.56	-0.42	
3,912.08	5.02	17.46	3,902.19	150.86	97.07	-96.78	0.49	-0.49	-0.35	
3,926.46	4.95	17.46	3,916.51	152.05	97.44	-97.15	0.49	-0.49	0.00	
3,940.85	4.89	17.51	3,930.85	153.23	97.81	-97.52	0.42	-0.42	0.35	
3,955.23	4.84	17.65	3,945.18	154.39	98.18	-97.88	0.36	-0.35	0.97	
3,969.62	4.81	17.91	3,959.52	155.54	98.55	-98.25	0.26	-0.21	1.81	
3,984.00	4.81	18.34	3,973.85	156.69	98.92	-98.62	0.25	0.00	2.99	
3,998.31	4.85	19.04	3,988.11	157.83	99.31	-99.01	0.50	0.28	4.89	
4,012.62	4.92	19.89	4,002.37	158.98	99.72	-99.41	0.70	0.49	5.94	
4,026.92	5.01	20.79	4,016.61	160.14	100.15	-99.84	0.83	0.63	6.29	
4,041.23	5.11	21.69	4,030.87	161.31	100.60	-100.29	0.89	0.70	6.29	
4,055.54	5.21	22.55	4,045.12	162.51	101.09	-100.78	0.88	0.70	6.01	
4,069.85	5.31	23.33	4,059.37	163.71	101.60	-101.29	0.86	0.70	5.45	
4,084.15	6.28	28.00	4,073.59	165.01	102.23	-101.91	7.54	6.78	32.66	
4,098.46	7.47	29.61	4,087.80	166.51	103.06	-102.74	8.42	8.32	11.25	
4,112.77	7.57	30.08	4,101.99	168.14	103.99	-103.67	0.82	0.70	3.28	
4,127.08	7.67	30.53	4,116.17	169.77	104.95	-104.62	0.81	0.70	3.14	
4,141.38	7.77	30.95	4,130.34	171.42	105.93	-105.60	0.80	0.70	2.94	
4,155.69	7.85	31.32	4,144.52	173.09	106.93	-106.60	0.66	0.56	2.59	
4,170.00	7.91	31.62	4,158.69	174.76	107.96	-107.62	0.51	0.42	2.10	
4,184.54	7.92	31.82	4,173.10	176.47	109.01	-108.67	0.20	0.07	1.38	
4,199.08	7.90	31.93	4,187.50	178.17	110.07	-109.72	0.17	-0.14	0.76	
4,213.62	7.87	31.98	4,201.90	179.86	111.12	-110.78	0.21	-0.21	0.34	
4,228.15	7.82	31.99	4,216.29	181.54	112.17	-111.82	0.34	-0.34	0.07	
4,242.69	7.77	31.96	4,230.70	183.21	113.22	-112.87	0.35	-0.34	-0.21	
4,257.23	7.71	31.92	4,245.11	184.87	114.25	-113.90	0.41	-0.41	-0.28	
4,271.77	7.64	31.86	4,259.52	186.52	115.28	-114.92	0.48	-0.48	-0.41	
4,286.31	7.58	31.80	4,273.93	188.16	116.29	-115.93	0.42	-0.41	-0.41	
4,300.85	7.51	31.73	4,288.34	189.78	117.30	-116.93	0.49	-0.48	-0.48	



Survey Report

Company:	Colgate Energy	Local Co-ordinate Reference:	Well Black Diamond 34 Fed Com 133H
Project:	Eddy County, NM (N83-NME)	TVD Reference:	3330+22 @ 3352.00usft
Site:	Black Diamond 34 Fed Com	MD Reference:	3330+22 @ 3352.00usft
Well:	Black Diamond 34 Fed Com 133H	North Reference:	Grid
Wellbore:	133H	Survey Calculation Method:	Minimum Curvature
Design:	DRL	Database:	EDM 5000.14 Single User Db

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,315.38	7.45	31.66	4,302.75	191.39	118.29	-117.93	0.42	-0.41	-0.48
4,329.92	7.39	31.61	4,317.17	192.99	119.28	-118.91	0.42	-0.41	-0.34
4,344.46	7.33	31.59	4,331.59	194.58	120.25	-119.88	0.41	-0.41	-0.14
4,359.00	7.29	31.63	4,346.01	196.15	121.22	-120.85	0.28	-0.28	0.28
4,373.46	7.27	31.76	4,360.35	197.71	122.19	-121.81	0.18	-0.14	0.90
4,387.92	7.25	31.95	4,374.70	199.26	123.15	-122.77	0.22	-0.14	1.31
4,402.38	7.24	32.17	4,389.04	200.81	124.12	-123.73	0.20	-0.07	1.52
4,416.85	7.24	32.40	4,403.40	202.35	125.09	-124.70	0.20	0.00	1.59
4,431.31	7.24	32.64	4,417.74	203.89	126.07	-125.68	0.21	0.00	1.66
4,445.77	7.24	32.88	4,432.09	205.42	127.06	-126.66	0.21	0.00	1.66
4,460.23	7.23	33.11	4,446.43	206.95	128.05	-127.65	0.21	-0.07	1.59
4,474.69	7.23	33.33	4,460.78	208.47	129.05	-128.65	0.19	0.00	1.52
4,489.15	7.23	33.54	4,475.12	209.99	130.05	-129.65	0.18	0.00	1.45
4,503.62	7.23	33.72	4,489.48	211.50	131.06	-130.65	0.16	0.00	1.24
4,518.08	7.22	33.86	4,503.82	213.02	132.07	-131.66	0.14	-0.07	0.97
4,532.54	7.20	33.95	4,518.17	214.52	133.08	-132.67	0.16	-0.14	0.62
4,547.00	7.17	33.97	4,532.51	216.02	134.09	-133.68	0.21	-0.21	0.14
4,561.46	7.12	33.85	4,546.86	217.51	135.10	-134.68	0.36	-0.35	-0.83
4,575.92	7.06	33.65	4,561.21	219.00	136.09	-135.67	0.45	-0.41	-1.38
4,590.38	7.00	33.39	4,575.56	220.47	137.07	-136.64	0.47	-0.41	-1.80
4,604.85	6.93	33.08	4,589.92	221.94	138.03	-137.60	0.55	-0.48	-2.14
4,619.31	6.86	32.74	4,604.28	223.40	138.97	-138.54	0.56	-0.48	-2.35
4,633.77	6.79	32.38	4,618.64	224.85	139.89	-139.46	0.57	-0.48	-2.49
4,648.23	6.72	31.99	4,633.00	226.29	140.80	-140.37	0.58	-0.48	-2.70
4,662.69	6.65	31.60	4,647.36	227.72	141.69	-141.25	0.58	-0.48	-2.70
4,677.15	6.58	31.20	4,661.72	229.14	142.56	-142.12	0.58	-0.48	-2.77
4,691.62	6.52	30.80	4,676.10	230.55	143.41	-142.96	0.52	-0.41	-2.76
4,706.08	6.46	30.42	4,690.47	231.96	144.24	-143.79	0.51	-0.41	-2.63
4,720.54	6.41	30.08	4,704.83	233.36	145.05	-144.61	0.43	-0.35	-2.35
4,735.00	6.37	29.81	4,719.20	234.76	145.86	-145.41	0.35	-0.28	-1.87
4,749.38	6.36	29.68	4,733.50	236.14	146.65	-146.20	0.12	-0.07	-0.90
4,763.77	6.35	29.62	4,747.80	237.52	147.44	-146.98	0.08	-0.07	-0.42
4,778.15	6.36	29.59	4,762.09	238.91	148.22	-147.76	0.07	0.07	-0.21
4,792.54	6.37	29.59	4,776.39	240.29	149.01	-148.55	0.07	0.07	0.00
4,806.92	6.38	29.61	4,790.68	241.68	149.80	-149.34	0.07	0.07	0.14
4,821.31	6.40	29.62	4,804.98	243.08	150.59	-150.12	0.14	0.14	0.07
4,835.69	6.42	29.64	4,819.27	244.47	151.38	-150.91	0.14	0.14	0.14
4,850.08	6.44	29.65	4,833.57	245.87	152.18	-151.71	0.14	0.14	0.07
4,864.46	6.47	29.65	4,847.86	247.28	152.98	-152.51	0.21	0.21	0.00
4,878.85	6.49	29.63	4,862.16	248.69	153.78	-153.31	0.14	0.14	-0.14
4,893.23	6.52	29.58	4,876.45	250.10	154.59	-154.11	0.21	0.21	-0.35
4,907.62	6.55	29.49	4,890.74	251.53	155.40	-154.91	0.22	0.21	-0.63
4,922.00	6.58	29.34	4,905.03	252.96	156.20	-155.72	0.24	0.21	-1.04



Survey Report

Company:	Colgate Energy	Local Co-ordinate Reference:	Well Black Diamond 34 Fed Com 133H
Project:	Eddy County, NM (N83-NME)	TVD Reference:	3330+22 @ 3352.00usft
Site:	Black Diamond 34 Fed Com	MD Reference:	3330+22 @ 3352.00usft
Well:	Black Diamond 34 Fed Com 133H	North Reference:	Grid
Wellbore:	133H	Survey Calculation Method:	Minimum Curvature
Design:	DRL	Database:	EDM 5000.14 Single User Db

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
4,936.54	6.61	29.10	4,919.47	254.42	157.02	-156.53	0.28	0.21	-1.65	
4,951.08	6.64	28.80	4,933.92	255.89	157.83	-157.34	0.32	0.21	-2.06	
4,965.62	6.68	28.46	4,948.36	257.37	158.64	-158.14	0.39	0.28	-2.34	
4,980.15	6.71	28.09	4,962.79	258.86	159.44	-158.94	0.36	0.21	-2.55	
4,994.69	6.74	27.71	4,977.23	260.36	160.24	-159.74	0.37	0.21	-2.61	
5,009.23	6.78	27.32	4,991.67	261.88	161.03	-160.53	0.42	0.28	-2.68	
5,023.77	6.81	26.92	5,006.10	263.41	161.81	-161.31	0.39	0.21	-2.75	
5,038.31	6.85	26.52	5,020.54	264.96	162.59	-162.08	0.43	0.28	-2.75	
5,052.85	6.88	26.12	5,034.98	266.51	163.36	-162.85	0.39	0.21	-2.75	
5,067.38	6.91	25.72	5,049.40	268.08	164.12	-163.61	0.39	0.21	-2.75	
5,081.92	6.94	25.32	5,063.84	269.67	164.88	-164.36	0.39	0.21	-2.75	
5,096.46	6.97	24.94	5,078.27	271.26	165.63	-165.11	0.38	0.21	-2.61	
5,111.00	6.99	24.57	5,092.70	272.86	166.37	-165.84	0.34	0.14	-2.54	
5,125.38	7.00	24.21	5,106.97	274.46	167.09	-166.56	0.31	0.07	-2.50	
5,139.77	7.01	23.88	5,121.26	276.06	167.80	-167.27	0.29	0.07	-2.29	
5,154.15	7.01	23.55	5,135.53	277.67	168.51	-167.98	0.28	0.00	-2.29	
5,168.54	7.01	23.23	5,149.81	279.28	169.21	-168.67	0.27	0.00	-2.22	
5,182.92	7.01	22.92	5,164.08	280.90	169.90	-169.36	0.26	0.00	-2.16	
5,197.31	7.01	22.61	5,178.37	282.51	170.58	-170.03	0.26	0.00	-2.15	
5,211.69	7.00	22.30	5,192.64	284.14	171.25	-170.70	0.27	-0.07	-2.16	
5,226.08	6.99	21.99	5,206.92	285.76	171.91	-171.36	0.27	-0.07	-2.15	
5,240.46	6.98	21.68	5,221.20	287.38	172.56	-172.00	0.27	-0.07	-2.16	
5,254.85	6.97	21.37	5,235.48	289.01	173.20	-172.64	0.27	-0.07	-2.15	
5,269.23	6.95	21.05	5,249.75	290.63	173.83	-173.27	0.30	-0.14	-2.23	
5,283.62	6.93	20.74	5,264.04	292.26	174.45	-173.89	0.30	-0.14	-2.15	
5,298.00	6.90	20.41	5,278.31	293.88	175.06	-174.49	0.35	-0.21	-2.29	
5,312.54	6.86	20.09	5,292.75	295.51	175.66	-175.09	0.38	-0.28	-2.20	
5,327.08	6.82	19.76	5,307.19	297.14	176.25	-175.68	0.39	-0.28	-2.27	
5,341.62	6.77	19.43	5,321.62	298.76	176.83	-176.25	0.44	-0.34	-2.27	
5,356.15	6.72	19.09	5,336.05	300.37	177.39	-176.81	0.44	-0.34	-2.34	
5,370.69	6.66	18.75	5,350.49	301.97	177.94	-177.36	0.49	-0.41	-2.34	
5,385.23	6.60	18.41	5,364.94	303.56	178.47	-177.89	0.49	-0.41	-2.34	
5,399.77	6.54	18.07	5,379.38	305.14	178.99	-178.41	0.49	-0.41	-2.34	
5,407.44	6.51	17.89	5,387.00	305.97	179.26	-178.68	0.49	-0.41	-2.40	
Lower Brushy Canyon										
5,414.31	6.48	17.72	5,393.83	306.71	179.50	-178.91	0.49	-0.41	-2.42	
5,428.85	6.41	17.37	5,408.27	308.27	179.99	-179.40	0.55	-0.48	-2.41	
5,443.38	6.34	17.02	5,422.72	309.81	180.47	-179.87	0.55	-0.48	-2.41	
5,457.92	6.27	16.66	5,437.17	311.34	180.93	-180.33	0.55	-0.48	-2.48	
5,472.46	6.20	16.29	5,451.62	312.85	181.38	-180.78	0.56	-0.48	-2.54	
5,487.00	6.12	15.91	5,466.08	314.35	181.81	-181.21	0.62	-0.55	-2.61	
5,501.46	6.03	15.56	5,480.46	315.83	182.23	-181.62	0.67	-0.62	-2.42	
5,515.92	5.94	15.20	5,494.84	317.28	182.63	-182.02	0.67	-0.62	-2.49	
5,530.38	5.84	14.84	5,509.22	318.71	183.01	-182.40	0.74	-0.69	-2.49	



Survey Report

Company:	Colgate Energy	Local Co-ordinate Reference:	Well Black Diamond 34 Fed Com 133H
Project:	Eddy County, NM (N83-NME)	TVD Reference:	3330+22 @ 3352.00usft
Site:	Black Diamond 34 Fed Com	MD Reference:	3330+22 @ 3352.00usft
Well:	Black Diamond 34 Fed Com 133H	North Reference:	Grid
Wellbore:	133H	Survey Calculation Method:	Minimum Curvature
Design:	DRL	Database:	EDM 5000.14 Single User Db

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)	
5,544.85	5.74	14.47	5,523.62	320.12	183.38	-182.77	0.74	-0.69	-2.56	
5,559.31	5.65	14.12	5,538.01	321.51	183.74	-183.12	0.67	-0.62	-2.42	
5,573.77	5.55	13.76	5,552.40	322.88	184.08	-183.46	0.73	-0.69	-2.49	
5,588.23	5.45	13.43	5,566.79	324.23	184.40	-183.78	0.73	-0.69	-2.28	
5,602.69	5.35	13.11	5,581.19	325.56	184.71	-184.09	0.72	-0.69	-2.21	
5,617.15	5.25	12.83	5,595.58	326.86	185.01	-184.39	0.71	-0.69	-1.94	
5,631.62	5.15	12.61	5,609.99	328.14	185.30	-184.67	0.70	-0.69	-1.52	
5,646.08	5.06	12.46	5,624.40	329.39	185.58	-184.95	0.63	-0.62	-1.04	
5,660.54	4.97	12.45	5,638.80	330.63	185.85	-185.22	0.62	-0.62	-0.07	
5,675.00	4.89	12.63	5,653.21	331.84	186.12	-185.49	0.56	-0.55	1.24	
5,689.54	4.82	13.16	5,667.70	333.04	186.40	-185.76	0.57	-0.48	3.65	
5,704.08	4.77	13.90	5,682.19	334.22	186.68	-186.04	0.55	-0.34	5.09	
5,718.62	4.72	14.78	5,696.68	335.39	186.98	-186.34	0.61	-0.34	6.05	
5,733.15	4.67	15.77	5,711.16	336.53	187.29	-186.65	0.66	-0.34	6.81	
5,734.00	4.67	15.83	5,712.00	336.60	187.31	-186.67	0.65	-0.28	7.25	
Bone Spring Lime										
5,747.69	4.63	16.83	5,725.65	337.66	187.63	-186.98	0.65	-0.27	7.29	
5,762.23	4.59	17.93	5,740.14	338.78	187.97	-187.32	0.67	-0.28	7.57	
5,776.77	4.55	19.05	5,754.64	339.88	188.34	-187.69	0.67	-0.28	7.70	
5,791.31	4.52	20.18	5,769.13	340.96	188.73	-188.07	0.65	-0.21	7.77	
5,805.85	4.48	21.28	5,783.63	342.03	189.13	-188.47	0.65	-0.28	7.57	
5,820.38	4.45	22.32	5,798.11	343.08	189.55	-188.89	0.59	-0.21	7.16	
5,834.92	4.41	23.27	5,812.61	344.11	189.99	-189.33	0.57	-0.28	6.53	
5,849.46	4.38	24.06	5,827.10	345.13	190.43	-189.77	0.46	-0.21	5.43	
5,864.00	4.86	28.26	5,841.60	346.18	190.95	-190.29	4.04	3.30	28.89	
5,878.46	5.61	31.60	5,856.00	347.33	191.61	-190.94	5.60	5.19	23.10	
5,892.92	5.56	31.45	5,870.39	348.53	192.35	-191.68	0.36	-0.35	-1.04	
5,907.38	5.50	31.16	5,884.78	349.72	193.07	-192.40	0.46	-0.41	-2.01	
5,921.85	5.45	30.76	5,899.19	350.90	193.78	-193.11	0.43	-0.35	-2.76	
5,936.31	5.39	30.28	5,913.58	352.08	194.48	-193.80	0.52	-0.41	-3.32	
5,950.77	5.34	29.74	5,927.98	353.25	195.15	-194.47	0.49	-0.35	-3.73	
5,965.23	5.28	29.15	5,942.38	354.41	195.81	-195.13	0.56	-0.41	-4.08	
5,979.69	5.22	28.51	5,956.77	355.57	196.45	-195.76	0.58	-0.41	-4.43	
5,994.15	5.17	27.82	5,971.18	356.73	197.07	-196.38	0.55	-0.35	-4.77	
6,008.62	5.11	27.10	5,985.59	357.88	197.66	-196.98	0.61	-0.41	-4.98	
6,023.08	5.05	26.35	5,999.99	359.02	198.24	-197.55	0.62	-0.41	-5.19	
6,037.54	4.99	25.57	6,014.39	360.16	198.79	-198.10	0.63	-0.41	-5.39	
6,052.00	4.93	24.76	6,028.80	361.29	199.32	-198.63	0.64	-0.41	-5.60	
6,066.46	4.86	24.08	6,043.21	362.41	199.84	-199.14	0.63	-0.48	-4.70	
6,080.92	4.78	23.38	6,057.62	363.52	200.32	-199.63	0.69	-0.55	-4.84	
6,095.38	4.70	22.67	6,072.03	364.62	200.79	-200.09	0.69	-0.55	-4.91	
6,109.85	4.62	21.94	6,086.45	365.71	201.24	-200.54	0.69	-0.55	-5.04	
6,124.31	4.54	21.18	6,100.86	366.79	201.66	-200.96	0.69	-0.55	-5.26	



Survey Report

Company:	Colgate Energy	Local Co-ordinate Reference:	Well Black Diamond 34 Fed Com 133H
Project:	Eddy County, NM (N83-NME)	TVD Reference:	3330+22 @ 3352.00usft
Site:	Black Diamond 34 Fed Com	MD Reference:	3330+22 @ 3352.00usft
Well:	Black Diamond 34 Fed Com 133H	North Reference:	Grid
Wellbore:	133H	Survey Calculation Method:	Minimum Curvature
Design:	DRL	Database:	EDM 5000.14 Single User Db

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)	
6,138.77	4.46	20.40	6,115.28	367.85	202.06	-201.36	0.70	-0.55	-5.39	
6,153.23	4.37	19.60	6,129.70	368.89	202.45	-201.74	0.75	-0.62	-5.53	
6,167.69	4.29	18.78	6,144.11	369.92	202.80	-202.09	0.70	-0.55	-5.67	
6,182.15	4.20	17.94	6,158.53	370.94	203.14	-202.43	0.76	-0.62	-5.81	
6,196.62	4.11	17.11	6,172.97	371.94	203.46	-202.74	0.75	-0.62	-5.74	
6,211.08	4.03	16.28	6,187.39	372.92	203.75	-203.04	0.69	-0.55	-5.74	
6,225.54	3.93	15.50	6,201.82	373.89	204.03	-203.31	0.79	-0.69	-5.39	
6,240.00	3.84	14.81	6,216.24	374.83	204.28	-203.56	0.70	-0.62	-4.77	
6,254.38	4.26	20.53	6,230.59	375.80	204.59	-203.87	4.05	2.92	39.78	
6,268.77	4.65	24.59	6,244.93	376.83	205.02	-204.30	3.48	2.71	28.21	
6,283.15	4.55	24.61	6,259.27	377.88	205.50	-204.78	0.70	-0.70	0.14	
6,297.54	4.44	24.70	6,273.61	378.90	205.97	-205.25	0.77	-0.76	0.63	
6,311.92	4.32	24.83	6,287.95	379.90	206.43	-205.70	0.84	-0.83	0.90	
6,326.31	4.21	24.96	6,302.30	380.87	206.89	-206.15	0.77	-0.76	0.90	
6,340.69	4.10	25.05	6,316.64	381.81	207.33	-206.59	0.77	-0.76	0.63	
6,355.08	4.53	32.02	6,330.99	382.76	207.84	-207.11	4.71	2.99	48.44	
6,369.46	4.90	36.52	6,345.32	383.74	208.51	-207.77	3.64	2.57	31.29	
6,383.85	4.78	36.39	6,359.66	384.71	209.23	-208.49	0.84	-0.83	-0.90	
6,398.23	4.66	36.10	6,373.99	385.67	209.93	-209.19	0.85	-0.83	-2.02	
6,412.62	4.54	35.51	6,388.34	386.60	210.61	-209.86	0.90	-0.83	-4.10	
6,427.00	4.42	34.45	6,402.67	387.52	211.25	-210.51	1.01	-0.83	-7.37	
6,441.38	4.31	32.48	6,417.01	388.44	211.86	-211.11	1.29	-0.76	-13.70	
6,455.77	4.20	29.94	6,431.36	389.35	212.41	-211.66	1.52	-0.76	-17.65	
6,470.15	4.11	27.01	6,445.70	390.27	212.91	-212.16	1.60	-0.63	-20.38	
6,484.54	4.02	23.80	6,460.06	391.19	213.34	-212.59	1.70	-0.63	-22.31	
6,498.92	3.95	20.43	6,474.40	392.11	213.72	-212.97	1.70	-0.49	-23.44	
6,513.31	3.88	17.02	6,488.76	393.04	214.03	-213.28	1.69	-0.49	-23.70	
6,527.69	3.81	13.68	6,503.11	393.97	214.29	-213.53	1.63	-0.49	-23.23	
6,542.08	4.96	19.52	6,517.45	395.02	214.61	-213.85	8.56	7.99	40.58	
6,556.46	5.21	19.29	6,531.78	396.22	215.03	-214.27	1.74	1.74	-1.60	
6,570.85	5.09	17.05	6,546.11	397.45	215.44	-214.67	1.63	-0.83	-15.57	
6,585.23	4.96	14.84	6,560.43	398.66	215.78	-215.02	1.62	-0.90	-15.37	
6,599.62	4.80	12.83	6,574.77	399.85	216.08	-215.31	1.63	-1.11	-13.97	
6,614.00	4.59	11.21	6,589.10	401.00	216.32	-215.55	1.73	-1.46	-11.27	
6,628.46	4.28	12.21	6,603.52	402.10	216.55	-215.78	2.21	-2.14	6.92	
6,642.92	3.94	14.44	6,617.94	403.10	216.79	-216.01	2.60	-2.35	15.42	
6,657.38	3.59	17.85	6,632.37	404.02	217.05	-216.27	2.87	-2.42	23.58	
6,671.85	3.26	22.46	6,646.82	404.83	217.35	-216.57	2.97	-2.28	31.86	
6,686.31	2.97	28.25	6,661.26	405.54	217.68	-216.90	2.96	-2.01	40.04	
6,700.77	2.73	35.03	6,675.70	406.15	218.06	-217.27	2.86	-1.66	46.89	
6,715.23	2.93	39.03	6,690.14	406.72	218.49	-217.70	1.94	1.38	27.66	
6,729.69	4.21	35.43	6,704.57	407.44	219.03	-218.24	8.98	8.85	-24.90	
6,744.15	5.50	33.55	6,718.98	408.45	219.72	-218.93	8.99	8.92	-13.00	
6,758.62	6.40	33.18	6,733.37	409.70	220.54	-219.75	6.23	6.22	-2.56	



Survey Report

Company:	Colgate Energy	Local Co-ordinate Reference:	Well Black Diamond 34 Fed Com 133H
Project:	Eddy County, NM (N83-NME)	TVD Reference:	3330+22 @ 3352.00usft
Site:	Black Diamond 34 Fed Com	MD Reference:	3330+22 @ 3352.00usft
Well:	Black Diamond 34 Fed Com 133H	North Reference:	Grid
Wellbore:	133H	Survey Calculation Method:	Minimum Curvature
Design:	DRL	Database:	EDM 5000.14 Single User Db

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)	
6,773.08	6.18	35.67	6,747.74	411.01	221.44	-220.65	2.42	-1.52	17.22	
6,787.54	5.97	38.38	6,762.12	412.23	222.36	-221.56	2.46	-1.45	18.74	
6,802.00	5.78	41.04	6,776.51	413.37	223.30	-222.51	2.30	-1.31	18.40	
6,816.38	5.53	42.11	6,790.82	414.43	224.24	-223.45	1.89	-1.74	7.44	
6,830.77	5.31	42.90	6,805.14	415.43	225.16	-224.36	1.61	-1.53	5.49	
6,845.15	5.11	43.52	6,819.46	416.38	226.05	-225.25	1.44	-1.39	4.31	
6,859.54	4.92	44.00	6,833.80	417.29	226.92	-226.12	1.35	-1.32	3.34	
6,873.92	4.74	44.40	6,848.13	418.16	227.77	-226.96	1.27	-1.25	2.78	
6,888.31	4.58	44.74	6,862.47	418.99	228.59	-227.78	1.13	-1.11	2.36	
6,902.69	4.42	45.04	6,876.81	419.79	229.38	-228.58	1.12	-1.11	2.09	
6,917.08	4.28	45.31	6,891.15	420.56	230.16	-229.35	0.98	-0.97	1.88	
6,931.46	4.15	45.58	6,905.50	421.30	230.91	-230.10	0.91	-0.90	1.88	
6,945.85	4.03	45.87	6,919.85	422.02	231.65	-230.84	0.85	-0.83	2.02	
6,960.23	3.93	46.21	6,934.19	422.71	232.37	-231.55	0.71	-0.70	2.36	
6,974.62	3.87	46.63	6,948.55	423.39	233.07	-232.26	0.46	-0.42	2.92	
6,989.00	3.84	47.21	6,962.90	424.05	233.78	-232.97	0.34	-0.21	4.03	
7,003.46	3.87	48.02	6,977.33	424.70	234.50	-233.68	0.43	0.21	5.60	
7,017.92	3.95	48.90	6,991.75	425.36	235.24	-234.42	0.69	0.55	6.09	
7,032.38	4.05	49.75	7,006.18	426.01	236.00	-235.18	0.80	0.69	5.88	
7,046.85	4.16	50.53	7,020.61	426.68	236.80	-235.98	0.85	0.76	5.39	
7,061.31	4.26	51.20	7,035.03	427.35	237.62	-236.80	0.77	0.69	4.63	
7,075.77	4.35	51.71	7,049.45	428.02	238.47	-237.65	0.68	0.62	3.53	
7,090.23	4.96	52.27	7,063.86	428.75	239.39	-238.57	4.23	4.22	3.87	
7,104.69	6.05	52.24	7,078.25	429.60	240.49	-239.67	7.54	7.54	-0.21	
7,119.15	7.29	50.69	7,092.62	430.64	241.80	-240.98	8.66	8.58	-10.72	
7,123.57	7.49	50.35	7,097.00	431.01	242.24	-241.41	4.73	4.62	-7.70	
1st Bone Spring SD										
7,133.62	7.96	49.64	7,106.96	431.87	243.28	-242.45	4.73	4.63	-7.06	
7,148.08	8.01	49.55	7,121.28	433.18	244.81	-243.97	0.36	0.35	-0.62	
7,162.54	8.05	49.34	7,135.60	434.49	246.34	-245.51	0.34	0.28	-1.45	
7,177.00	8.06	48.93	7,149.91	435.81	247.87	-247.04	0.40	0.07	-2.84	
7,191.54	8.00	48.14	7,164.31	437.16	249.40	-248.56	0.86	-0.41	-5.43	
7,206.08	7.90	47.11	7,178.71	438.51	250.88	-250.04	1.20	-0.69	-7.08	
7,220.62	7.78	45.88	7,193.12	439.88	252.32	-251.47	1.42	-0.83	-8.46	
7,235.15	7.65	44.51	7,207.51	441.25	253.70	-252.86	1.55	-0.89	-9.43	
7,249.69	7.51	43.02	7,221.93	442.64	255.03	-254.18	1.66	-0.96	-10.25	
7,264.23	7.37	41.45	7,236.34	444.03	256.30	-255.44	1.70	-0.96	-10.80	
7,278.77	7.24	39.83	7,250.77	445.44	257.50	-256.64	1.68	-0.89	-11.14	
7,293.31	6.82	30.20	7,265.20	446.89	258.52	-257.66	8.59	-2.89	-66.23	
7,307.85	6.68	27.11	7,279.64	448.38	259.34	-258.48	2.68	-0.96	-21.25	
7,322.38	6.56	25.15	7,294.07	449.89	260.08	-259.21	1.76	-0.83	-13.49	
7,325.33	6.54	24.75	7,297.00	450.19	260.22	-259.36	1.74	-0.78	-13.64	
2nd Bone Spring LM										



Survey Report

Company:	Colgate Energy	Local Co-ordinate Reference:	Well Black Diamond 34 Fed Com 133H
Project:	Eddy County, NM (N83-NME)	TVD Reference:	3330+22 @ 3352.00usft
Site:	Black Diamond 34 Fed Com	MD Reference:	3330+22 @ 3352.00usft
Well:	Black Diamond 34 Fed Com 133H	North Reference:	Grid
Wellbore:	133H	Survey Calculation Method:	Minimum Curvature
Design:	DRL	Database:	EDM 5000.14 Single User Db

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)	
7,336.92	6.45	23.14	7,308.52	451.39	260.75	-259.89	1.74	-0.75	-13.87	
7,351.46	6.34	21.14	7,322.97	452.89	261.36	-260.49	1.71	-0.76	-13.76	
7,366.00	6.22	19.25	7,337.42	454.38	261.91	-261.04	1.64	-0.83	-13.00	
7,380.46	6.04	18.23	7,351.80	455.85	262.41	-261.53	1.45	-1.24	-7.05	
7,394.92	5.86	17.40	7,366.18	457.27	262.87	-261.99	1.38	-1.24	-5.74	
7,409.38	5.68	16.70	7,380.57	458.66	263.29	-262.41	1.34	-1.24	-4.84	
7,423.85	5.50	16.07	7,394.97	460.01	263.69	-262.81	1.31	-1.24	-4.35	
7,438.31	5.32	15.50	7,409.36	461.33	264.06	-263.18	1.30	-1.24	-3.94	
7,452.77	5.14	14.94	7,423.76	462.60	264.41	-263.52	1.29	-1.24	-3.87	
7,467.23	4.95	14.38	7,438.17	463.83	264.73	-263.84	1.36	-1.31	-3.87	
7,481.69	4.76	13.81	7,452.57	465.01	265.03	-264.14	1.36	-1.31	-3.94	
7,496.15	4.57	13.21	7,466.99	466.16	265.30	-264.41	1.36	-1.31	-4.15	
7,510.62	4.38	12.56	7,481.41	467.26	265.56	-264.66	1.36	-1.31	-4.49	
7,525.08	4.19	11.83	7,495.83	468.31	265.78	-264.88	1.37	-1.31	-5.05	
7,539.54	3.99	10.97	7,510.25	469.33	265.99	-265.09	1.45	-1.38	-5.95	
7,554.00	3.79	9.93	7,524.68	470.29	266.17	-265.26	1.47	-1.38	-7.19	
7,568.54	3.58	8.62	7,539.19	471.21	266.32	-265.41	1.56	-1.44	-9.01	
7,583.08	3.37	7.04	7,553.70	472.09	266.44	-265.53	1.59	-1.44	-10.87	
7,597.62	3.16	5.21	7,568.22	472.91	266.53	-265.62	1.61	-1.44	-12.59	
7,612.15	2.96	3.10	7,582.73	473.68	266.58	-265.67	1.58	-1.38	-14.52	
7,626.69	2.76	0.70	7,597.25	474.41	266.61	-265.70	1.60	-1.38	-16.51	
7,641.23	2.58	358.02	7,611.78	475.08	266.60	-265.69	1.51	-1.24	-18.43	
7,655.77	3.38	8.26	7,626.30	475.84	266.65	-265.74	6.59	5.50	70.43	
7,670.31	4.42	11.48	7,640.80	476.81	266.82	-265.91	7.31	7.15	22.15	
7,684.85	4.24	9.85	7,655.30	477.89	267.03	-266.11	1.50	-1.24	-11.21	
7,699.38	4.07	7.99	7,669.79	478.93	267.19	-266.27	1.49	-1.17	-12.80	
7,713.92	3.91	5.85	7,684.30	479.93	267.31	-266.39	1.50	-1.10	-14.72	
7,728.46	3.77	3.36	7,698.81	480.90	267.39	-266.47	1.50	-0.96	-17.13	
7,743.00	3.66	0.45	7,713.31	481.84	267.42	-266.50	1.50	-0.76	-20.01	
7,757.46	3.57	357.28	7,727.75	482.75	267.41	-266.48	1.52	-0.62	-21.92	
7,771.92	3.51	353.71	7,742.18	483.64	267.34	-266.41	1.58	-0.41	-24.69	
7,786.38	3.47	349.96	7,756.61	484.51	267.21	-266.28	1.60	-0.28	-25.93	
7,800.85	3.45	346.19	7,771.06	485.37	267.03	-266.10	1.58	-0.14	-26.05	
7,815.31	3.45	342.54	7,785.49	486.21	266.80	-265.86	1.52	0.00	-25.24	
7,829.77	3.44	339.14	7,799.92	487.03	266.51	-265.58	1.41	-0.07	-23.51	
7,844.23	3.85	351.86	7,814.35	487.91	266.29	-265.35	6.25	2.84	87.97	
7,858.69	4.69	6.36	7,828.77	488.98	266.28	-265.35	9.42	5.81	100.28	
7,873.15	5.07	9.68	7,843.18	490.20	266.46	-265.52	3.27	2.63	22.96	
7,887.62	5.01	7.62	7,857.60	491.45	266.65	-265.70	1.32	-0.41	-14.24	
7,902.08	4.94	5.67	7,872.00	492.70	266.79	-265.85	1.27	-0.48	-13.49	
7,916.54	4.86	4.05	7,886.41	493.93	266.90	-265.95	1.11	-0.55	-11.20	
7,922.15	4.82	3.67	7,892.00	494.40	266.93	-265.98	0.90	-0.69	-6.76	
2nd Bone Spring SD										
7,931.00	4.76	3.06	7,900.82	495.14	266.97	-266.02	0.90	-0.69	-6.90	



Survey Report

Company:	Colgate Energy	Local Co-ordinate Reference:	Well Black Diamond 34 Fed Com 133H
Project:	Eddy County, NM (N83-NME)	TVD Reference:	3330+22 @ 3352.00usft
Site:	Black Diamond 34 Fed Com	MD Reference:	3330+22 @ 3352.00usft
Well:	Black Diamond 34 Fed Com 133H	North Reference:	Grid
Wellbore:	133H	Survey Calculation Method:	Minimum Curvature
Design:	DRL	Database:	EDM 5000.14 Single User Db

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)	
7,945.46	4.62	3.79	7,915.23	496.32	267.04	-266.09	1.05	-0.97	5.05	
7,959.92	4.47	5.44	7,929.64	497.46	267.14	-266.18	1.38	-1.04	11.41	
7,974.38	4.33	7.78	7,944.06	498.56	267.26	-266.31	1.57	-0.97	16.18	
7,988.85	4.20	10.62	7,958.49	499.63	267.44	-266.48	1.71	-0.90	19.63	
8,003.31	4.10	13.76	7,972.91	500.65	267.66	-266.69	1.72	-0.69	21.72	
8,017.77	4.01	16.97	7,987.34	501.63	267.93	-266.96	1.69	-0.62	22.20	
8,032.23	4.47	30.31	8,001.76	502.60	268.36	-267.39	7.50	3.18	92.25	
8,046.69	5.43	39.66	8,016.16	503.62	269.08	-268.11	8.65	6.64	64.66	
8,061.15	5.41	42.07	8,030.56	504.65	269.97	-269.00	1.58	-0.14	16.67	
8,075.62	5.41	44.57	8,044.96	505.64	270.91	-269.94	1.63	0.00	17.28	
8,090.08	5.44	47.00	8,059.36	506.60	271.89	-270.92	1.60	0.21	16.80	
8,104.54	5.48	49.20	8,073.75	507.51	272.91	-271.94	1.47	0.28	15.21	
8,119.00	5.51	50.99	8,088.15	508.40	273.97	-273.00	1.20	0.21	12.38	
8,133.46	5.47	52.03	8,102.54	509.26	275.06	-274.08	0.74	-0.28	7.19	
8,147.92	5.44	52.67	8,116.94	510.10	276.15	-275.17	0.47	-0.21	4.43	
8,162.38	5.41	53.05	8,131.33	510.93	277.24	-276.25	0.32	-0.21	2.63	
8,176.85	5.39	53.25	8,145.74	511.75	278.32	-277.34	0.19	-0.14	1.38	
8,191.31	5.37	53.35	8,160.13	512.56	279.41	-278.43	0.15	-0.14	0.69	
8,205.77	5.35	53.37	8,174.53	513.36	280.50	-279.51	0.14	-0.14	0.14	
8,220.23	5.32	53.35	8,188.93	514.16	281.57	-280.59	0.21	-0.21	-0.14	
8,234.69	5.29	53.34	8,203.33	514.96	282.65	-281.66	0.21	-0.21	-0.07	
8,249.15	5.25	53.35	8,217.72	515.76	283.71	-282.72	0.28	-0.28	0.07	
8,263.62	5.19	53.43	8,232.13	516.54	284.77	-283.78	0.42	-0.41	0.55	
8,273.53	5.13	53.57	8,242.00	517.07	285.49	-284.49	0.64	-0.62	1.44	
3rd Bone Spring LM										
8,278.08	5.10	53.64	8,246.54	517.31	285.81	-284.82	0.64	-0.62	1.47	
8,292.54	4.98	54.08	8,260.94	518.06	286.84	-285.84	0.87	-0.83	3.04	
8,307.00	4.80	54.92	8,275.35	518.78	287.84	-286.84	1.34	-1.24	5.81	
8,321.50	4.55	56.84	8,289.80	519.44	288.82	-287.82	2.03	-1.72	13.24	
8,336.00	4.25	59.52	8,304.26	520.03	289.76	-288.76	2.51	-2.07	18.48	
8,350.50	3.94	62.95	8,318.72	520.53	290.67	-289.67	2.72	-2.14	23.66	
8,365.00	3.63	67.14	8,333.19	520.93	291.54	-290.54	2.86	-2.14	28.90	
8,379.50	3.34	72.11	8,347.66	521.24	292.36	-291.36	2.89	-2.00	34.28	
8,394.00	3.09	77.75	8,362.14	521.45	293.15	-292.14	2.78	-1.72	38.90	
8,408.50	2.89	83.82	8,376.62	521.57	293.89	-292.89	2.58	-1.38	41.86	
8,423.00	2.75	89.74	8,391.10	521.61	294.60	-293.60	2.23	-0.97	40.83	
8,437.86	2.55	92.83	8,405.95	521.60	295.29	-294.29	1.65	-1.35	20.79	
8,452.71	2.41	95.42	8,420.78	521.55	295.93	-294.93	1.21	-0.94	17.44	
8,467.57	2.30	97.47	8,435.63	521.49	296.54	-295.53	0.93	-0.74	13.80	
8,482.43	2.21	98.89	8,450.48	521.40	297.12	-296.11	0.71	-0.61	9.56	
8,497.29	2.14	99.51	8,465.33	521.31	297.67	-296.67	0.50	-0.47	4.17	
8,500.00	1.86	97.60	8,468.03	521.30	297.77	-296.76	10.61	-10.33	-70.42	
KOP: 8500.00' MD, -296.76' VS, 8468.03' TVD										
8,512.14	0.69	70.05	8,480.17	521.30	298.03	-297.03	10.61	-9.64	-226.95	



Survey Report

Company:	Colgate Energy	Local Co-ordinate Reference:	Well Black Diamond 34 Fed Com 133H
Project:	Eddy County, NM (N83-NME)	TVD Reference:	3330+22 @ 3352.00usft
Site:	Black Diamond 34 Fed Com	MD Reference:	3330+22 @ 3352.00usft
Well:	Black Diamond 34 Fed Com 133H	North Reference:	Grid
Wellbore:	133H	Survey Calculation Method:	Minimum Curvature
Design:	DRL	Database:	EDM 5000.14 Single User Db

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
8,527.00	1.92	296.64	8,495.03	521.44	297.89	-296.89	16.46	8.28	-897.78
8,540.57	4.12	284.58	8,508.58	521.66	297.22	-296.21	16.79	16.21	-88.87
8,554.14	6.42	282.49	8,522.09	521.95	296.00	-295.00	17.01	16.95	-15.40
8,567.71	8.72	282.56	8,535.54	522.34	294.26	-293.26	16.95	16.95	0.52
8,581.29	10.98	282.73	8,548.92	522.85	291.99	-290.99	16.64	16.64	1.25
8,594.86	13.25	283.32	8,562.19	523.49	289.22	-288.21	16.75	16.73	4.35
8,608.43	15.49	284.10	8,575.33	524.29	285.95	-284.94	16.57	16.51	5.75
8,622.00	17.57	285.82	8,588.34	525.29	282.22	-281.21	15.74	15.33	12.68
8,635.43	19.80	287.06	8,601.06	526.51	278.09	-277.08	16.87	16.60	9.23
8,648.86	21.94	288.47	8,613.61	527.97	273.54	-272.52	16.37	15.93	10.50
8,662.29	24.12	289.32	8,625.97	529.68	268.57	-267.55	16.42	16.23	6.33
8,675.71	25.07	288.52	8,638.17	531.49	263.28	-262.26	7.50	7.08	-5.96
8,683.59	25.23	287.41	8,645.31	532.52	260.10	-259.08	6.32	2.05	-14.06
100FEL: 8683.59' MD, -259.08' VS, 8645.30' TVD									
8,689.14	25.35	286.64	8,650.32	533.21	257.83	-256.81	6.32	2.14	-13.91
8,702.57	25.77	284.73	8,662.44	534.78	252.25	-251.23	6.89	3.13	-14.22
8,716.00	26.14	283.01	8,674.51	536.19	246.55	-245.52	6.25	2.76	-12.81
8,729.43	27.85	283.41	8,686.48	537.58	240.61	-239.58	12.80	12.73	2.98
8,742.86	29.74	282.67	8,698.25	539.04	234.31	-233.28	14.32	14.07	-5.51
8,756.29	31.68	281.99	8,709.80	540.50	227.61	-226.57	14.67	14.45	-5.06
8,769.71	33.57	281.67	8,721.10	541.99	220.53	-219.49	14.14	14.08	-2.38
8,783.14	33.47	280.97	8,732.29	543.44	213.26	-212.21	2.97	-0.74	-5.21
8,796.57	33.15	280.32	8,743.52	544.80	206.01	-204.96	3.57	-2.38	-4.84
8,810.00	32.82	279.77	8,754.78	546.08	198.81	-197.76	3.32	-2.46	-4.10
8,823.43	32.96	279.54	8,766.06	547.30	191.62	-190.57	1.40	1.04	-1.71
8,836.86	34.75	279.64	8,777.21	548.55	184.24	-183.19	13.33	13.33	0.74
8,850.29	36.53	280.21	8,788.13	549.90	176.54	-175.48	13.48	13.25	4.24
8,863.71	38.30	279.18	8,798.79	551.27	168.50	-167.44	13.99	13.19	-7.68
8,877.14	38.32	279.08	8,809.32	552.59	160.28	-159.22	0.49	0.15	-0.74
8,890.57	38.03	279.18	8,819.88	553.91	152.08	-151.02	2.21	-2.16	0.74
8,904.00	38.48	279.48	8,830.43	555.26	143.88	-142.81	3.62	3.35	2.23
8,917.43	40.26	280.06	8,840.81	556.70	135.48	-134.41	13.53	13.25	4.32
8,925.61	41.42	280.45	8,847.00	557.66	130.22	-129.15	14.48	14.14	4.76
3rd Spring LM									
8,930.86	42.16	280.69	8,850.91	558.30	126.78	-125.71	14.48	14.16	4.58
8,944.29	43.93	280.05	8,860.73	559.95	117.76	-116.69	13.57	13.18	-4.77
8,957.71	45.76	280.92	8,870.24	561.67	108.46	-107.38	14.38	13.64	6.48
8,971.14	45.82	281.07	8,879.61	563.51	99.01	-97.93	0.92	0.45	1.12
8,984.57	45.76	281.16	8,888.97	565.36	89.56	-88.48	0.66	-0.45	0.67
8,998.00	47.12	281.08	8,898.23	567.24	80.01	-78.92	10.14	10.13	-0.60
9,009.49	48.81	281.28	8,905.92	568.89	71.65	-70.55	14.73	14.67	1.74
01-FTP(BD34-133H-v04)									
9,011.29	49.07	281.31	8,907.10	569.16	70.31	-69.22	14.73	14.67	1.69



Survey Report

Company:	Colgate Energy	Local Co-ordinate Reference:	Well Black Diamond 34 Fed Com 133H
Project:	Eddy County, NM (N83-NME)	TVD Reference:	3330+22 @ 3352.00usft
Site:	Black Diamond 34 Fed Com	MD Reference:	3330+22 @ 3352.00usft
Well:	Black Diamond 34 Fed Com 133H	North Reference:	Grid
Wellbore:	133H	Survey Calculation Method:	Minimum Curvature
Design:	DRL	Database:	EDM 5000.14 Single User Db

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)	
9,024.57	51.06	281.65	8,915.63	571.19	60.33	-59.24	15.11	14.98	2.56	
9,037.86	53.05	281.93	8,923.80	573.33	50.07	-48.97	15.07	14.97	2.11	
9,051.14	54.97	282.36	8,931.60	575.59	39.57	-38.46	14.69	14.46	3.24	
9,064.43	54.78	282.46	8,939.25	577.92	28.95	-27.84	1.56	-1.43	0.75	
9,077.71	54.58	282.58	8,946.93	580.27	18.38	-17.26	1.68	-1.51	0.90	
9,091.00	54.39	282.69	8,954.65	582.64	7.82	-6.70	1.58	-1.43	0.83	
9,104.43	55.38	282.68	8,962.37	585.05	-2.90	4.02	7.37	7.37	-0.07	
9,117.86	57.34	282.85	8,969.81	587.52	-13.80	14.93	14.63	14.59	1.27	
9,131.29	59.39	282.90	8,976.85	590.07	-24.95	26.08	15.27	15.26	0.37	
9,144.71	61.46	282.15	8,983.48	592.60	-36.34	37.48	16.17	15.42	-5.59	
9,158.14	61.55	282.17	8,989.88	595.09	-47.88	49.02	0.68	0.67	0.15	
9,171.57	61.48	282.20	8,996.29	597.58	-59.42	60.56	0.56	-0.52	0.22	
9,172.87	61.52	282.19	8,996.91	597.82	-60.54	61.68	3.04	2.98	-0.67	
00-OVS(BD34-133H-v04)										
9,185.00	61.88	282.11	9,002.66	600.07	-70.97	72.13	3.04	2.98	-0.67	
9,198.43	63.52	281.69	9,008.82	602.53	-82.65	83.81	12.52	12.21	-3.13	
9,211.86	65.61	281.11	9,014.59	604.92	-94.54	95.70	16.04	15.56	-4.32	
9,225.29	67.68	280.14	9,019.91	607.20	-106.66	107.82	16.78	15.41	-7.22	
9,238.71	69.64	279.03	9,024.80	609.28	-118.98	120.15	16.51	14.61	-8.27	
9,252.14	69.76	278.67	9,029.45	611.21	-131.43	132.60	2.67	0.89	-2.68	
9,265.57	69.76	278.36	9,034.10	613.08	-143.89	145.07	2.17	0.00	-2.31	
9,279.00	69.75	278.07	9,038.75	614.88	-156.36	157.54	2.03	-0.07	-2.16	
9,292.57	71.05	276.80	9,043.30	616.53	-169.04	170.22	13.02	9.58	-9.36	
9,306.14	72.57	275.15	9,047.54	617.88	-181.86	183.04	16.09	11.20	-12.16	
9,319.71	73.97	273.31	9,051.44	618.83	-194.82	196.00	16.58	10.32	-13.56	
9,333.29	75.34	271.50	9,055.04	619.38	-207.90	209.09	16.34	10.09	-13.33	
9,346.86	75.20	271.50	9,058.49	619.73	-221.02	222.21	1.03	-1.03	0.00	
9,360.43	75.08	271.52	9,061.97	620.07	-234.13	235.32	0.90	-0.88	0.15	
9,374.00	74.98	271.58	9,065.47	620.43	-247.24	248.43	0.85	-0.74	0.44	
9,387.29	74.98	271.67	9,068.92	620.79	-260.07	261.26	0.65	0.00	0.68	
9,400.57	76.92	270.75	9,072.14	621.06	-272.95	274.14	16.08	14.61	-6.93	
01-LP(BD34-133H-v04)										
9,413.86	79.17	270.76	9,074.89	621.23	-285.95	287.14	16.93	16.93	0.08	
9,427.14	81.39	270.48	9,077.14	621.37	-299.03	300.23	16.85	16.72	-2.11	
9,440.43	81.66	270.59	9,079.09	621.50	-312.18	313.37	2.19	2.03	0.83	
9,453.71	81.79	270.74	9,081.01	621.65	-325.32	326.51	1.49	0.98	1.13	
9,467.00	82.62	271.40	9,082.81	621.90	-338.48	339.68	7.95	6.25	4.97	
9,480.57	84.44	271.94	9,084.34	622.29	-351.96	353.15	13.98	13.41	3.98	
9,494.14	86.80	271.65	9,085.37	622.71	-365.48	366.68	17.52	17.39	-2.14	
9,507.71	89.12	271.04	9,085.86	623.03	-379.04	380.24	17.68	17.10	-4.50	
9,520.00	91.14	270.23	9,085.83	623.17	-391.33	392.52	17.71	16.42	-6.63	
EOC: 9520.00' MD, 392.52' VS, 9085.83' TVD										
9,521.29	91.35	270.14	9,085.80	623.17	-392.62	393.81	17.71	16.42	-6.63	
9,534.86	91.54	270.11	9,085.46	623.20	-406.18	407.38	1.42	1.40	-0.22	



Survey Report

Company:	Colgate Energy	Local Co-ordinate Reference:	Well Black Diamond 34 Fed Com 133H
Project:	Eddy County, NM (N83-NME)	TVD Reference:	3330+22 @ 3352.00usft
Site:	Black Diamond 34 Fed Com	MD Reference:	3330+22 @ 3352.00usft
Well:	Black Diamond 34 Fed Com 133H	North Reference:	Grid
Wellbore:	133H	Survey Calculation Method:	Minimum Curvature
Design:	DRL	Database:	EDM 5000.14 Single User Db

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)	
9,548.43	91.59	270.16	9,085.09	623.23	-419.75	420.94	0.52	0.37	0.37	
9,562.00	91.64	270.21	9,084.71	623.28	-433.31	434.51	0.52	0.37	0.37	
9,575.43	91.66	270.24	9,084.32	623.33	-446.74	447.93	0.27	0.15	0.22	
9,588.86	91.68	270.25	9,083.93	623.39	-460.16	461.36	0.17	0.15	0.07	
9,602.29	91.69	270.26	9,083.53	623.45	-473.59	474.78	0.11	0.07	0.07	
9,615.71	91.70	270.25	9,083.14	623.51	-487.00	488.20	0.11	0.07	-0.07	
9,629.14	91.71	270.23	9,082.74	623.56	-500.42	501.62	0.17	0.07	-0.15	
9,642.57	91.73	270.19	9,082.33	623.61	-513.85	515.04	0.33	0.15	-0.30	
9,656.00	91.75	270.12	9,081.92	623.65	-527.27	528.47	0.54	0.15	-0.52	
9,669.57	91.78	270.00	9,081.51	623.66	-540.84	542.03	0.91	0.22	-0.88	
9,683.14	91.81	269.87	9,081.08	623.65	-554.40	555.59	0.98	0.22	-0.96	
9,696.71	91.85	269.71	9,080.65	623.60	-567.96	569.16	1.21	0.29	-1.18	
9,710.29	91.88	269.56	9,080.21	623.51	-581.53	582.73	1.13	0.22	-1.10	
9,723.86	91.91	269.42	9,079.76	623.39	-595.10	596.29	1.05	0.22	-1.03	
9,737.43	91.91	269.30	9,079.31	623.24	-608.66	609.85	0.88	0.00	-0.88	
9,751.00	91.90	269.21	9,078.85	623.06	-622.22	623.41	0.67	-0.07	-0.66	
9,764.43	91.84	269.19	9,078.42	622.87	-635.64	636.84	0.47	-0.45	-0.15	
9,777.86	91.77	269.20	9,077.99	622.69	-649.06	650.26	0.53	-0.52	0.07	
9,791.29	91.68	269.24	9,077.59	622.50	-662.49	663.68	0.73	-0.67	0.30	
9,804.71	91.60	269.29	9,077.20	622.33	-675.90	677.09	0.70	-0.60	0.37	
9,818.14	91.52	269.35	9,076.84	622.17	-689.32	690.52	0.74	-0.60	0.45	
9,831.57	91.45	269.41	9,076.49	622.03	-702.75	703.94	0.69	-0.52	0.45	
9,845.00	91.42	269.47	9,076.15	621.89	-716.17	717.37	0.50	-0.22	0.45	
9,858.43	91.43	269.53	9,075.82	621.78	-729.60	730.79	0.45	0.07	0.45	
9,871.86	91.48	269.58	9,075.48	621.67	-743.02	744.22	0.53	0.37	0.37	
9,885.29	91.54	269.62	9,075.13	621.58	-756.45	757.64	0.54	0.45	0.30	
9,898.71	91.60	269.66	9,074.76	621.50	-769.86	771.05	0.54	0.45	0.30	
9,912.14	91.67	269.69	9,074.38	621.42	-783.29	784.48	0.57	0.52	0.22	
9,925.57	91.72	269.72	9,073.98	621.35	-796.71	797.90	0.43	0.37	0.22	
9,939.00	91.76	269.73	9,073.57	621.29	-810.13	811.33	0.31	0.30	0.07	
9,952.57	91.76	269.71	9,073.15	621.22	-823.70	824.89	0.15	0.00	-0.15	
9,966.14	91.74	269.68	9,072.74	621.15	-837.26	838.45	0.27	-0.15	-0.22	
9,979.71	91.71	269.64	9,072.33	621.07	-850.83	852.02	0.37	-0.22	-0.29	
9,993.29	91.67	269.60	9,071.93	620.98	-864.40	865.59	0.42	-0.29	-0.29	
10,006.86	91.63	269.55	9,071.54	620.88	-877.96	879.15	0.47	-0.29	-0.37	
10,020.43	91.60	269.50	9,071.16	620.76	-891.53	892.72	0.43	-0.22	-0.37	
10,034.00	91.59	269.45	9,070.78	620.64	-905.09	906.28	0.38	-0.07	-0.37	
10,047.57	91.61	269.40	9,070.40	620.50	-918.66	919.84	0.40	0.15	-0.37	
10,061.14	91.65	269.36	9,070.01	620.36	-932.22	933.41	0.42	0.29	-0.29	
10,074.71	91.69	269.31	9,069.62	620.20	-945.78	946.97	0.47	0.29	-0.37	
10,088.29	91.74	269.27	9,069.21	620.03	-959.36	960.54	0.47	0.37	-0.29	
10,101.86	91.78	269.22	9,068.80	619.85	-972.92	974.11	0.47	0.29	-0.37	
10,115.43	91.82	269.17	9,068.37	619.66	-986.48	987.67	0.47	0.29	-0.37	
10,129.00	91.84	269.12	9,067.94	619.46	-1,000.04	1,001.23	0.40	0.15	-0.37	



Survey Report

Company:	Colgate Energy	Local Co-ordinate Reference:	Well Black Diamond 34 Fed Com 133H
Project:	Eddy County, NM (N83-NME)	TVD Reference:	3330+22 @ 3352.00usft
Site:	Black Diamond 34 Fed Com	MD Reference:	3330+22 @ 3352.00usft
Well:	Black Diamond 34 Fed Com 133H	North Reference:	Grid
Wellbore:	133H	Survey Calculation Method:	Minimum Curvature
Design:	DRL	Database:	EDM 5000.14 Single User Db

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)
10,142.43	91.83	269.06	9,067.51	619.25	-1,013.46	1,014.65	0.45	-0.07	-0.45
10,155.86	91.80	268.99	9,067.08	619.02	-1,026.88	1,028.07	0.57	-0.22	-0.52
10,169.29	91.77	268.93	9,066.66	618.77	-1,040.31	1,041.49	0.50	-0.22	-0.45
10,182.71	91.73	268.85	9,066.25	618.51	-1,053.72	1,054.90	0.67	-0.30	-0.60
10,196.14	91.70	268.78	9,065.85	618.24	-1,067.14	1,068.32	0.57	-0.22	-0.52
10,209.57	91.67	268.70	9,065.46	617.94	-1,080.56	1,081.74	0.64	-0.22	-0.60
10,223.00	91.66	268.62	9,065.07	617.63	-1,093.98	1,095.16	0.60	-0.07	-0.60
10,236.57	91.68	268.53	9,064.67	617.29	-1,107.54	1,108.72	0.68	0.15	-0.66
10,250.14	91.71	268.45	9,064.27	616.93	-1,121.10	1,122.28	0.63	0.22	-0.59
10,263.71	91.75	268.36	9,063.86	616.55	-1,134.66	1,135.84	0.73	0.29	-0.66
10,277.29	91.80	268.28	9,063.44	616.16	-1,148.22	1,149.41	0.69	0.37	-0.59
10,290.86	91.85	268.22	9,063.01	615.74	-1,161.78	1,162.96	0.58	0.37	-0.44
10,304.43	91.89	268.17	9,062.56	615.32	-1,175.34	1,176.52	0.47	0.29	-0.37
10,318.00	91.91	268.16	9,062.11	614.88	-1,188.89	1,190.07	0.16	0.15	-0.07
10,331.43	91.92	268.21	9,061.66	614.46	-1,202.31	1,203.49	0.38	0.07	0.37
10,344.86	91.92	268.28	9,061.21	614.04	-1,215.73	1,216.90	0.52	0.00	0.52
10,358.29	91.90	268.36	9,060.77	613.65	-1,229.14	1,230.32	0.61	-0.15	0.60
10,371.71	91.88	268.45	9,060.32	613.28	-1,242.55	1,243.72	0.69	-0.15	0.67
10,385.14	91.86	268.52	9,059.89	612.92	-1,255.97	1,257.14	0.54	-0.15	0.52
10,398.57	91.84	268.56	9,059.45	612.58	-1,269.39	1,270.56	0.33	-0.15	0.30
10,412.00	92.24	269.42	9,058.97	612.34	-1,282.81	1,283.98	7.06	2.98	6.40
10,425.57	92.53	270.54	9,058.41	612.34	-1,296.36	1,297.54	8.52	2.14	8.25
10,439.14	92.56	270.70	9,057.81	612.49	-1,309.92	1,311.09	1.20	0.22	1.18
10,452.71	92.54	270.52	9,057.20	612.63	-1,323.47	1,324.65	1.33	-0.15	-1.33
10,466.29	92.52	270.33	9,056.60	612.73	-1,337.04	1,338.22	1.41	-0.15	-1.40
10,479.86	92.51	270.13	9,056.01	612.79	-1,350.60	1,351.77	1.47	-0.07	-1.47
10,493.43	92.51	269.94	9,055.41	612.79	-1,364.16	1,365.33	1.40	0.00	-1.40
10,507.00	92.53	269.78	9,054.82	612.76	-1,377.71	1,378.89	1.19	0.15	-1.18
10,520.43	92.58	269.68	9,054.22	612.70	-1,391.13	1,392.30	0.83	0.37	-0.74
10,533.86	92.65	269.62	9,053.61	612.62	-1,404.54	1,405.72	0.69	0.52	-0.45
10,547.29	92.73	269.58	9,052.98	612.52	-1,417.96	1,419.13	0.67	0.60	-0.30
10,560.71	92.81	269.55	9,052.33	612.42	-1,431.36	1,432.54	0.64	0.60	-0.22
10,574.14	92.90	269.54	9,051.66	612.31	-1,444.78	1,445.95	0.67	0.67	-0.07
10,587.57	92.99	269.52	9,050.97	612.20	-1,458.19	1,459.36	0.69	0.67	-0.15
10,601.00	93.08	269.50	9,050.26	612.09	-1,471.60	1,472.77	0.69	0.67	-0.15
10,614.43	93.17	269.46	9,049.53	611.97	-1,485.01	1,486.18	0.73	0.67	-0.30
10,627.86	93.24	269.43	9,048.77	611.84	-1,498.42	1,499.59	0.57	0.52	-0.22
10,641.29	93.30	269.39	9,048.01	611.70	-1,511.82	1,513.00	0.54	0.45	-0.30
10,654.71	93.33	269.36	9,047.23	611.55	-1,525.22	1,526.39	0.32	0.22	-0.22
10,668.14	93.14	269.68	9,046.47	611.44	-1,538.63	1,539.80	2.77	-1.41	2.38
10,681.57	92.73	270.42	9,045.79	611.45	-1,552.04	1,553.21	6.29	-3.05	5.51
10,695.00	92.60	270.44	9,045.16	611.55	-1,565.46	1,566.63	0.98	-0.97	0.15
10,708.43	92.35	270.49	9,044.58	611.66	-1,578.87	1,580.04	1.90	-1.86	0.37



Survey Report

Company:	Colgate Energy	Local Co-ordinate Reference:	Well Black Diamond 34 Fed Com 133H
Project:	Eddy County, NM (N83-NME)	TVD Reference:	3330+22 @ 3352.00usft
Site:	Black Diamond 34 Fed Com	MD Reference:	3330+22 @ 3352.00usft
Well:	Black Diamond 34 Fed Com 133H	North Reference:	Grid
Wellbore:	133H	Survey Calculation Method:	Minimum Curvature
Design:	DRL	Database:	EDM 5000.14 Single User Db

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)	
10,721.86	91.45	270.87	9,044.14	611.82	-1,592.29	1,593.47	7.27	-6.70	2.83	
10,735.29	90.93	271.04	9,043.86	612.05	-1,605.72	1,606.89	4.07	-3.87	1.27	
10,748.71	90.49	271.15	9,043.69	612.30	-1,619.14	1,620.31	3.38	-3.28	0.82	
10,762.14	90.07	271.24	9,043.63	612.58	-1,632.56	1,633.74	3.20	-3.13	0.67	
10,775.57	89.69	271.32	9,043.65	612.88	-1,645.99	1,647.16	2.89	-2.83	0.60	
10,789.00	89.38	271.37	9,043.76	613.20	-1,659.42	1,660.59	2.34	-2.31	0.37	
10,802.43	89.22	271.38	9,043.93	613.52	-1,672.84	1,674.02	1.19	-1.19	0.07	
10,815.86	89.15	271.35	9,044.12	613.84	-1,686.27	1,687.44	0.57	-0.52	-0.22	
10,829.29	89.14	271.30	9,044.32	614.15	-1,699.69	1,700.87	0.38	-0.07	-0.37	
10,842.71	89.17	271.25	9,044.52	614.45	-1,713.11	1,714.28	0.43	0.22	-0.37	
10,856.14	89.23	271.18	9,044.70	614.73	-1,726.53	1,727.71	0.69	0.45	-0.52	
10,869.57	89.31	271.11	9,044.88	615.00	-1,739.96	1,741.13	0.79	0.60	-0.52	
10,883.00	89.39	271.04	9,045.03	615.25	-1,753.38	1,754.56	0.79	0.60	-0.52	
10,896.43	89.48	270.96	9,045.16	615.49	-1,766.81	1,767.99	0.90	0.67	-0.60	
10,909.86	89.58	270.90	9,045.27	615.71	-1,780.24	1,781.42	0.87	0.74	-0.45	
10,923.29	89.68	270.84	9,045.36	615.91	-1,793.67	1,794.85	0.87	0.74	-0.45	
10,936.71	89.80	270.81	9,045.42	616.10	-1,807.09	1,808.27	0.92	0.89	-0.22	
10,950.14	89.93	270.81	9,045.45	616.29	-1,820.51	1,821.69	0.97	0.97	0.00	
10,963.57	90.08	270.85	9,045.45	616.49	-1,833.94	1,835.12	1.16	1.12	0.30	
10,977.00	90.27	270.97	9,045.41	616.70	-1,847.37	1,848.55	1.67	1.41	0.89	
10,990.43	90.50	271.21	9,045.32	616.96	-1,860.80	1,861.98	2.48	1.71	1.79	
11,003.86	90.76	271.52	9,045.17	617.28	-1,874.22	1,875.41	3.01	1.94	2.31	
11,017.29	91.04	271.85	9,044.96	617.67	-1,887.65	1,888.83	3.22	2.08	2.46	
11,030.71	91.34	272.18	9,044.68	618.14	-1,901.06	1,902.24	3.32	2.24	2.46	
11,044.14	91.64	272.49	9,044.33	618.69	-1,914.47	1,915.65	3.21	2.23	2.31	
11,057.57	91.00	273.21	9,044.02	619.36	-1,927.88	1,929.06	7.17	-4.77	5.36	
11,071.00	90.14	273.71	9,043.89	620.17	-1,941.28	1,942.47	7.41	-6.40	3.72	
11,084.43	89.36	273.61	9,043.95	621.02	-1,954.69	1,955.87	5.86	-5.81	-0.74	
11,097.86	89.87	273.80	9,044.04	621.89	-1,968.09	1,969.28	4.05	3.80	1.41	
11,111.29	90.43	273.97	9,044.00	622.80	-1,981.49	1,982.68	4.36	4.17	1.27	
11,124.71	90.99	274.14	9,043.83	623.75	-1,994.87	1,996.07	4.36	4.17	1.27	
11,138.14	91.50	274.28	9,043.54	624.74	-2,008.26	2,009.46	3.94	3.80	1.04	
11,151.57	91.31	274.28	9,043.21	625.74	-2,021.65	2,022.85	1.41	-1.41	0.00	
11,165.00	90.49	274.00	9,043.00	626.71	-2,035.04	2,036.24	6.45	-6.11	-2.08	
11,178.57	89.53	273.62	9,043.00	627.61	-2,048.58	2,049.79	7.61	-7.07	-2.80	
11,192.14	88.52	273.40	9,043.23	628.44	-2,062.13	2,063.33	7.62	-7.44	-1.62	
11,205.71	88.13	273.31	9,043.63	629.23	-2,075.67	2,076.87	2.95	-2.87	-0.66	
11,219.29	88.12	273.23	9,044.07	630.01	-2,089.22	2,090.42	0.59	-0.07	-0.59	
11,232.86	88.09	273.14	9,044.52	630.76	-2,102.76	2,103.97	0.70	-0.22	-0.66	
11,246.43	88.04	273.04	9,044.98	631.49	-2,116.30	2,117.51	0.82	-0.37	-0.74	
11,260.00	88.01	272.95	9,045.45	632.20	-2,129.85	2,131.06	0.70	-0.22	-0.66	
11,273.43	88.01	272.87	9,045.91	632.88	-2,143.25	2,144.46	0.60	0.00	-0.60	
11,286.86	88.03	272.80	9,046.38	633.55	-2,156.66	2,157.87	0.54	0.15	-0.52	



Survey Report

Company:	Colgate Energy	Local Co-ordinate Reference:	Well Black Diamond 34 Fed Com 133H
Project:	Eddy County, NM (N83-NME)	TVD Reference:	3330+22 @ 3352.00usft
Site:	Black Diamond 34 Fed Com	MD Reference:	3330+22 @ 3352.00usft
Well:	Black Diamond 34 Fed Com 133H	North Reference:	Grid
Wellbore:	133H	Survey Calculation Method:	Minimum Curvature
Design:	DRL	Database:	EDM 5000.14 Single User Db

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
11,300.29	88.06	272.74	9,046.84	634.20	-2,170.06	2,171.28	0.50	0.22	-0.45	
11,313.71	88.11	272.68	9,047.28	634.83	-2,183.46	2,184.67	0.58	0.37	-0.45	
11,327.14	88.15	272.63	9,047.72	635.45	-2,196.87	2,198.08	0.48	0.30	-0.37	
11,340.57	88.21	272.58	9,048.15	636.06	-2,210.28	2,211.49	0.58	0.45	-0.37	
11,354.00	88.26	272.53	9,048.56	636.66	-2,223.69	2,224.91	0.53	0.37	-0.37	
11,367.43	88.32	272.49	9,048.96	637.25	-2,237.10	2,238.32	0.54	0.45	-0.30	
11,380.86	88.39	272.44	9,049.35	637.83	-2,250.51	2,251.73	0.64	0.52	-0.37	
11,394.29	88.45	272.40	9,049.72	638.39	-2,263.92	2,265.15	0.54	0.45	-0.30	
11,407.71	88.52	272.36	9,050.07	638.95	-2,277.33	2,278.55	0.60	0.52	-0.30	
11,421.14	88.59	272.31	9,050.41	639.50	-2,290.74	2,291.97	0.64	0.52	-0.37	
11,434.57	88.66	272.26	9,050.73	640.03	-2,304.16	2,305.38	0.64	0.52	-0.37	
11,448.00	88.73	272.21	9,051.04	640.56	-2,317.57	2,318.80	0.64	0.52	-0.37	
11,461.43	88.81	272.14	9,051.33	641.07	-2,330.99	2,332.22	0.79	0.60	-0.52	
11,474.86	88.90	272.06	9,051.60	641.56	-2,344.41	2,345.64	0.90	0.67	-0.60	
11,488.29	88.98	271.98	9,051.85	642.03	-2,357.83	2,359.06	0.84	0.60	-0.60	
11,501.71	89.06	271.90	9,052.08	642.48	-2,371.24	2,372.47	0.84	0.60	-0.60	
11,515.14	89.14	271.82	9,052.29	642.92	-2,384.66	2,385.89	0.84	0.60	-0.60	
11,528.57	89.22	271.74	9,052.48	643.34	-2,398.08	2,399.31	0.84	0.60	-0.60	
11,542.00	89.29	271.66	9,052.65	643.74	-2,411.51	2,412.74	0.79	0.52	-0.60	
11,555.43	89.34	271.58	9,052.81	644.12	-2,424.93	2,426.16	0.70	0.37	-0.60	
11,568.86	89.39	271.51	9,052.96	644.48	-2,438.35	2,439.59	0.64	0.37	-0.52	
11,582.29	89.43	271.44	9,053.10	644.82	-2,451.78	2,453.01	0.60	0.30	-0.52	
11,595.71	89.48	271.38	9,053.23	645.15	-2,465.19	2,466.43	0.58	0.37	-0.45	
11,609.14	89.53	271.32	9,053.34	645.47	-2,478.62	2,479.85	0.58	0.37	-0.45	
11,622.57	89.59	271.28	9,053.45	645.77	-2,492.05	2,493.28	0.54	0.45	-0.30	
11,636.00	89.66	271.24	9,053.54	646.07	-2,505.47	2,506.71	0.60	0.52	-0.30	
11,649.43	89.75	271.22	9,053.60	646.36	-2,518.90	2,520.14	0.69	0.67	-0.15	
11,662.86	89.85	271.21	9,053.65	646.64	-2,532.33	2,533.56	0.75	0.74	-0.07	
11,676.29	89.96	271.21	9,053.67	646.93	-2,545.75	2,546.99	0.82	0.82	0.00	
11,689.71	90.08	271.21	9,053.67	647.21	-2,559.17	2,560.41	0.89	0.89	0.00	
11,703.14	90.20	271.21	9,053.64	647.49	-2,572.60	2,573.84	0.89	0.89	0.00	
11,716.57	90.99	271.37	9,053.50	647.80	-2,586.02	2,587.26	6.00	5.88	1.19	
11,730.00	91.26	271.39	9,053.23	648.12	-2,599.45	2,600.69	2.02	2.01	0.15	
11,743.57	91.39	271.37	9,052.92	648.45	-2,613.01	2,614.25	0.97	0.96	-0.15	
11,757.14	91.53	271.34	9,052.57	648.77	-2,626.57	2,627.81	1.06	1.03	-0.22	
11,770.71	91.66	271.30	9,052.20	649.08	-2,640.13	2,641.37	1.00	0.96	-0.29	
11,784.29	91.80	271.27	9,051.79	649.38	-2,653.70	2,654.94	1.05	1.03	-0.22	
11,797.86	91.93	271.23	9,051.34	649.68	-2,667.26	2,668.50	1.00	0.96	-0.29	
11,811.43	92.07	271.19	9,050.87	649.97	-2,680.82	2,682.06	1.07	1.03	-0.29	
11,825.00	92.20	271.15	9,050.37	650.24	-2,694.38	2,695.62	1.00	0.96	-0.29	
11,838.43	92.34	271.11	9,049.83	650.51	-2,707.79	2,709.04	1.08	1.04	-0.30	
11,851.86	92.46	271.07	9,049.27	650.76	-2,721.21	2,722.45	0.94	0.89	-0.30	
11,865.29	92.59	271.03	9,048.68	651.01	-2,734.63	2,735.87	1.01	0.97	-0.30	
11,878.71	92.71	270.99	9,048.06	651.25	-2,748.03	2,749.27	0.94	0.89	-0.30	



Survey Report

Company:	Colgate Energy	Local Co-ordinate Reference:	Well Black Diamond 34 Fed Com 133H
Project:	Eddy County, NM (N83-NME)	TVD Reference:	3330+22 @ 3352.00usft
Site:	Black Diamond 34 Fed Com	MD Reference:	3330+22 @ 3352.00usft
Well:	Black Diamond 34 Fed Com 133H	North Reference:	Grid
Wellbore:	133H	Survey Calculation Method:	Minimum Curvature
Design:	DRL	Database:	EDM 5000.14 Single User Db

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
11,892.14	92.82	270.94	9,047.41	651.47	-2,761.44	2,762.69	0.90	0.82	-0.37
11,905.57	92.92	270.89	9,046.74	651.69	-2,774.85	2,776.10	0.83	0.74	-0.37
11,919.00	93.00	270.84	9,046.04	651.89	-2,788.26	2,789.51	0.70	0.60	-0.37
11,930.90	93.06	270.78	9,045.42	652.06	-2,800.14	2,801.39	0.74	0.52	-0.52
02-2800(BD34-133H-v04)									
11,932.43	93.07	270.77	9,045.33	652.08	-2,801.67	2,802.92	0.74	0.52	-0.52
11,945.86	93.11	270.70	9,044.61	652.25	-2,815.08	2,816.33	0.60	0.30	-0.52
11,959.29	93.16	270.62	9,043.88	652.40	-2,828.49	2,829.74	0.70	0.37	-0.60
11,972.71	93.20	270.55	9,043.13	652.54	-2,841.89	2,843.14	0.60	0.30	-0.52
11,986.14	93.25	270.47	9,042.38	652.66	-2,855.30	2,856.55	0.70	0.37	-0.60
11,999.57	92.53	270.18	9,041.70	652.73	-2,868.71	2,869.96	5.78	-5.36	-2.16
12,013.00	91.49	270.29	9,041.23	652.79	-2,882.13	2,883.38	7.79	-7.74	0.82
12,026.57	90.43	270.38	9,041.00	652.87	-2,895.70	2,896.95	7.84	-7.81	0.66
12,040.14	90.37	270.29	9,040.91	652.95	-2,909.27	2,910.52	0.80	-0.44	-0.66
12,053.71	90.48	270.17	9,040.80	653.00	-2,922.84	2,924.09	1.20	0.81	-0.88
12,067.29	90.60	270.06	9,040.68	653.03	-2,936.42	2,937.67	1.20	0.88	-0.81
12,080.86	90.72	269.95	9,040.52	653.03	-2,949.99	2,951.24	1.20	0.88	-0.81
12,094.43	90.83	269.85	9,040.34	653.01	-2,963.56	2,964.80	1.10	0.81	-0.74
12,108.00	90.94	269.78	9,040.13	652.96	-2,977.12	2,978.37	0.96	0.81	-0.52
12,121.29	91.02	269.76	9,039.90	652.91	-2,990.41	2,991.66	0.62	0.60	-0.15
12,134.57	91.10	269.76	9,039.65	652.86	-3,003.69	3,004.94	0.60	0.60	0.00
12,147.86	91.17	269.78	9,039.39	652.80	-3,016.98	3,018.23	0.55	0.53	0.15
12,161.14	91.24	269.80	9,039.11	652.75	-3,030.25	3,031.50	0.55	0.53	0.15
12,174.43	91.33	269.83	9,038.81	652.71	-3,043.54	3,044.79	0.71	0.68	0.23
12,187.71	91.42	269.85	9,038.49	652.67	-3,056.82	3,058.06	0.69	0.68	0.15
12,201.00	91.54	269.87	9,038.15	652.64	-3,070.10	3,071.35	0.92	0.90	0.15
12,214.57	91.71	269.87	9,037.77	652.61	-3,083.67	3,084.91	1.25	1.25	0.00
12,228.14	91.90	269.86	9,037.34	652.58	-3,097.23	3,098.48	1.40	1.40	-0.07
12,241.71	92.10	269.84	9,036.87	652.54	-3,110.79	3,112.04	1.48	1.47	-0.15
12,255.29	92.31	269.81	9,036.34	652.50	-3,124.36	3,125.61	1.56	1.55	-0.22
12,268.86	92.52	269.78	9,035.77	652.45	-3,137.92	3,139.17	1.56	1.55	-0.22
12,282.43	92.72	269.75	9,035.15	652.40	-3,151.48	3,152.72	1.49	1.47	-0.22
12,296.00	92.90	269.72	9,034.49	652.33	-3,165.03	3,166.28	1.34	1.33	-0.22
12,309.29	93.05	269.69	9,033.80	652.27	-3,178.30	3,179.55	1.15	1.13	-0.23
12,322.57	93.18	269.66	9,033.07	652.19	-3,191.56	3,192.81	1.00	0.98	-0.23
12,335.86	93.30	269.62	9,032.32	652.11	-3,204.83	3,206.08	0.95	0.90	-0.30
12,349.14	93.40	269.59	9,031.55	652.02	-3,218.09	3,219.33	0.79	0.75	-0.23
12,362.43	93.48	269.56	9,030.75	651.92	-3,231.35	3,232.60	0.64	0.60	-0.23
12,375.71	93.55	269.52	9,029.94	651.81	-3,244.61	3,245.85	0.61	0.53	-0.30
12,389.00	93.59	269.48	9,029.11	651.70	-3,257.87	3,259.12	0.43	0.30	-0.30
12,402.43	93.61	269.43	9,028.26	651.57	-3,271.27	3,272.52	0.40	0.15	-0.37
12,415.86	93.60	269.38	9,027.42	651.43	-3,284.68	3,285.92	0.38	-0.07	-0.37
12,429.29	93.58	269.33	9,026.58	651.28	-3,298.08	3,299.32	0.40	-0.15	-0.37



Survey Report

Company:	Colgate Energy	Local Co-ordinate Reference:	Well Black Diamond 34 Fed Com 133H
Project:	Eddy County, NM (N83-NME)	TVD Reference:	3330+22 @ 3352.00usft
Site:	Black Diamond 34 Fed Com	MD Reference:	3330+22 @ 3352.00usft
Well:	Black Diamond 34 Fed Com 133H	North Reference:	Grid
Wellbore:	133H	Survey Calculation Method:	Minimum Curvature
Design:	DRL	Database:	EDM 5000.14 Single User Db

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)	
12,442.71	93.56	269.28	9,025.74	651.12	-3,311.47	3,312.72	0.40	-0.15	-0.37	
12,456.14	93.54	269.22	9,024.91	650.94	-3,324.87	3,326.12	0.47	-0.15	-0.45	
12,469.57	93.53	269.17	9,024.08	650.75	-3,338.28	3,339.52	0.38	-0.07	-0.37	
12,483.00	92.80	269.25	9,023.34	650.57	-3,351.69	3,352.93	5.47	-5.44	0.60	
12,496.43	91.78	269.13	9,022.81	650.38	-3,365.10	3,366.35	7.65	-7.59	-0.89	
12,509.86	90.86	268.78	9,022.50	650.13	-3,378.53	3,379.77	7.33	-6.85	-2.61	
12,523.29	90.71	268.66	9,022.31	649.83	-3,391.95	3,393.19	1.43	-1.12	-0.89	
12,536.71	90.77	268.58	9,022.14	649.51	-3,405.37	3,406.61	0.75	0.45	-0.60	
12,550.14	90.84	268.50	9,021.95	649.17	-3,418.79	3,420.03	0.79	0.52	-0.60	
12,563.57	90.90	268.41	9,021.75	648.80	-3,432.22	3,433.46	0.81	0.45	-0.67	
12,577.00	90.94	268.33	9,021.53	648.42	-3,445.64	3,446.88	0.67	0.30	-0.60	
12,590.43	90.96	268.25	9,021.31	648.02	-3,459.06	3,460.30	0.61	0.15	-0.60	
12,603.86	90.97	268.17	9,021.08	647.60	-3,472.48	3,473.72	0.60	0.07	-0.60	
12,617.29	90.98	268.10	9,020.85	647.17	-3,485.90	3,487.14	0.53	0.07	-0.52	
12,630.71	90.98	268.04	9,020.62	646.71	-3,499.31	3,500.55	0.45	0.00	-0.45	
12,644.14	90.99	267.98	9,020.39	646.25	-3,512.73	3,513.97	0.45	0.07	-0.45	
12,657.57	91.01	267.94	9,020.16	645.77	-3,526.15	3,527.39	0.33	0.15	-0.30	
12,671.00	91.05	267.90	9,019.92	645.28	-3,539.57	3,540.80	0.42	0.30	-0.30	
12,684.29	91.12	267.89	9,019.67	644.79	-3,552.85	3,554.08	0.53	0.53	-0.08	
12,697.57	91.21	267.89	9,019.40	644.31	-3,566.12	3,567.35	0.68	0.68	0.00	
12,710.86	91.31	267.90	9,019.10	643.82	-3,579.40	3,580.63	0.76	0.75	0.08	
12,724.14	91.42	267.91	9,018.79	643.33	-3,592.66	3,593.89	0.83	0.83	0.08	
12,737.43	91.54	267.93	9,018.44	642.85	-3,605.94	3,607.17	0.92	0.90	0.15	
12,750.71	91.66	267.94	9,018.07	642.37	-3,619.21	3,620.43	0.91	0.90	0.08	
12,764.00	91.79	267.95	9,017.67	641.89	-3,632.48	3,633.71	0.98	0.98	0.08	
12,777.29	91.92	267.95	9,017.24	641.42	-3,645.76	3,646.98	0.98	0.98	0.00	
12,790.57	92.05	267.94	9,016.78	640.94	-3,659.02	3,660.24	0.98	0.98	-0.08	
12,803.86	92.19	267.93	9,016.29	640.47	-3,672.29	3,673.52	1.06	1.05	-0.08	
12,817.14	92.33	267.91	9,015.77	639.98	-3,685.55	3,686.78	1.06	1.05	-0.15	
12,830.43	92.46	267.90	9,015.21	639.50	-3,698.82	3,700.04	0.98	0.98	-0.08	
12,843.71	92.60	267.88	9,014.63	639.01	-3,712.08	3,713.30	1.06	1.05	-0.15	
12,857.00	92.75	267.87	9,014.01	638.52	-3,725.35	3,726.57	1.13	1.13	-0.08	
12,870.29	92.89	267.86	9,013.35	638.02	-3,738.61	3,739.83	1.06	1.05	-0.08	
12,883.57	93.03	267.86	9,012.67	637.53	-3,751.87	3,753.08	1.05	1.05	0.00	
12,896.86	93.18	267.86	9,011.95	637.03	-3,765.13	3,766.34	1.13	1.13	0.00	
12,910.14	93.32	267.85	9,011.19	636.54	-3,778.38	3,779.59	1.06	1.05	-0.08	
12,923.43	93.46	267.85	9,010.41	636.04	-3,791.63	3,792.85	1.05	1.05	0.00	
12,936.71	93.59	267.84	9,009.59	635.54	-3,804.88	3,806.09	0.98	0.98	-0.08	
12,950.00	93.71	267.82	9,008.75	635.04	-3,818.13	3,819.35	0.92	0.90	-0.15	
12,963.43	93.82	267.80	9,007.86	634.53	-3,831.52	3,832.74	0.83	0.82	-0.15	
12,976.86	93.91	267.78	9,006.96	634.01	-3,844.91	3,846.12	0.69	0.67	-0.15	
12,990.29	94.01	267.75	9,006.03	633.49	-3,858.30	3,859.51	0.78	0.74	-0.22	
13,003.71	94.10	267.72	9,005.08	632.96	-3,871.68	3,872.89	0.71	0.67	-0.22	



Survey Report

Company:	Colgate Energy	Local Co-ordinate Reference:	Well Black Diamond 34 Fed Com 133H
Project:	Eddy County, NM (N83-NME)	TVD Reference:	3330+22 @ 3352.00usft
Site:	Black Diamond 34 Fed Com	MD Reference:	3330+22 @ 3352.00usft
Well:	Black Diamond 34 Fed Com 133H	North Reference:	Grid
Wellbore:	133H	Survey Calculation Method:	Minimum Curvature
Design:	DRL	Database:	EDM 5000.14 Single User Db

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)	
13,017.14	94.19	267.70	9,004.11	632.42	-3,885.06	3,886.27	0.69	0.67	-0.15	
13,030.57	94.29	267.68	9,003.12	631.88	-3,898.44	3,899.65	0.76	0.74	-0.15	
13,044.00	94.39	267.67	9,002.10	631.34	-3,911.82	3,913.03	0.75	0.74	-0.07	
13,057.43	94.52	267.68	9,001.06	630.80	-3,925.20	3,926.41	0.97	0.97	0.07	
13,070.86	94.65	267.69	8,999.98	630.26	-3,938.58	3,939.78	0.97	0.97	0.07	
13,084.29	94.78	267.71	8,998.88	629.72	-3,951.95	3,953.15	0.98	0.97	0.15	
13,097.71	94.89	267.73	8,997.75	629.19	-3,965.31	3,966.51	0.83	0.82	0.15	
13,111.14	94.98	267.74	8,996.59	628.66	-3,978.68	3,979.88	0.67	0.67	0.07	
13,124.57	95.03	267.74	8,995.42	628.13	-3,992.05	3,993.25	0.37	0.37	0.00	
13,138.00	95.02	267.73	8,994.25	627.60	-4,005.42	4,006.62	0.11	-0.07	-0.07	
13,151.29	94.90	267.68	8,993.10	627.07	-4,018.65	4,019.85	0.98	-0.90	-0.38	
13,164.57	94.74	267.62	8,991.98	626.53	-4,031.87	4,033.07	1.29	-1.20	-0.45	
13,177.86	94.55	267.54	8,990.91	625.97	-4,045.11	4,046.30	1.55	-1.43	-0.60	
13,191.14	94.35	267.45	8,989.87	625.39	-4,058.33	4,059.53	1.65	-1.51	-0.68	
13,204.43	94.17	267.35	8,988.89	624.79	-4,071.57	4,072.77	1.55	-1.35	-0.75	
13,217.71	93.87	267.37	8,987.96	624.18	-4,084.81	4,086.00	2.26	-2.26	0.15	
13,231.00	93.36	267.16	8,987.12	623.55	-4,098.05	4,099.24	4.15	-3.84	-1.58	
13,244.57	92.69	267.29	8,986.40	622.89	-4,111.59	4,112.78	5.03	-4.94	0.96	
13,258.14	91.89	267.86	8,985.86	622.32	-4,125.14	4,126.32	7.24	-5.90	4.20	
13,271.71	91.79	267.73	8,985.42	621.79	-4,138.69	4,139.88	1.21	-0.74	-0.96	
13,285.29	91.83	267.47	8,985.00	621.23	-4,152.25	4,153.44	1.94	0.29	-1.91	
13,298.86	91.88	267.21	8,984.56	620.60	-4,165.80	4,166.98	1.95	0.37	-1.92	
13,312.43	91.92	266.99	8,984.11	619.91	-4,179.34	4,180.53	1.65	0.29	-1.62	
13,326.00	91.94	266.84	8,983.65	619.18	-4,192.89	4,194.07	1.11	0.15	-1.11	
13,339.43	91.94	266.81	8,983.19	618.44	-4,206.29	4,207.47	0.22	0.00	-0.22	
13,352.86	91.91	266.84	8,982.74	617.69	-4,219.69	4,220.87	0.32	-0.22	0.22	
13,366.29	91.88	266.92	8,982.30	616.96	-4,233.09	4,234.27	0.64	-0.22	0.60	
13,379.71	91.85	267.00	8,981.86	616.25	-4,246.49	4,247.66	0.64	-0.22	0.60	
13,393.14	91.82	267.08	8,981.43	615.56	-4,259.89	4,261.07	0.64	-0.22	0.60	
13,406.57	91.61	267.43	8,981.03	614.92	-4,273.30	4,274.47	3.04	-1.56	2.61	
13,420.00	91.15	268.36	8,980.71	614.42	-4,286.72	4,287.89	7.72	-3.43	6.92	
13,433.57	90.83	269.36	8,980.47	614.15	-4,300.28	4,301.45	7.74	-2.36	7.37	
13,447.14	90.66	269.50	8,980.30	614.02	-4,313.85	4,315.02	1.62	-1.25	1.03	
13,460.71	90.71	269.33	8,980.13	613.88	-4,327.42	4,328.59	1.31	0.37	-1.25	
13,474.29	90.76	269.14	8,979.96	613.70	-4,341.00	4,342.17	1.45	0.37	-1.40	
13,487.86	90.82	268.95	8,979.77	613.47	-4,354.56	4,355.73	1.47	0.44	-1.40	
13,501.43	90.88	268.76	8,979.57	613.20	-4,368.13	4,369.30	1.47	0.44	-1.40	
13,515.00	90.92	268.60	8,979.36	612.89	-4,381.69	4,382.86	1.22	0.29	-1.18	
13,528.43	90.94	268.47	8,979.14	612.54	-4,395.12	4,396.29	0.98	0.15	-0.97	
13,541.86	90.94	268.38	8,978.92	612.18	-4,408.54	4,409.71	0.67	0.00	-0.67	
13,555.29	90.94	268.30	8,978.70	611.79	-4,421.96	4,423.13	0.60	0.00	-0.60	
13,568.71	90.94	268.22	8,978.48	611.38	-4,435.38	4,436.54	0.60	0.00	-0.60	
13,582.14	90.93	268.16	8,978.26	610.95	-4,448.80	4,449.96	0.45	-0.07	-0.45	
13,595.57	90.92	268.09	8,978.04	610.52	-4,462.22	4,463.38	0.53	-0.07	-0.52	



Survey Report

Company:	Colgate Energy	Local Co-ordinate Reference:	Well Black Diamond 34 Fed Com 133H
Project:	Eddy County, NM (N83-NME)	TVD Reference:	3330+22 @ 3352.00usft
Site:	Black Diamond 34 Fed Com	MD Reference:	3330+22 @ 3352.00usft
Well:	Black Diamond 34 Fed Com 133H	North Reference:	Grid
Wellbore:	133H	Survey Calculation Method:	Minimum Curvature
Design:	DRL	Database:	EDM 5000.14 Single User Db

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)
13,609.00	90.92	268.02	8,977.83	610.06	-4,475.64	4,476.80	0.52	0.00	-0.52
13,622.29	90.92	267.94	8,977.61	609.59	-4,488.92	4,490.08	0.60	0.00	-0.60
13,635.57	90.93	267.86	8,977.40	609.10	-4,502.19	4,503.35	0.61	0.08	-0.60
13,648.86	90.93	267.77	8,977.18	608.60	-4,515.47	4,516.63	0.68	0.00	-0.68
13,662.14	90.93	267.69	8,976.97	608.07	-4,528.74	4,529.89	0.60	0.00	-0.60
13,675.43	90.92	267.61	8,976.75	607.53	-4,542.01	4,543.17	0.61	-0.08	-0.60
13,688.71	90.90	267.54	8,976.54	606.97	-4,555.28	4,556.44	0.55	-0.15	-0.53
13,702.00	90.85	267.48	8,976.34	606.39	-4,568.55	4,569.71	0.59	-0.38	-0.45
13,715.43	90.76	267.43	8,976.15	605.79	-4,581.97	4,583.12	0.77	-0.67	-0.37
13,728.86	90.65	267.40	8,975.99	605.19	-4,595.39	4,596.54	0.85	-0.82	-0.22
13,742.29	90.53	267.37	8,975.85	604.57	-4,608.80	4,609.95	0.92	-0.89	-0.22
13,755.71	90.42	267.34	8,975.74	603.95	-4,622.21	4,623.36	0.85	-0.82	-0.22
13,769.14	90.32	267.31	8,975.65	603.33	-4,635.62	4,636.77	0.78	-0.74	-0.22
13,782.57	90.25	268.32	8,975.58	602.82	-4,649.04	4,650.19	7.54	-0.52	7.52
13,796.00	90.18	269.49	8,975.53	602.56	-4,662.47	4,663.62	8.73	-0.52	8.71
13,809.43	90.21	270.68	8,975.49	602.58	-4,675.90	4,677.05	8.86	0.22	8.86
13,822.86	90.23	271.15	8,975.44	602.79	-4,689.33	4,690.47	3.50	0.15	3.50
13,836.29	90.21	271.04	8,975.38	603.05	-4,702.75	4,703.90	0.83	-0.15	-0.82
13,849.71	90.19	270.92	8,975.34	603.28	-4,716.17	4,717.32	0.91	-0.15	-0.89
13,863.14	90.18	270.80	8,975.29	603.48	-4,729.60	4,730.75	0.90	-0.07	-0.89
13,876.57	90.17	270.68	8,975.25	603.65	-4,743.03	4,744.18	0.90	-0.07	-0.89
13,890.00	90.16	270.55	8,975.21	603.80	-4,756.46	4,757.61	0.97	-0.07	-0.97
13,903.43	90.15	270.43	8,975.18	603.91	-4,769.89	4,771.04	0.90	-0.07	-0.89
13,916.86	90.15	270.32	8,975.14	604.00	-4,783.32	4,784.47	0.82	0.00	-0.82
13,930.29	90.16	270.21	8,975.11	604.06	-4,796.75	4,797.90	0.82	0.07	-0.82
13,943.71	90.17	270.10	8,975.07	604.10	-4,810.17	4,811.32	0.82	0.07	-0.82
13,957.14	90.18	270.00	8,975.03	604.11	-4,823.60	4,824.75	0.75	0.07	-0.74
13,970.57	90.20	269.91	8,974.98	604.10	-4,837.03	4,838.18	0.69	0.15	-0.67
13,984.00	90.24	269.83	8,974.93	604.07	-4,850.46	4,851.61	0.67	0.30	-0.60
13,997.43	90.29	269.77	8,974.87	604.02	-4,863.89	4,865.04	0.58	0.37	-0.45
14,010.86	90.35	269.72	8,974.79	603.96	-4,877.32	4,878.47	0.58	0.45	-0.37
14,024.29	90.42	269.67	8,974.70	603.89	-4,890.75	4,891.90	0.64	0.52	-0.37
14,037.71	90.51	269.64	8,974.59	603.81	-4,904.16	4,905.31	0.71	0.67	-0.22
14,051.14	90.61	269.62	8,974.46	603.72	-4,917.59	4,918.74	0.76	0.74	-0.15
14,064.57	90.73	269.61	8,974.31	603.63	-4,931.02	4,932.17	0.90	0.89	-0.07
14,078.00	90.88	269.61	8,974.12	603.54	-4,944.45	4,945.60	1.12	1.12	0.00
14,091.43	91.07	269.63	8,973.89	603.45	-4,957.88	4,959.03	1.42	1.41	0.15
14,104.86	91.28	269.66	8,973.61	603.37	-4,971.31	4,972.45	1.58	1.56	0.22
14,118.29	91.51	269.69	8,973.29	603.29	-4,984.73	4,985.88	1.73	1.71	0.22
14,131.71	91.73	269.73	8,972.91	603.23	-4,998.15	4,999.29	1.67	1.64	0.30
14,132.47	91.74	269.73	8,972.88	603.22	-4,998.90	5,000.05	1.74	1.71	0.30
03-5000(BD34-133H-v04)									
14,145.14	91.96	269.77	8,972.48	603.17	-5,011.57	5,012.72	1.74	1.71	0.30



Survey Report

Company:	Colgate Energy	Local Co-ordinate Reference:	Well Black Diamond 34 Fed Com 133H
Project:	Eddy County, NM (N83-NME)	TVD Reference:	3330+22 @ 3352.00usft
Site:	Black Diamond 34 Fed Com	MD Reference:	3330+22 @ 3352.00usft
Well:	Black Diamond 34 Fed Com 133H	North Reference:	Grid
Wellbore:	133H	Survey Calculation Method:	Minimum Curvature
Design:	DRL	Database:	EDM 5000.14 Single User Db

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)	
14,158.57	92.17	269.80	8,971.99	603.12	-5,024.99	5,026.14	1.58	1.56	0.22	
14,172.00	92.35	269.81	8,971.46	603.07	-5,038.41	5,039.56	1.34	1.34	0.07	
14,185.43	92.49	269.80	8,970.89	603.03	-5,051.83	5,052.98	1.05	1.04	-0.07	
14,198.86	92.60	269.78	8,970.30	602.98	-5,065.24	5,066.39	0.83	0.82	-0.15	
14,212.29	92.69	269.74	8,969.68	602.92	-5,078.66	5,079.81	0.73	0.67	-0.30	
14,225.71	92.76	269.70	8,969.04	602.86	-5,092.06	5,093.21	0.60	0.52	-0.30	
14,239.14	92.81	269.65	8,968.39	602.78	-5,105.48	5,106.63	0.53	0.37	-0.37	
14,252.57	92.84	269.60	8,967.73	602.69	-5,118.89	5,120.04	0.43	0.22	-0.37	
14,266.00	92.84	269.54	8,967.06	602.59	-5,132.30	5,133.45	0.45	0.00	-0.45	
14,279.57	92.79	269.47	8,966.39	602.47	-5,145.86	5,147.00	0.63	-0.37	-0.52	
14,293.14	92.73	269.41	8,965.74	602.34	-5,159.41	5,160.56	0.62	-0.44	-0.44	
14,306.71	92.66	269.34	8,965.10	602.19	-5,172.97	5,174.11	0.73	-0.52	-0.52	
14,320.29	92.59	269.27	8,964.48	602.03	-5,186.53	5,187.68	0.73	-0.52	-0.52	
14,333.86	92.55	269.21	8,963.87	601.85	-5,200.09	5,201.23	0.53	-0.29	-0.44	
14,347.43	91.62	269.08	8,963.38	601.65	-5,213.64	5,214.79	6.92	-6.85	-0.96	
14,361.00	90.65	269.66	8,963.11	601.50	-5,227.21	5,228.36	8.33	-7.15	4.27	
14,374.29	89.59	269.74	8,963.08	601.43	-5,240.50	5,241.65	8.00	-7.98	0.60	
14,387.57	89.51	269.67	8,963.19	601.36	-5,253.78	5,254.92	0.80	-0.60	-0.53	
14,400.86	89.63	269.63	8,963.29	601.28	-5,267.07	5,268.21	0.95	0.90	-0.30	
14,414.14	89.76	269.58	8,963.36	601.19	-5,280.35	5,281.49	1.05	0.98	-0.38	
14,427.43	89.90	269.54	8,963.40	601.08	-5,293.64	5,294.78	1.10	1.05	-0.30	
14,440.71	90.04	269.51	8,963.40	600.97	-5,306.92	5,308.06	1.08	1.05	-0.23	
14,454.00	90.16	269.48	8,963.38	600.86	-5,320.21	5,321.35	0.93	0.90	-0.23	
14,467.29	90.27	269.46	8,963.33	600.73	-5,333.50	5,334.64	0.84	0.83	-0.15	
14,480.57	90.37	269.45	8,963.26	600.61	-5,346.78	5,347.92	0.76	0.75	-0.08	
14,493.86	90.46	269.45	8,963.16	600.48	-5,360.06	5,361.21	0.68	0.68	0.00	
14,507.14	90.54	269.45	8,963.04	600.35	-5,373.34	5,374.49	0.60	0.60	0.00	
14,520.43	90.62	269.45	8,962.91	600.23	-5,386.63	5,387.77	0.60	0.60	0.00	
14,533.71	90.71	269.44	8,962.75	600.10	-5,399.91	5,401.05	0.68	0.68	-0.08	
14,547.00	90.79	269.44	8,962.58	599.97	-5,413.20	5,414.34	0.60	0.60	0.00	
14,560.57	90.87	269.44	8,962.38	599.83	-5,426.77	5,427.91	0.59	0.59	0.00	
14,574.14	90.95	269.44	8,962.17	599.70	-5,440.33	5,441.48	0.59	0.59	0.00	
14,587.71	91.04	269.43	8,961.93	599.57	-5,453.90	5,455.04	0.67	0.66	-0.07	
14,601.29	91.12	269.42	8,961.68	599.43	-5,467.48	5,468.62	0.59	0.59	-0.07	
14,614.86	91.20	269.40	8,961.40	599.29	-5,481.05	5,482.19	0.61	0.59	-0.15	
14,628.43	91.29	269.38	8,961.11	599.15	-5,494.61	5,495.75	0.68	0.66	-0.15	
14,642.00	91.37	269.35	8,960.79	599.00	-5,508.18	5,509.32	0.63	0.59	-0.22	
14,655.57	91.45	269.31	8,960.46	598.84	-5,521.74	5,522.88	0.66	0.59	-0.29	
14,669.14	91.53	269.27	8,960.11	598.67	-5,535.31	5,536.45	0.66	0.59	-0.29	
14,682.71	91.61	269.22	8,959.73	598.49	-5,548.87	5,550.01	0.70	0.59	-0.37	
14,696.29	91.69	269.16	8,959.34	598.30	-5,562.44	5,563.58	0.74	0.59	-0.44	
14,709.86	91.75	269.10	8,958.94	598.09	-5,576.01	5,577.14	0.63	0.44	-0.44	
14,723.43	91.81	269.04	8,958.51	597.87	-5,589.57	5,590.70	0.63	0.44	-0.44	
14,737.00	91.86	268.99	8,958.08	597.64	-5,603.13	5,604.27	0.52	0.37	-0.37	



Survey Report

Company:	Colgate Energy	Local Co-ordinate Reference:	Well Black Diamond 34 Fed Com 133H
Project:	Eddy County, NM (N83-NME)	TVD Reference:	3330+22 @ 3352.00usft
Site:	Black Diamond 34 Fed Com	MD Reference:	3330+22 @ 3352.00usft
Well:	Black Diamond 34 Fed Com 133H	North Reference:	Grid
Wellbore:	133H	Survey Calculation Method:	Minimum Curvature
Design:	DRL	Database:	EDM 5000.14 Single User Db

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)
14,750.29	91.89	268.93	8,957.64	597.40	-5,616.41	5,617.55	0.50	0.23	-0.45
14,763.57	91.91	268.88	8,957.20	597.15	-5,629.68	5,630.82	0.41	0.15	-0.38
14,776.86	91.92	268.82	8,956.76	596.88	-5,642.96	5,644.09	0.46	0.08	-0.45
14,790.14	91.92	268.76	8,956.32	596.60	-5,656.23	5,657.36	0.45	0.00	-0.45
14,803.43	91.91	268.68	8,955.87	596.30	-5,669.51	5,670.64	0.61	-0.08	-0.60
14,816.71	91.25	268.97	8,955.51	596.03	-5,682.78	5,683.91	5.43	-4.97	2.18
14,830.00	90.26	269.48	8,955.33	595.85	-5,696.07	5,697.20	8.38	-7.45	3.84
14,843.43	89.24	270.17	8,955.39	595.81	-5,709.50	5,710.63	9.17	-7.59	5.14
14,856.86	88.26	270.77	8,955.68	595.92	-5,722.92	5,724.06	8.56	-7.30	4.47
14,870.29	87.79	270.78	8,956.14	596.10	-5,736.34	5,737.48	3.50	-3.50	0.07
14,883.71	87.66	270.46	8,956.68	596.25	-5,749.75	5,750.89	2.57	-0.97	-2.38
14,897.14	87.52	270.12	8,957.24	596.31	-5,763.17	5,764.30	2.74	-1.04	-2.53
14,910.57	87.39	269.79	8,957.84	596.30	-5,776.59	5,777.72	2.64	-0.97	-2.46
14,924.00	87.31	269.52	8,958.46	596.22	-5,790.00	5,791.14	2.09	-0.60	-2.01
14,937.43	87.28	269.36	8,959.09	596.09	-5,803.42	5,804.55	1.21	-0.22	-1.19
14,950.86	87.31	269.27	8,959.73	595.93	-5,816.83	5,817.96	0.71	0.22	-0.67
14,964.29	87.36	269.22	8,960.35	595.75	-5,830.25	5,831.38	0.53	0.37	-0.37
14,977.71	87.43	269.20	8,960.96	595.57	-5,843.65	5,844.78	0.54	0.52	-0.15
14,991.14	87.52	269.19	8,961.55	595.38	-5,857.07	5,858.20	0.67	0.67	-0.07
15,004.57	87.63	269.20	8,962.12	595.19	-5,870.48	5,871.61	0.82	0.82	0.07
15,018.00	87.74	269.20	8,962.66	595.01	-5,883.90	5,885.03	0.82	0.82	0.00
15,031.57	87.87	269.19	8,963.18	594.82	-5,897.46	5,898.59	0.96	0.96	-0.07
15,045.14	88.00	269.17	8,963.67	594.62	-5,911.02	5,912.15	0.97	0.96	-0.15
15,058.71	88.14	269.16	8,964.13	594.42	-5,924.58	5,925.71	1.03	1.03	-0.07
15,072.29	88.27	269.14	8,964.55	594.22	-5,938.15	5,939.28	0.97	0.96	-0.15
15,085.86	88.39	269.13	8,964.95	594.02	-5,951.71	5,952.84	0.89	0.88	-0.07
15,099.43	88.50	269.12	8,965.32	593.81	-5,965.28	5,966.41	0.81	0.81	-0.07
15,113.00	88.58	269.13	8,965.66	593.60	-5,978.84	5,979.97	0.59	0.59	0.07
15,126.43	88.62	269.15	8,965.99	593.40	-5,992.27	5,993.39	0.33	0.30	0.15
15,139.86	88.63	269.18	8,966.31	593.21	-6,005.69	6,006.82	0.24	0.07	0.22
15,153.29	88.62	269.21	8,966.64	593.02	-6,019.12	6,020.24	0.24	-0.07	0.22
15,166.71	88.59	269.24	8,966.96	592.84	-6,032.53	6,033.66	0.32	-0.22	0.22
15,180.14	88.56	269.26	8,967.30	592.66	-6,045.95	6,047.08	0.27	-0.22	0.15
15,193.57	88.11	270.21	8,967.69	592.60	-6,059.38	6,060.51	7.82	-3.35	7.07
15,207.00	87.69	271.23	8,968.18	592.77	-6,072.80	6,073.93	8.21	-3.13	7.59
15,220.57	87.47	271.57	8,968.75	593.10	-6,086.35	6,087.48	2.98	-1.62	2.51
15,234.14	87.39	271.59	8,969.36	593.47	-6,099.90	6,101.03	0.61	-0.59	0.15
15,247.71	87.23	271.54	8,970.00	593.84	-6,113.45	6,114.58	1.24	-1.18	-0.37
15,261.29	87.07	271.49	8,970.67	594.20	-6,127.01	6,128.14	1.23	-1.18	-0.37
15,274.86	86.92	271.44	8,971.38	594.55	-6,140.56	6,141.69	1.17	-1.11	-0.37
15,288.43	86.78	271.39	8,972.13	594.88	-6,154.10	6,155.23	1.10	-1.03	-0.37
15,302.00	86.68	271.34	8,972.90	595.20	-6,167.65	6,168.78	0.82	-0.74	-0.37
15,315.57	86.63	271.31	8,973.70	595.52	-6,181.19	6,182.32	0.43	-0.37	-0.22



Survey Report

Company:	Colgate Energy	Local Co-ordinate Reference:	Well Black Diamond 34 Fed Com 133H
Project:	Eddy County, NM (N83-NME)	TVD Reference:	3330+22 @ 3352.00usft
Site:	Black Diamond 34 Fed Com	MD Reference:	3330+22 @ 3352.00usft
Well:	Black Diamond 34 Fed Com 133H	North Reference:	Grid
Wellbore:	133H	Survey Calculation Method:	Minimum Curvature
Design:	DRL	Database:	EDM 5000.14 Single User Db

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)	
15,329.14	86.63	271.27	8,974.49	595.82	-6,194.73	6,195.87	0.29	0.00	-0.29	
15,342.71	86.65	271.24	8,975.29	596.12	-6,208.28	6,209.41	0.27	0.15	-0.22	
15,356.29	86.69	271.21	8,976.08	596.41	-6,221.83	6,222.97	0.37	0.29	-0.22	
15,369.86	86.73	271.18	8,976.86	596.69	-6,235.38	6,236.51	0.37	0.29	-0.22	
15,383.43	86.79	271.15	8,977.62	596.97	-6,248.92	6,250.06	0.49	0.44	-0.22	
15,397.00	86.85	271.10	8,978.38	597.23	-6,262.47	6,263.60	0.58	0.44	-0.37	
15,410.43	86.91	271.05	8,979.11	597.48	-6,275.88	6,277.01	0.58	0.45	-0.37	
15,423.86	86.97	270.98	8,979.82	597.72	-6,289.29	6,290.42	0.69	0.45	-0.52	
15,437.29	87.03	270.91	8,980.53	597.94	-6,302.69	6,303.83	0.69	0.45	-0.52	
15,450.71	87.10	270.84	8,981.21	598.15	-6,316.10	6,317.23	0.74	0.52	-0.52	
15,464.14	87.16	270.77	8,981.89	598.34	-6,329.51	6,330.64	0.69	0.45	-0.52	
15,477.57	87.22	270.70	8,982.55	598.51	-6,342.92	6,344.06	0.69	0.45	-0.52	
15,491.00	87.27	270.63	8,983.19	598.66	-6,356.33	6,357.47	0.64	0.37	-0.52	
15,504.29	87.32	270.57	8,983.82	598.80	-6,369.61	6,370.75	0.59	0.38	-0.45	
15,517.57	87.36	270.51	8,984.43	598.93	-6,382.87	6,384.01	0.54	0.30	-0.45	
15,530.86	87.40	270.46	8,985.04	599.04	-6,396.15	6,397.29	0.48	0.30	-0.38	
15,544.14	87.44	270.41	8,985.64	599.14	-6,409.42	6,410.55	0.48	0.30	-0.38	
15,557.43	87.48	270.35	8,986.23	599.23	-6,422.69	6,423.83	0.54	0.30	-0.45	
15,570.71	87.51	270.30	8,986.81	599.30	-6,435.96	6,437.10	0.44	0.23	-0.38	
15,584.00	87.53	270.24	8,987.38	599.37	-6,449.24	6,450.38	0.48	0.15	-0.45	
15,597.43	87.55	270.17	8,987.96	599.42	-6,462.65	6,463.79	0.54	0.15	-0.52	
15,610.86	87.56	270.11	8,988.53	599.45	-6,476.07	6,477.21	0.45	0.07	-0.45	
15,624.29	87.58	270.04	8,989.10	599.47	-6,489.49	6,490.63	0.54	0.15	-0.52	
15,637.71	87.59	269.97	8,989.67	599.47	-6,502.90	6,504.04	0.53	0.07	-0.52	
15,651.14	87.61	269.90	8,990.23	599.45	-6,516.32	6,517.45	0.54	0.15	-0.52	
15,664.57	87.64	269.84	8,990.79	599.42	-6,529.73	6,530.87	0.50	0.22	-0.45	
15,678.00	87.69	269.77	8,991.33	599.38	-6,543.15	6,544.29	0.64	0.37	-0.52	
15,691.57	87.76	269.71	8,991.87	599.31	-6,556.71	6,557.85	0.68	0.52	-0.44	
15,705.14	87.84	269.65	8,992.39	599.24	-6,570.27	6,571.41	0.74	0.59	-0.44	
15,718.71	87.94	269.60	8,992.89	599.15	-6,583.83	6,584.97	0.82	0.74	-0.37	
15,732.29	88.04	269.54	8,993.37	599.05	-6,597.40	6,598.54	0.86	0.74	-0.44	
15,745.86	88.13	269.49	8,993.82	598.93	-6,610.97	6,612.10	0.76	0.66	-0.37	
15,759.43	88.23	269.43	8,994.25	598.80	-6,624.53	6,625.67	0.86	0.74	-0.44	
15,773.00	88.31	269.37	8,994.66	598.66	-6,638.09	6,639.23	0.74	0.59	-0.44	
15,786.29	88.38	269.31	8,995.05	598.51	-6,651.37	6,652.51	0.69	0.53	-0.45	
15,799.57	88.43	269.24	8,995.42	598.34	-6,664.65	6,665.79	0.65	0.38	-0.53	
15,812.86	88.47	269.18	8,995.78	598.16	-6,677.93	6,679.07	0.54	0.30	-0.45	
15,826.14	88.51	269.12	8,996.13	597.96	-6,691.21	6,692.34	0.54	0.30	-0.45	
15,839.43	88.55	269.06	8,996.47	597.75	-6,704.49	6,705.63	0.54	0.30	-0.45	
15,852.71	88.57	269.01	8,996.80	597.53	-6,717.76	6,718.90	0.41	0.15	-0.38	
15,866.00	88.59	268.97	8,997.13	597.29	-6,731.05	6,732.18	0.34	0.15	-0.30	
15,879.57	88.60	268.94	8,997.46	597.05	-6,744.61	6,745.75	0.23	0.07	-0.22	
15,893.14	88.60	268.92	8,997.80	596.79	-6,758.18	6,759.31	0.15	0.00	-0.15	



Survey Report

Company:	Colgate Energy	Local Co-ordinate Reference:	Well Black Diamond 34 Fed Com 133H
Project:	Eddy County, NM (N83-NME)	TVD Reference:	3330+22 @ 3352.00usft
Site:	Black Diamond 34 Fed Com	MD Reference:	3330+22 @ 3352.00usft
Well:	Black Diamond 34 Fed Com 133H	North Reference:	Grid
Wellbore:	133H	Survey Calculation Method:	Minimum Curvature
Design:	DRL	Database:	EDM 5000.14 Single User Db

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)	
15,906.71	88.59	268.91	8,998.13	596.54	-6,771.74	6,772.87	0.10	-0.07	-0.07	
15,920.29	88.59	268.89	8,998.46	596.27	-6,785.31	6,786.44	0.15	0.00	-0.15	
15,933.86	88.60	268.88	8,998.80	596.01	-6,798.88	6,800.01	0.10	0.07	-0.07	
15,947.43	88.59	268.92	8,999.13	595.75	-6,812.44	6,813.57	0.30	-0.07	0.29	
15,961.00	88.28	269.67	8,999.50	595.58	-6,826.00	6,827.13	5.98	-2.28	5.53	
15,974.43	88.53	269.83	8,999.87	595.52	-6,839.43	6,840.56	2.21	1.86	1.19	
15,987.86	88.58	269.80	9,000.21	595.48	-6,852.85	6,853.98	0.43	0.37	-0.22	
16,001.29	88.63	269.77	9,000.54	595.43	-6,866.28	6,867.41	0.43	0.37	-0.22	
16,014.71	88.68	269.73	9,000.85	595.37	-6,879.70	6,880.83	0.48	0.37	-0.30	
16,028.14	88.74	269.69	9,001.16	595.30	-6,893.12	6,894.25	0.54	0.45	-0.30	
16,041.57	88.79	269.66	9,001.44	595.23	-6,906.55	6,907.68	0.43	0.37	-0.22	
16,055.00	88.83	269.62	9,001.72	595.14	-6,919.98	6,921.11	0.42	0.30	-0.30	
16,068.57	88.87	269.58	9,002.00	595.05	-6,933.54	6,934.67	0.42	0.29	-0.29	
16,082.14	88.90	269.54	9,002.26	594.95	-6,947.11	6,948.24	0.37	0.22	-0.29	
16,095.71	88.93	269.51	9,002.52	594.83	-6,960.68	6,961.81	0.31	0.22	-0.22	
16,109.29	88.97	269.47	9,002.77	594.71	-6,974.25	6,975.38	0.42	0.29	-0.29	
16,122.86	89.01	269.44	9,003.00	594.58	-6,987.82	6,988.95	0.37	0.29	-0.22	
16,136.43	89.07	269.42	9,003.23	594.45	-7,001.39	7,002.52	0.47	0.44	-0.15	
16,150.00	89.14	269.41	9,003.44	594.31	-7,014.96	7,016.08	0.52	0.52	-0.07	
16,163.43	89.25	269.41	9,003.63	594.17	-7,028.38	7,029.51	0.82	0.82	0.00	
16,176.86	89.38	269.42	9,003.79	594.03	-7,041.81	7,042.94	0.97	0.97	0.07	
16,190.29	89.52	269.44	9,003.92	593.90	-7,055.24	7,056.37	1.05	1.04	0.15	
16,203.71	89.67	269.45	9,004.02	593.77	-7,068.66	7,069.79	1.12	1.12	0.07	
16,217.14	89.82	269.46	9,004.08	593.64	-7,082.09	7,083.22	1.12	1.12	0.07	
16,230.57	89.96	269.47	9,004.10	593.52	-7,095.52	7,096.64	1.05	1.04	0.07	
16,244.00	90.08	269.47	9,004.10	593.39	-7,108.95	7,110.07	0.89	0.89	0.00	
16,257.43	90.19	269.45	9,004.07	593.27	-7,122.38	7,123.50	0.83	0.82	-0.15	
16,270.86	90.28	269.41	9,004.01	593.13	-7,135.81	7,136.93	0.73	0.67	-0.30	
16,284.29	90.36	269.38	9,003.94	592.99	-7,149.24	7,150.36	0.64	0.60	-0.22	
16,297.71	90.43	269.33	9,003.84	592.84	-7,162.65	7,163.78	0.64	0.52	-0.37	
16,311.14	90.51	269.29	9,003.73	592.68	-7,176.08	7,177.21	0.67	0.60	-0.30	
16,324.57	90.58	269.24	9,003.61	592.51	-7,189.51	7,190.64	0.64	0.52	-0.37	
16,338.00	90.66	269.20	9,003.46	592.32	-7,202.94	7,204.06	0.67	0.60	-0.30	
16,351.29	90.75	269.17	9,003.30	592.13	-7,216.23	7,217.35	0.71	0.68	-0.23	
16,364.57	90.84	269.13	9,003.11	591.94	-7,229.50	7,230.63	0.74	0.68	-0.30	
16,377.86	90.94	269.11	9,002.91	591.73	-7,242.79	7,243.91	0.77	0.75	-0.15	
16,391.14	91.04	269.09	9,002.68	591.52	-7,256.07	7,257.19	0.77	0.75	-0.15	
16,404.43	91.14	269.07	9,002.42	591.31	-7,269.35	7,270.48	0.77	0.75	-0.15	
16,417.71	91.23	269.06	9,002.15	591.09	-7,282.63	7,283.75	0.68	0.68	-0.08	
16,431.00	91.32	269.06	9,001.85	590.88	-7,295.91	7,297.03	0.68	0.68	0.00	
16,444.43	91.41	269.08	9,001.53	590.66	-7,309.34	7,310.46	0.69	0.67	0.15	
16,457.86	91.48	269.11	9,001.20	590.45	-7,322.76	7,323.88	0.57	0.52	0.22	
16,471.29	91.56	269.14	9,000.84	590.24	-7,336.19	7,337.31	0.64	0.60	0.22	
16,484.71	91.63	269.17	9,000.47	590.04	-7,349.60	7,350.72	0.57	0.52	0.22	



Survey Report

Company:	Colgate Energy	Local Co-ordinate Reference:	Well Black Diamond 34 Fed Com 133H
Project:	Eddy County, NM (N83-NME)	TVD Reference:	3330+22 @ 3352.00usft
Site:	Black Diamond 34 Fed Com	MD Reference:	3330+22 @ 3352.00usft
Well:	Black Diamond 34 Fed Com 133H	North Reference:	Grid
Wellbore:	133H	Survey Calculation Method:	Minimum Curvature
Design:	DRL	Database:	EDM 5000.14 Single User Db

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
16,498.14	91.70	269.20	9,000.08	589.85	-7,363.02	7,364.14	0.57	0.52	0.22
16,511.57	91.77	269.21	8,999.67	589.67	-7,376.44	7,377.56	0.53	0.52	0.07
16,525.00	91.84	269.21	8,999.25	589.48	-7,389.87	7,390.98	0.52	0.52	0.00
16,537.83	91.90	269.19	8,998.83	589.30	-7,402.69	7,403.81	0.49	0.47	-0.16
16,550.67	91.97	269.14	8,998.39	589.12	-7,415.52	7,416.64	0.67	0.55	-0.39
16,563.50	92.04	269.09	8,997.94	588.92	-7,428.34	7,429.46	0.67	0.55	-0.39
16,576.33	92.11	269.04	8,997.48	588.71	-7,441.16	7,442.28	0.67	0.55	-0.39
16,589.17	92.17	268.98	8,997.00	588.49	-7,453.99	7,455.11	0.66	0.47	-0.47
16,594.13	92.19	268.96	8,996.81	588.40	-7,458.94	7,460.06	0.56	0.47	-0.31
05-LTP(BD34-133H-v04)									
16,602.00	92.23	268.94	8,996.51	588.25	-7,466.81	7,467.92	0.56	0.47	-0.31
Final MWD Survey: 16602.00' MD, 92.23°INC, 268.94°AZ									
16,634.72	92.23	268.94	8,995.23	587.65	-7,499.50	7,500.62	0.00	0.00	0.00
04-7500(BD34-133H-v04)									
16,660.00	92.23	268.94	8,994.25	587.18	-7,524.75	7,525.87	0.00	0.00	0.00
PTB: 16660.00' MD, 92.23°INC, 268.94°AZ - 06-PBHL(BD34-133H-v04)									

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
167.01	167.00	Rustler				
402.07	402.00	Top of Salt				
1,157.24	1,157.00	Base of Salt				
1,407.37	1,407.00	Yates				
1,712.50	1,712.00	Capitan				
3,519.88	3,512.00	DLWR Mnt. Group				
5,407.44	5,387.00	Lower Brushy Canyon				
5,734.00	5,712.00	Bone Spring Lime				
7,123.57	7,097.00	1st Bone Spring SD				
7,325.33	7,297.00	2nd Bone Spring LM				
7,922.15	7,892.00	2nd Bone Spring SD				
8,273.53	8,242.00	3rd Bone Spring LM				
8,925.61	8,847.00	3rd Spring LM				



Survey Report

Company:	Colgate Energy	Local Co-ordinate Reference:	Well Black Diamond 34 Fed Com 133H
Project:	Eddy County, NM (N83-NME)	TVD Reference:	3330+22 @ 3352.00usft
Site:	Black Diamond 34 Fed Com	MD Reference:	3330+22 @ 3352.00usft
Well:	Black Diamond 34 Fed Com 133H	North Reference:	Grid
Wellbore:	133H	Survey Calculation Method:	Minimum Curvature
Design:	DRL	Database:	EDM 5000.14 Single User Db

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
8,500.00	8,468.03	521.30	297.77	KOP: 8500.00' MD, -296.76' VS, 8468.03' TVD
8,683.59	8,645.31	532.52	260.10	100FEL: 8683.59' MD, -259.08' VS, 8645.30' TVD
9,520.00	9,085.83	623.17	-391.33	EOC: 9520.00' MD, 392.52' VS, 9085.83' TVD
16,602.00	8,996.51	588.25	-7,466.81	Final MWD Survey: 16602.00' MD, 92.23°INC, 268.94°AZ
16,660.00	8,994.25	587.18	-7,524.75	PTB: 16660.00' MD, 92.23°INC, 268.94°AZ

Checked By: _____ Approved By: _____ Date: _____

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

ACKNOWLEDGMENTS

Action 89119

ACKNOWLEDGMENTS

Operator: COLGATE OPERATING, LLC 300 North Marienfeld Street Midland, TX 79701	OGRID: 371449
	Action Number: 89119
	Action Type: [C-104] Completion Packet (C-104C)

ACKNOWLEDGMENTS

☒	I hereby certify that the required Water Use Report has been, or will be, submitted for this wells completion.
☒	I hereby certify that the required FracFocus disclosure has been, or will be, submitted for this wells completion.

District I
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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 89119

CONDITIONS

Operator: COLGATE OPERATING, LLC 300 North Marienfeld Street Midland, TX 79701	OGRID: 371449
	Action Number: 89119
	Action Type: [C-104] Completion Packet (C-104C)

CONDITIONS

Created By	Condition	Condition Date
plmartinez	RT EXPIRES 6/4/2022	3/15/2022