

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 – 48119	⁵ Pool Name PARKWAY; BONE SPRING		⁶ Pool Code 49622
⁷ Property Code 330007	⁸ Property Name CRAZY HORSE 32 STATE FED COM		⁹ Well Number 133H

II. ¹⁰ Surface Location

UL or lot no. E	Section 32	Township 19S	Range 30E	Lot Idn	Feet from the 1243	North/South Line South	Feet from the 191	East/West line West	County Eddy
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¹¹ Bottom Hole Location

UL or lot no. I	Section 33	Township 19S	Range 30E	Lot Idn	Feet from the 1982	North/South line South	Feet from the 10	East/West line East	County Eddy
¹² Lse Code F	¹³ Producing Method Code		¹⁴ Gas Connection Date 12/01/2021		¹⁵ C-129 Permit Number	¹⁶ C-129 Effective Date		¹⁷ C-129 Expiration Date	

III. Oil and Gas Transporters

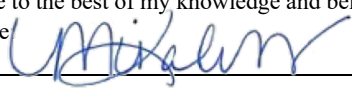
¹⁸ Transporter OGRID	¹⁹ Transporter Name and Address	²⁰ O/G/W
329097	LM TOUCHDOWN, LLC	O
329097	LM TOUCHDOWN, LLC	G

IV. Well Completion Data

²¹ Spud Date 06/06/2021	²² Ready Date 12/20/2021	²³ TD 19,811 MD 9,443 TVD	²⁴ PBTD 19,851 MD 9,559 TVD	²⁵ Perforations 9,544 – 19,473	²⁶ DHC, MC
²⁷ Hole Size		²⁸ Casing & Tubing Size		²⁹ Depth Set	³⁰ Sacks Cement
22.375		18.625		371	449 sx
17.5		13.375		1,594	625 sx Lead 225 sx Tail
12.25		9.625		3,324	510 sx Lead 199 sx Tail
8.75		5.5		19,839	750 sx Lead 1,550 sx 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: Leonard R. Lowe	
Title: Operations Tech		Title: Engineer	
E-mail Address: mthomas@colgateenergy.com		Approval Date: 12/29/21	
Date: 12/19/2021	Phone: 432-695-4272	RT Expires on 03/20/2022	

DISTRICT I1625 N. French Dr., Hobbs, N.M. 88240
Phone: (575) 393-6161 Fax: (575) 393-0720**DISTRICT II**811 S. First St., Artesia, N.M. 88210
Phone: (575) 748-1283 Fax: (575) 748-9720**DISTRICT III**1000 Rio Brazos Rd., Aztec, N.M. 87410
Phone: (505) 334-6178 Fax: (505) 334-6170**DISTRICT IV**1220 S. St. Francis Dr., Santa Fe, N.M. 87505
Phone: (505) 476-3480 Fax: (505) 476-3482State of New Mexico
Energy, Minerals & Natural Resources Department

Form C-102

Revised August 1, 2011

OIL CONSERVATION DIVISION

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

Submit one copy to appropriate

District Office

AS-DRILLED

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-015-48000	² Pool Code 49622	³ Pool Name Parkway: Bone Spring
⁴ Property Code 330007	⁵ Property Name Crazy Horse 32 State Fed Com	⁶ Well Number 133H
⁷ GRID No. 371449	⁸ Operator Name Colgate Operating, LLC	⁹ Elevation 3263

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
M	32	19 S	30 E		1243	South	191	West	Eddy

¹¹ Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
I	33	19 S	30 E		1982	South	10	East	Eddy

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

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED
OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

16 Legend:

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

NOTE:
DOWNHOLE INFORMATION TAKEN
FROM A REPORT FURNISHED
BY COLGATE ENERGY
DATED 7-3-2021

SURFACE LOCATION
NAD 83 NADSPC ZONE 3001
Y= 586931.39 N
X= 643314.80 E
LAT.= 32.6130889° N
LONG.= 104.0021397° W

BOTTOM HOLE LOCATION
NAD 83 NADSPC ZONE 3001
Y= 587682.24 N
X= 653688.97 E
LAT.= 32.6150594° N
LONG.= 103.9684394° W

FIRST TAKE POINT LOCATION
NAD 83 NADSPC ZONE 3001
Y= 587660.68 N
X= 643384.07 E
LAT.= 32.6150929° N
LONG.= 104.0019073° W

LAST TAKE POINT LOCATION
NAD 83 NADSPC ZONE 3001
Y= 587682.74 N
X= 653604.98 E
LAT.= 32.6150616° N
LONG.= 103.9687122° 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.

[Signature] **12/19/2021**
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.

3/20/21
Date of Survey
Plat Revised: 11/17/21
Signature and Seal of Professional Surveyor:

17078
Certificate Number



Colgate Energy

Eddy County, NM (N83-NME)

Crazy Horse 32 State Fed Com

Crazy Horse 32 State Fed Com 133H

30-015-48000

133H

Design: 133H

Standard Survey Report

03 July, 2021



Survey Report

Company:	Colgate Energy	Local Co-ordinate Reference:	Well Crazy Horse 32 State Fed Com 133H
Project:	Eddy County, NM (N83-NME)	TVD Reference:	3262+30 @ 3292.00usft (HP510)
Site:	Crazy Horse 32 State Fed Com	MD Reference:	3262+30 @ 3292.00usft (HP510)
Well:	Crazy Horse 32 State Fed Com 133H	North Reference:	Grid
Wellbore:	133H	Survey Calculation Method:	Minimum Curvature
Design:	133H	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		Crazy Horse 32 State Fed Com			
Site Position:		Northing:	586,991.40 usft	Latitude:	32.61325351
From:	Map	Easting:	643,359.01 usft	Longitude:	-104.00199549
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "		

Well		Crazy Horse 32 State Fed Com 133H				
Well Position	+N/-S	0.00 usft	Northing:	586,931.20 usft	Latitude:	32.61308840
	+E/-W	0.00 usft	Easting:	643,314.23 usft	Longitude:	-104.00214153
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	3,262.00 usft
Grid Convergence:		0.18 °				

Wellbore	133H				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IFR	6/5/2021	7.01	60.30	47,850.20000000

Design	133H				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	89.94	

Survey Program	Date	7/3/2021			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
14.21	19,792.00	Survey #1 - Gordon MWD (133H)	MWD+IFR1+SAG+FDIR (SQ OWSG MWD + IFR1 + Sag + FDIR Correction		
19,851.00	19,851.00	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	
14.21	0.06	153.43	14.21	-0.01	0.00	0.00	0.42	0.42	0.00	
28.43	0.13	153.55	28.43	-0.03	0.01	0.01	0.49	0.49	0.84	
42.64	0.19	153.67	42.64	-0.06	0.03	0.03	0.42	0.42	0.84	
56.86	0.26	153.79	56.86	-0.11	0.06	0.06	0.49	0.49	0.84	
71.07	0.32	153.91	71.07	-0.18	0.09	0.09	0.42	0.42	0.84	
85.29	0.38	154.03	85.29	-0.26	0.13	0.13	0.42	0.42	0.84	
99.50	0.45	154.16	99.50	-0.35	0.17	0.17	0.49	0.49	0.91	
113.71	0.51	154.28	113.71	-0.46	0.22	0.22	0.42	0.42	0.84	



Survey Report

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Site:	Crazy Horse 32 State Fed Com	MD Reference:	3262+30 @ 3292.00usft (HP510)
Well:	Crazy Horse 32 State Fed Com 133H	North Reference:	Grid
Wellbore:	133H	Survey Calculation Method:	Minimum Curvature
Design:	133H	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)
127.93	0.57	154.40	127.93	-0.58	0.28	0.28	0.42	0.42	0.84
142.00	0.63	154.53	142.00	-0.71	0.34	0.34	0.42	0.42	0.92
Rustler									
142.14	0.63	154.53	142.14	-0.71	0.34	0.34	0.42	0.42	0.82
156.36	0.70	154.65	156.36	-0.86	0.42	0.41	0.49	0.49	0.84
170.57	0.76	154.78	170.56	-1.02	0.49	0.49	0.42	0.42	0.91
184.79	0.82	154.90	184.78	-1.20	0.58	0.58	0.42	0.42	0.84
199.00	0.88	155.03	198.99	-1.39	0.67	0.66	0.42	0.42	0.91
212.14	0.98	150.58	212.13	-1.58	0.76	0.76	0.94	0.76	-33.87
225.29	1.09	147.01	225.28	-1.78	0.89	0.88	0.97	0.84	-27.15
238.43	1.20	144.10	238.42	-2.00	1.04	1.03	0.95	0.84	-22.15
251.57	1.32	141.69	251.55	-2.23	1.21	1.21	1.00	0.91	-18.34
264.71	1.43	139.68	264.69	-2.47	1.41	1.41	0.91	0.84	-15.30
277.86	1.55	137.97	277.83	-2.73	1.64	1.63	0.97	0.91	-13.00
291.00	1.66	136.51	290.97	-3.00	1.89	1.88	0.89	0.84	-11.11
305.92	1.66	135.67	305.88	-3.31	2.18	2.18	0.16	0.00	-5.63
320.83	1.66	134.75	320.79	-3.62	2.49	2.49	0.18	0.00	-6.17
335.75	1.65	133.77	335.70	-3.92	2.80	2.79	0.20	-0.07	-6.57
350.67	1.65	132.76	350.61	-4.21	3.11	3.11	0.19	0.00	-6.77
365.58	1.65	131.72	365.52	-4.50	3.43	3.42	0.20	0.00	-6.98
380.50	1.64	130.68	380.43	-4.79	3.75	3.75	0.21	-0.07	-6.97
382.07	1.64	130.68	382.00	-4.81	3.78	3.78	0.00	0.00	0.00
Top of Salt									
395.42	1.64	129.64	395.35	-5.06	4.08	4.07	0.22	0.00	-7.79
410.33	1.64	128.63	410.25	-5.33	4.41	4.40	0.19	0.00	-6.77
425.25	1.64	127.65	425.16	-5.59	4.74	4.74	0.19	0.00	-6.57
440.17	1.64	126.75	440.08	-5.85	5.08	5.08	0.17	0.00	-6.03
455.08	1.65	125.96	454.98	-6.11	5.43	5.42	0.17	0.07	-5.30
470.00	1.65	125.34	469.89	-6.36	5.78	5.77	0.12	0.00	-4.16
483.00	1.66	125.00	482.89	-6.57	6.08	6.08	0.11	0.08	-2.62
496.00	1.67	124.77	495.88	-6.79	6.39	6.39	0.09	0.08	-1.77
509.00	1.68	124.61	508.88	-7.00	6.71	6.70	0.08	0.08	-1.23
522.00	1.69	124.47	521.87	-7.22	7.02	7.01	0.08	0.08	-1.08
535.00	1.71	124.33	534.87	-7.44	7.34	7.33	0.16	0.15	-1.08
548.00	1.74	124.16	547.86	-7.66	7.66	7.66	0.23	0.23	-1.31
561.00	1.78	123.91	560.86	-7.88	7.99	7.99	0.31	0.31	-1.92
575.83	1.84	123.55	575.68	-8.14	8.38	8.38	0.41	0.40	-2.43
590.67	1.91	123.16	590.51	-8.41	8.79	8.78	0.48	0.47	-2.63
605.50	1.98	122.78	605.33	-8.68	9.21	9.20	0.48	0.47	-2.56
620.33	2.06	122.47	620.15	-8.97	9.65	9.64	0.54	0.54	-2.09
635.17	2.13	122.28	634.98	-9.26	10.11	10.10	0.47	0.47	-1.28
650.00	2.20	122.26	649.80	-9.56	10.58	10.57	0.47	0.47	-0.13
663.89	2.25	122.51	663.68	-9.84	11.04	11.03	0.37	0.36	1.80



Survey Report

Company:	Colgate Energy	Local Co-ordinate Reference:	Well Crazy Horse 32 State Fed Com 133H
Project:	Eddy County, NM (N83-NME)	TVD Reference:	3262+30 @ 3292.00usft (HP510)
Site:	Crazy Horse 32 State Fed Com	MD Reference:	3262+30 @ 3292.00usft (HP510)
Well:	Crazy Horse 32 State Fed Com 133H	North Reference:	Grid
Wellbore:	133H	Survey Calculation Method:	Minimum Curvature
Design:	133H	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)	
677.78	2.30	122.88	677.56	-10.14	11.50	11.49	0.38	0.36	2.66	
691.67	2.34	123.32	691.44	-10.45	11.97	11.96	0.32	0.29	3.17	
705.56	2.37	123.76	705.32	-10.76	12.45	12.44	0.25	0.22	3.17	
719.44	2.40	124.15	719.18	-11.09	12.93	12.92	0.25	0.22	2.81	
733.33	2.43	124.45	733.06	-11.42	13.41	13.40	0.23	0.22	2.16	
747.22	2.45	124.60	746.94	-11.75	13.90	13.89	0.15	0.14	1.08	
761.11	2.46	124.50	760.82	-12.09	14.39	14.38	0.08	0.07	-0.72	
775.00	2.45	124.03	774.69	-12.42	14.88	14.87	0.16	-0.07	-3.38	
788.43	2.43	122.94	788.11	-12.74	15.36	15.34	0.38	-0.15	-8.12	
801.86	2.40	121.41	801.53	-13.04	15.84	15.82	0.53	-0.22	-11.39	
815.29	2.36	119.54	814.95	-13.32	16.32	16.30	0.65	-0.30	-13.92	
828.71	2.31	117.35	828.36	-13.58	16.80	16.78	0.76	-0.37	-16.32	
842.14	2.26	114.85	841.78	-13.82	17.28	17.26	0.83	-0.37	-18.62	
855.57	2.20	111.97	855.20	-14.03	17.76	17.74	0.95	-0.45	-21.44	
869.00	2.12	108.58	868.62	-14.20	18.23	18.22	1.12	-0.60	-25.24	
882.57	1.99	105.24	882.18	-14.35	18.70	18.68	1.30	-0.96	-24.61	
896.14	1.85	101.30	895.74	-14.45	19.14	19.13	1.42	-1.03	-29.03	
909.71	1.71	96.73	909.30	-14.52	19.56	19.54	1.47	-1.03	-33.68	
923.29	1.58	91.57	922.88	-14.55	19.94	19.93	1.45	-0.96	-38.00	
936.86	1.48	86.07	936.44	-14.54	20.31	20.29	1.31	-0.74	-40.53	
950.43	1.40	80.77	950.01	-14.50	20.64	20.63	1.14	-0.59	-39.06	
964.00	1.35	76.60	963.58	-14.44	20.96	20.95	0.82	-0.37	-30.73	
977.57	1.33	75.25	977.14	-14.36	21.27	21.26	0.28	-0.15	-9.95	
991.14	1.35	74.94	990.71	-14.28	21.58	21.56	0.16	0.15	-2.28	
1,004.71	1.38	75.18	1,004.27	-14.19	21.89	21.88	0.23	0.22	1.77	
1,018.29	1.43	75.64	1,017.85	-14.11	22.21	22.20	0.38	0.37	3.39	
1,031.86	1.47	76.10	1,031.42	-14.03	22.55	22.53	0.31	0.29	3.39	
1,045.43	1.64	78.79	1,044.98	-13.95	22.91	22.89	1.36	1.25	19.82	
1,059.00	1.81	80.90	1,058.54	-13.88	23.31	23.29	1.34	1.25	15.55	
1,072.43	1.80	81.25	1,071.97	-13.81	23.73	23.71	0.11	-0.07	2.61	
1,085.86	1.79	81.62	1,085.39	-13.75	24.14	24.13	0.11	-0.07	2.76	
1,099.29	1.78	82.00	1,098.82	-13.69	24.56	24.54	0.12	-0.07	2.83	
1,112.71	1.77	82.35	1,112.23	-13.63	24.97	24.95	0.11	-0.07	2.61	
1,126.14	1.77	82.63	1,125.65	-13.58	25.38	25.36	0.06	0.00	2.08	
1,139.57	1.77	82.79	1,139.08	-13.52	25.79	25.78	0.04	0.00	1.19	
1,153.00	1.80	82.74	1,152.50	-13.47	26.20	26.19	0.22	0.22	-0.37	
1,166.57	1.85	82.54	1,166.06	-13.42	26.63	26.62	0.37	0.37	-1.47	
1,180.14	1.92	82.22	1,179.63	-13.36	27.08	27.06	0.52	0.52	-2.36	
1,193.71	2.00	81.84	1,193.19	-13.29	27.54	27.52	0.60	0.59	-2.80	
1,207.29	2.09	81.45	1,206.76	-13.22	28.02	28.00	0.67	0.66	-2.87	
1,220.86	2.17	81.07	1,220.32	-13.15	28.51	28.50	0.60	0.59	-2.80	
1,234.43	2.25	80.72	1,233.88	-13.06	29.03	29.02	0.60	0.59	-2.58	
1,248.00	2.32	80.43	1,247.44	-12.97	29.56	29.55	0.52	0.52	-2.14	
1,261.57	2.36	80.22	1,261.00	-12.88	30.11	30.10	0.30	0.29	-1.55	



Survey Report

Company:	Colgate Energy	Local Co-ordinate Reference:	Well Crazy Horse 32 State Fed Com 133H
Project:	Eddy County, NM (N83-NME)	TVD Reference:	3262+30 @ 3292.00usft (HP510)
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Design:	133H	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)	
1,275.14	2.40	80.03	1,274.56	-12.78	30.67	30.65	0.30	0.29	-1.40	
1,288.71	2.42	79.82	1,288.11	-12.68	31.23	31.21	0.16	0.15	-1.55	
1,297.60	2.43	79.62	1,297.00	-12.62	31.60	31.58	0.18	0.15	-2.25	
Base of Salt										
1,302.29	2.44	79.52	1,301.68	-12.58	31.79	31.78	0.17	0.14	-2.14	
1,315.86	2.45	79.07	1,315.24	-12.47	32.36	32.35	0.16	0.07	-3.32	
1,329.43	2.45	78.37	1,328.80	-12.36	32.93	32.92	0.22	0.00	-5.16	
1,343.00	2.45	77.27	1,342.35	-12.24	33.50	33.49	0.35	0.00	-8.11	
1,356.43	2.45	75.54	1,355.77	-12.10	34.06	34.04	0.55	0.00	-12.88	
1,369.86	2.44	73.45	1,369.19	-11.95	34.61	34.60	0.67	-0.07	-15.56	
1,383.29	2.43	71.17	1,382.61	-11.78	35.15	35.14	0.73	-0.07	-16.98	
1,396.71	2.43	68.87	1,396.02	-11.58	35.69	35.67	0.73	0.00	-17.14	
1,410.14	2.42	66.72	1,409.43	-11.37	36.21	36.20	0.68	-0.07	-16.01	
1,423.57	2.42	64.89	1,422.85	-11.14	36.73	36.72	0.58	0.00	-13.63	
1,437.00	2.42	63.62	1,436.27	-10.89	37.24	37.23	0.40	0.00	-9.46	
1,451.14	2.40	63.36	1,450.40	-10.62	37.77	37.76	0.16	-0.14	-1.84	
1,465.29	2.39	63.76	1,464.53	-10.36	38.30	38.29	0.14	-0.07	2.83	
1,467.76	2.39	63.90	1,467.00	-10.31	38.39	38.38	0.25	-0.07	5.77	
Yates										
1,479.43	2.38	64.58	1,478.66	-10.10	38.83	38.82	0.25	-0.07	5.81	
1,493.57	2.36	65.67	1,492.79	-9.86	39.36	39.35	0.35	-0.14	7.71	
1,507.71	2.35	66.90	1,506.92	-9.62	39.89	39.88	0.36	-0.07	8.70	
1,521.86	2.34	68.19	1,521.06	-9.40	40.43	40.42	0.38	-0.07	9.12	
1,536.00	2.33	69.45	1,535.18	-9.19	40.97	40.96	0.37	-0.07	8.91	
1,550.14	2.31	70.58	1,549.31	-9.00	41.50	41.49	0.35	-0.14	7.99	
1,564.29	2.22	63.78	1,563.45	-8.78	42.02	42.01	2.00	-0.64	-48.06	
1,578.43	2.32	34.97	1,577.58	-8.43	42.43	42.42	8.01	0.71	-203.75	
1,592.57	2.90	13.32	1,591.71	-7.85	42.67	42.67	8.02	4.10	-153.11	
1,606.71	2.95	11.32	1,605.83	-7.14	42.83	42.82	0.80	0.35	-14.14	
1,620.86	2.89	11.23	1,619.96	-6.43	42.97	42.96	0.43	-0.42	-0.64	
1,635.00	2.81	10.42	1,634.08	-5.74	43.10	43.10	0.63	-0.57	-5.73	
1,648.43	2.74	7.89	1,647.50	-5.10	43.21	43.20	1.05	-0.52	-18.84	
1,661.86	2.67	4.47	1,660.91	-4.47	43.27	43.27	1.31	-0.52	-25.47	
1,675.29	2.62	0.49	1,674.33	-3.85	43.30	43.30	1.42	-0.37	-29.64	
1,688.71	2.59	356.31	1,687.73	-3.24	43.28	43.28	1.43	-0.22	-31.15	
1,702.14	2.56	352.27	1,701.15	-2.64	43.22	43.22	1.37	-0.22	-30.08	
1,715.57	2.55	348.78	1,714.57	-2.05	43.13	43.12	1.16	-0.07	-25.99	
1,729.00	2.64	332.49	1,727.98	-1.49	42.92	42.92	5.51	0.67	-121.30	
1,742.57	3.12	312.71	1,741.54	-0.96	42.51	42.51	8.08	3.54	-145.76	
1,756.14	3.86	299.32	1,755.08	-0.48	41.84	41.84	8.08	5.45	-98.67	
1,769.71	4.09	297.25	1,768.62	-0.04	41.01	41.01	2.00	1.69	-15.25	
1,783.29	4.09	298.97	1,782.16	0.42	40.16	40.16	0.90	0.00	12.67	
1,796.86	4.11	300.92	1,795.70	0.90	39.32	39.32	1.04	0.15	14.37	



Survey Report

Company:	Colgate Energy	Local Co-ordinate Reference:	Well Crazy Horse 32 State Fed Com 133H
Project:	Eddy County, NM (N83-NME)	TVD Reference:	3262+30 @ 3292.00usft (HP510)
Site:	Crazy Horse 32 State Fed Com	MD Reference:	3262+30 @ 3292.00usft (HP510)
Well:	Crazy Horse 32 State Fed Com 133H	North Reference:	Grid
Wellbore:	133H	Survey Calculation Method:	Minimum Curvature
Design:	133H	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)
1,810.43	4.12	302.81	1,809.23	1.42	38.49	38.49	1.00	0.07	13.93
1,824.00	4.13	304.34	1,822.77	1.96	37.68	37.68	0.81	0.07	11.27
1,828.24	4.12	304.56	1,827.00	2.13	37.42	37.43	0.44	-0.23	5.27
Capitan									
1,837.43	4.10	305.05	1,836.16	2.50	36.88	36.89	0.44	-0.22	5.29
1,850.86	4.06	305.23	1,849.56	3.05	36.10	36.11	0.31	-0.30	1.34
1,864.29	4.00	304.98	1,862.96	3.60	35.33	35.33	0.47	-0.45	-1.86
1,877.71	3.92	304.35	1,876.35	4.12	34.57	34.57	0.68	-0.60	-4.69
1,891.14	3.82	303.29	1,889.74	4.63	33.81	33.82	0.92	-0.74	-7.89
1,904.57	3.69	301.69	1,903.15	5.10	33.07	33.08	1.24	-0.97	-11.91
1,918.00	3.51	299.28	1,916.55	5.53	32.35	32.35	1.75	-1.34	-17.94
1,931.57	3.23	296.03	1,930.10	5.90	31.64	31.65	2.50	-2.06	-23.95
1,945.14	2.91	291.51	1,943.65	6.19	30.98	30.98	2.96	-2.36	-33.31
1,958.71	2.59	285.51	1,957.20	6.40	30.36	30.37	3.17	-2.36	-44.22
1,972.29	2.31	277.86	1,970.77	6.52	29.79	29.80	3.17	-2.06	-56.33
1,985.86	2.08	268.71	1,984.33	6.55	29.28	29.28	3.08	-1.69	-67.43
1,999.43	1.93	258.87	1,997.89	6.50	28.81	28.81	2.76	-1.11	-72.51
2,013.00	1.85	249.98	2,011.45	6.39	28.38	28.38	2.24	-0.59	-65.51
2,026.43	1.70	247.17	2,024.88	6.23	27.99	28.00	1.29	-1.12	-20.92
2,039.86	1.60	245.73	2,038.30	6.08	27.63	27.64	0.81	-0.74	-10.72
2,053.29	1.55	245.27	2,051.73	5.93	27.30	27.31	0.38	-0.37	-3.43
2,066.71	1.52	245.40	2,065.14	5.78	26.97	26.98	0.23	-0.22	0.97
2,080.14	1.51	245.80	2,078.57	5.63	26.65	26.65	0.11	-0.07	2.98
2,093.57	1.65	248.40	2,091.99	5.49	26.31	26.31	1.17	1.04	19.36
2,107.00	1.80	250.49	2,105.42	5.34	25.93	25.93	1.21	1.12	15.56
2,120.57	1.80	250.92	2,118.98	5.20	25.53	25.53	0.10	0.00	3.17
2,134.14	1.80	251.48	2,132.54	5.07	25.12	25.13	0.13	0.00	4.13
2,147.71	1.81	252.11	2,146.11	4.93	24.72	24.72	0.16	0.07	4.64
2,161.29	1.83	252.75	2,159.68	4.80	24.31	24.31	0.21	0.15	4.71
2,174.86	1.85	253.35	2,173.24	4.68	23.89	23.89	0.20	0.15	4.42
2,188.43	1.87	253.85	2,186.80	4.55	23.47	23.47	0.19	0.15	3.68
2,202.00	1.90	254.20	2,200.37	4.43	23.04	23.04	0.24	0.22	2.58
2,215.43	1.94	254.51	2,213.79	4.31	22.60	22.61	0.31	0.30	2.31
2,228.86	1.97	254.71	2,227.21	4.19	22.16	22.17	0.23	0.22	1.49
2,242.29	2.01	254.83	2,240.63	4.06	21.71	21.72	0.30	0.30	0.89
2,255.71	2.06	254.90	2,254.04	3.94	21.25	21.26	0.37	0.37	0.52
2,269.14	2.10	254.93	2,267.47	3.81	20.78	20.79	0.30	0.30	0.22
2,282.57	2.14	254.94	2,280.89	3.68	20.30	20.31	0.30	0.30	0.07
2,296.00	2.17	254.93	2,294.31	3.55	19.81	19.82	0.22	0.22	-0.07
2,309.57	2.19	254.92	2,307.87	3.42	19.32	19.32	0.15	0.15	-0.07
2,323.14	2.21	254.90	2,321.43	3.28	18.81	18.82	0.15	0.15	-0.15
2,336.71	2.22	254.89	2,334.99	3.14	18.31	18.31	0.07	0.07	-0.07
2,350.29	2.23	254.90	2,348.56	3.01	17.80	17.80	0.07	0.07	0.07
2,363.86	2.24	254.94	2,362.12	2.87	17.29	17.29	0.07	0.07	0.29



Survey Report

Company:	Colgate Energy	Local Co-ordinate Reference:	Well Crazy Horse 32 State Fed Com 133H
Project:	Eddy County, NM (N83-NME)	TVD Reference:	3262+30 @ 3292.00usft (HP510)
Site:	Crazy Horse 32 State Fed Com	MD Reference:	3262+30 @ 3292.00usft (HP510)
Well:	Crazy Horse 32 State Fed Com 133H	North Reference:	Grid
Wellbore:	133H	Survey Calculation Method:	Minimum Curvature
Design:	133H	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)	
2,377.43	2.25	255.01	2,375.68	2.73	16.77	16.78	0.08	0.07	0.52	
2,391.00	2.26	255.15	2,389.24	2.59	16.26	16.26	0.08	0.07	1.03	
2,405.00	2.28	255.39	2,403.22	2.45	15.72	15.72	0.16	0.14	1.71	
2,419.00	2.31	255.69	2,417.21	2.31	15.18	15.18	0.23	0.21	2.14	
2,433.00	2.33	256.03	2,431.20	2.17	14.63	14.63	0.17	0.14	2.43	
2,447.00	2.36	256.37	2,445.19	2.04	14.07	14.07	0.24	0.21	2.43	
2,461.00	2.39	256.72	2,459.18	1.90	13.51	13.51	0.24	0.21	2.50	
2,475.00	2.42	257.05	2,473.17	1.77	12.94	12.94	0.24	0.21	2.36	
2,489.00	2.45	257.35	2,487.15	1.64	12.36	12.36	0.23	0.21	2.14	
2,502.43	2.49	257.63	2,500.57	1.51	11.79	11.79	0.31	0.30	2.08	
2,515.86	2.53	257.88	2,513.99	1.39	11.22	11.22	0.31	0.30	1.86	
2,529.29	2.56	258.11	2,527.40	1.26	10.63	10.63	0.24	0.22	1.71	
2,542.71	2.60	258.31	2,540.81	1.14	10.04	10.04	0.31	0.30	1.49	
2,556.14	2.64	258.48	2,554.23	1.02	9.44	9.44	0.30	0.30	1.27	
2,569.57	2.67	258.61	2,567.64	0.89	8.83	8.83	0.23	0.22	0.97	
2,583.00	2.71	258.69	2,581.06	0.77	8.21	8.21	0.30	0.30	0.60	
2,596.57	2.74	258.70	2,594.61	0.64	7.58	7.58	0.22	0.22	0.07	
2,610.14	2.77	258.66	2,608.17	0.52	6.94	6.94	0.22	0.22	-0.29	
2,623.71	2.80	258.59	2,621.72	0.39	6.29	6.29	0.22	0.22	-0.52	
2,637.29	2.83	258.51	2,635.28	0.25	5.64	5.64	0.22	0.22	-0.59	
2,650.86	2.86	258.40	2,648.84	0.12	4.98	4.98	0.22	0.22	-0.81	
2,664.43	2.89	258.28	2,662.39	-0.02	4.31	4.31	0.23	0.22	-0.88	
2,678.00	2.92	258.14	2,675.94	-0.16	3.64	3.64	0.23	0.22	-1.03	
2,691.43	2.95	257.95	2,689.36	-0.30	2.97	2.97	0.23	0.22	-1.41	
2,704.86	2.99	257.75	2,702.77	-0.45	2.29	2.29	0.31	0.30	-1.49	
2,718.29	3.02	257.55	2,716.18	-0.60	1.60	1.60	0.24	0.22	-1.49	
2,731.71	3.06	257.35	2,729.58	-0.75	0.91	0.90	0.31	0.30	-1.49	
2,745.14	3.10	257.17	2,742.99	-0.91	0.20	0.20	0.31	0.30	-1.34	
2,758.57	3.14	256.99	2,756.40	-1.08	-0.51	-0.51	0.31	0.30	-1.34	
2,772.00	3.19	256.82	2,769.81	-1.24	-1.23	-1.23	0.38	0.37	-1.27	
2,785.57	3.24	256.65	2,783.36	-1.42	-1.97	-1.98	0.38	0.37	-1.25	
2,799.14	3.30	256.51	2,796.91	-1.60	-2.73	-2.73	0.45	0.44	-1.03	
2,812.71	3.36	256.39	2,810.45	-1.78	-3.49	-3.49	0.45	0.44	-0.88	
2,826.29	3.43	256.32	2,824.01	-1.97	-4.27	-4.28	0.52	0.52	-0.52	
2,839.86	3.48	256.31	2,837.56	-2.17	-5.07	-5.07	0.37	0.37	-0.07	
2,853.43	3.53	256.37	2,851.10	-2.36	-5.88	-5.88	0.37	0.37	0.44	
2,867.00	3.57	256.54	2,864.64	-2.56	-6.69	-6.69	0.30	0.29	1.25	
2,880.43	3.59	256.86	2,878.05	-2.75	-7.51	-7.51	0.21	0.15	2.38	
2,893.86	3.60	257.28	2,891.45	-2.94	-8.33	-8.33	0.21	0.07	3.13	
2,907.29	3.60	257.77	2,904.86	-3.12	-9.15	-9.16	0.23	0.00	3.65	
2,920.71	3.59	258.29	2,918.25	-3.30	-9.98	-9.98	0.25	-0.07	3.87	
2,934.14	3.59	258.83	2,931.65	-3.46	-10.80	-10.80	0.25	0.00	4.02	
2,947.57	3.58	259.36	2,945.06	-3.62	-11.62	-11.63	0.26	-0.07	3.95	



Survey Report

Company:	Colgate Energy	Local Co-ordinate Reference:	Well Crazy Horse 32 State Fed Com 133H
Project:	Eddy County, NM (N83-NME)	TVD Reference:	3262+30 @ 3292.00usft (HP510)
Site:	Crazy Horse 32 State Fed Com	MD Reference:	3262+30 @ 3292.00usft (HP510)
Well:	Crazy Horse 32 State Fed Com 133H	North Reference:	Grid
Wellbore:	133H	Survey Calculation Method:	Minimum Curvature
Design:	133H	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)	
2,961.00	3.58	259.83	2,958.46	-3.77	-12.45	-12.45	0.22	0.00	3.50	
2,974.57	3.58	260.22	2,972.00	-3.92	-13.28	-13.29	0.18	0.00	2.87	
2,988.14	2.95	263.33	2,985.55	-4.03	-14.05	-14.05	4.82	-4.64	22.92	
3,001.71	1.96	270.86	2,999.11	-4.07	-14.63	-14.63	7.66	-7.30	55.49	
3,015.29	1.36	280.45	3,012.68	-4.04	-15.02	-15.02	4.85	-4.42	70.62	
3,028.86	1.37	280.51	3,026.25	-3.98	-15.34	-15.34	0.07	0.07	0.44	
3,042.43	1.39	280.51	3,039.82	-3.92	-15.66	-15.66	0.15	0.15	0.00	
3,056.00	1.40	280.54	3,053.38	-3.86	-15.98	-15.99	0.07	0.07	0.22	
3,069.43	1.43	280.74	3,066.81	-3.80	-16.31	-16.31	0.23	0.22	1.49	
3,082.86	1.45	281.00	3,080.23	-3.73	-16.64	-16.64	0.16	0.15	1.94	
3,096.29	1.49	281.28	3,093.66	-3.67	-16.98	-16.98	0.30	0.30	2.08	
3,109.71	1.52	281.52	3,107.07	-3.60	-17.32	-17.33	0.23	0.22	1.79	
3,123.14	1.55	281.68	3,120.50	-3.53	-17.67	-17.68	0.23	0.22	1.19	
3,136.57	1.58	281.69	3,133.92	-3.45	-18.03	-18.04	0.22	0.22	0.07	
3,150.00	1.61	281.47	3,147.35	-3.38	-18.40	-18.40	0.23	0.22	-1.64	
3,164.86	1.64	280.81	3,162.20	-3.30	-18.81	-18.82	0.24	0.20	-4.44	
3,179.71	1.66	279.92	3,177.05	-3.22	-19.23	-19.24	0.22	0.13	-5.99	
3,194.57	1.68	278.90	3,191.90	-3.15	-19.66	-19.66	0.24	0.13	-6.86	
3,209.43	1.70	277.81	3,206.75	-3.08	-20.10	-20.10	0.25	0.13	-7.34	
3,224.29	1.72	276.68	3,221.61	-3.03	-20.54	-20.54	0.26	0.13	-7.60	
3,239.14	1.74	275.53	3,236.45	-2.98	-20.98	-20.98	0.27	0.13	-7.74	
3,254.00	1.76	274.34	3,251.30	-2.94	-21.43	-21.44	0.28	0.13	-8.01	
3,268.25	1.78	272.99	3,265.55	-2.91	-21.87	-21.88	0.32	0.14	-9.47	
3,282.50	1.80	271.70	3,279.79	-2.90	-22.32	-22.32	0.32	0.14	-9.05	
3,296.75	1.83	270.64	3,294.03	-2.89	-22.77	-22.77	0.32	0.21	-7.44	
3,311.00	1.85	269.97	3,308.28	-2.88	-23.23	-23.23	0.21	0.14	-4.70	
3,325.25	1.87	269.90	3,322.52	-2.88	-23.69	-23.69	0.14	0.14	-0.49	
3,339.50	1.88	270.73	3,336.76	-2.88	-24.15	-24.16	0.20	0.07	5.82	
3,353.75	1.89	272.89	3,351.00	-2.87	-24.62	-24.63	0.50	0.07	15.16	
3,368.00	1.89	277.10	3,365.24	-2.83	-25.09	-25.09	0.97	0.00	29.54	
3,381.43	1.90	284.27	3,378.67	-2.74	-25.53	-25.53	1.77	0.07	53.39	
3,394.77	1.95	292.88	3,392.00	-2.60	-25.95	-25.95	2.20	0.37	64.57	
DLWR Mnt Group										
3,394.86	1.95	292.94	3,392.09	-2.60	-25.95	-25.96	2.20	0.53	62.68	
3,408.29	2.04	301.82	3,405.51	-2.38	-26.37	-26.37	2.39	0.67	66.12	
3,421.71	2.19	309.85	3,418.92	-2.09	-26.77	-26.77	2.47	1.12	59.84	
3,435.14	2.36	316.44	3,432.34	-1.73	-27.15	-27.16	2.32	1.27	49.07	
3,448.57	2.54	321.31	3,445.76	-1.30	-27.53	-27.53	2.05	1.34	36.26	
3,462.00	3.32	331.92	3,459.17	-0.72	-27.90	-27.90	7.05	5.81	79.00	
3,475.57	4.55	340.48	3,472.71	0.13	-28.26	-28.26	10.02	9.06	63.08	
3,489.14	5.29	344.08	3,486.23	1.24	-28.62	-28.61	5.91	5.45	26.53	
3,502.71	5.34	344.40	3,499.74	2.45	-28.96	-28.95	0.43	0.37	2.36	
3,516.29	5.40	344.41	3,513.26	3.68	-29.30	-29.29	0.44	0.44	0.07	
3,529.86	5.46	344.25	3,526.77	4.91	-29.65	-29.64	0.46	0.44	-1.18	



Survey Report

Company:	Colgate Energy	Local Co-ordinate Reference:	Well Crazy Horse 32 State Fed Com 133H
Project:	Eddy County, NM (N83-NME)	TVD Reference:	3262+30 @ 3292.00usft (HP510)
Site:	Crazy Horse 32 State Fed Com	MD Reference:	3262+30 @ 3292.00usft (HP510)
Well:	Crazy Horse 32 State Fed Com 133H	North Reference:	Grid
Wellbore:	133H	Survey Calculation Method:	Minimum Curvature
Design:	133H	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)	
3,543.43	5.51	344.01	3,540.28	6.16	-30.00	-29.99	0.41	0.37	-1.77	
3,557.00	5.54	343.79	3,553.79	7.41	-30.36	-30.35	0.27	0.22	-1.62	
3,570.43	5.54	343.66	3,567.15	8.66	-30.73	-30.72	0.09	0.00	-0.97	
3,583.86	5.52	343.61	3,580.52	9.90	-31.09	-31.08	0.15	-0.15	-0.37	
3,597.29	5.49	343.58	3,593.89	11.14	-31.45	-31.44	0.22	-0.22	-0.22	
3,610.71	5.45	343.56	3,607.25	12.36	-31.82	-31.80	0.30	-0.30	-0.15	
3,624.14	5.42	343.52	3,620.62	13.58	-32.18	-32.16	0.23	-0.22	-0.30	
3,637.57	5.39	343.43	3,633.99	14.80	-32.54	-32.52	0.23	-0.22	-0.67	
3,651.00	5.37	343.28	3,647.36	16.00	-32.90	-32.88	0.18	-0.15	-1.12	
3,664.57	5.37	343.01	3,660.87	17.22	-33.26	-33.25	0.19	0.00	-1.99	
3,678.14	5.38	342.66	3,674.38	18.43	-33.64	-33.62	0.25	0.07	-2.58	
3,691.71	5.40	342.27	3,687.89	19.65	-34.02	-34.00	0.31	0.15	-2.87	
3,705.29	5.43	341.86	3,701.41	20.87	-34.42	-34.40	0.36	0.22	-3.02	
3,718.86	5.45	341.45	3,714.92	22.09	-34.82	-34.80	0.32	0.15	-3.02	
3,732.43	5.47	341.06	3,728.43	23.31	-35.24	-35.21	0.31	0.15	-2.87	
3,746.00	5.47	340.70	3,741.93	24.53	-35.66	-35.64	0.25	0.00	-2.65	
3,759.43	5.47	340.44	3,755.30	25.74	-36.09	-36.06	0.18	0.00	-1.94	
3,772.86	5.45	340.23	3,768.67	26.94	-36.52	-36.49	0.21	-0.15	-1.56	
3,786.29	5.42	340.04	3,782.04	28.14	-36.95	-36.92	0.26	-0.22	-1.41	
3,799.71	5.39	339.86	3,795.40	29.33	-37.38	-37.35	0.26	-0.22	-1.34	
3,813.14	5.36	339.68	3,808.77	30.51	-37.82	-37.79	0.26	-0.22	-1.34	
3,826.57	5.33	339.48	3,822.14	31.68	-38.26	-38.22	0.26	-0.22	-1.49	
3,840.00	5.30	339.24	3,835.52	32.84	-38.69	-38.66	0.28	-0.22	-1.79	
3,853.57	5.27	338.94	3,849.03	34.01	-39.14	-39.10	0.30	-0.22	-2.21	
3,867.14	5.24	338.61	3,862.54	35.17	-39.59	-39.55	0.31	-0.22	-2.43	
3,880.71	5.21	338.27	3,876.06	36.32	-40.04	-40.01	0.32	-0.22	-2.51	
3,894.29	5.18	337.95	3,889.58	37.46	-40.50	-40.46	0.31	-0.22	-2.36	
3,907.86	5.16	337.67	3,903.09	38.59	-40.96	-40.92	0.24	-0.15	-2.06	
3,921.43	5.15	337.48	3,916.61	39.72	-41.43	-41.39	0.15	-0.07	-1.40	
3,935.00	5.14	337.44	3,930.13	40.84	-41.90	-41.85	0.08	-0.07	-0.29	
3,948.57	5.15	337.63	3,943.64	41.97	-42.36	-42.32	0.15	0.07	1.40	
3,962.14	5.17	337.96	3,957.16	43.10	-42.82	-42.78	0.26	0.15	2.43	
3,975.71	5.20	338.36	3,970.67	44.24	-43.28	-43.23	0.35	0.22	2.95	
3,989.29	5.23	338.78	3,984.19	45.39	-43.73	-43.68	0.36	0.22	3.09	
4,002.86	5.28	339.17	3,997.71	46.55	-44.18	-44.13	0.45	0.37	2.87	
4,016.43	5.33	339.51	4,011.22	47.72	-44.62	-44.57	0.44	0.37	2.51	
4,030.00	5.39	339.74	4,024.73	48.91	-45.06	-45.01	0.47	0.44	1.69	
4,043.43	5.64	343.74	4,038.10	50.13	-45.46	-45.41	3.41	1.86	29.78	
4,056.86	6.41	349.04	4,051.45	51.50	-45.79	-45.74	7.07	5.73	39.46	
4,070.29	6.99	349.95	4,064.79	53.04	-46.07	-46.02	4.39	4.32	6.78	
4,083.71	7.11	349.82	4,078.11	54.67	-46.36	-46.31	0.90	0.89	-0.97	
4,097.14	7.23	349.65	4,091.43	56.32	-46.66	-46.60	0.91	0.89	-1.27	
4,110.57	7.34	349.44	4,104.76	57.99	-46.97	-46.91	0.84	0.82	-1.56	



Survey Report

Company:	Colgate Energy	Local Co-ordinate Reference:	Well Crazy Horse 32 State Fed Com 133H
Project:	Eddy County, NM (N83-NME)	TVD Reference:	3262+30 @ 3292.00usft (HP510)
Site:	Crazy Horse 32 State Fed Com	MD Reference:	3262+30 @ 3292.00usft (HP510)
Well:	Crazy Horse 32 State Fed Com 133H	North Reference:	Grid
Wellbore:	133H	Survey Calculation Method:	Minimum Curvature
Design:	133H	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)
4,124.00	7.42	349.19	4,118.07	59.69	-47.29	-47.23	0.64	0.60	-1.86
4,137.43	7.46	348.86	4,131.39	61.39	-47.62	-47.56	0.44	0.30	-2.46
4,150.86	7.47	348.50	4,144.71	63.10	-47.97	-47.90	0.36	0.07	-2.68
4,164.29	7.45	348.12	4,158.02	64.81	-48.32	-48.25	0.40	-0.15	-2.83
4,177.71	7.43	347.72	4,171.33	66.51	-48.68	-48.61	0.41	-0.15	-2.98
4,191.14	7.40	347.33	4,184.65	68.20	-49.06	-48.99	0.44	-0.22	-2.90
4,204.57	7.36	346.94	4,197.97	69.88	-49.44	-49.37	0.48	-0.30	-2.90
4,218.00	7.33	346.56	4,211.29	71.56	-49.83	-49.76	0.43	-0.22	-2.83
4,231.57	7.30	346.22	4,224.75	73.23	-50.24	-50.16	0.39	-0.22	-2.51
4,245.14	7.27	345.89	4,238.21	74.90	-50.66	-50.58	0.38	-0.22	-2.43
4,258.71	7.24	345.58	4,251.67	76.57	-51.08	-51.00	0.36	-0.22	-2.28
4,272.29	7.21	345.27	4,265.14	78.22	-51.51	-51.43	0.36	-0.22	-2.28
4,285.86	7.18	344.97	4,278.60	79.86	-51.94	-51.86	0.35	-0.22	-2.21
4,299.43	7.14	344.67	4,292.07	81.49	-52.39	-52.30	0.40	-0.29	-2.21
4,313.00	7.09	344.37	4,305.53	83.11	-52.84	-52.75	0.46	-0.37	-2.21
4,326.43	7.02	344.08	4,318.86	84.70	-53.28	-53.20	0.58	-0.52	-2.16
4,339.86	6.94	343.80	4,332.19	86.27	-53.74	-53.64	0.65	-0.60	-2.08
4,353.29	6.86	343.55	4,345.53	87.82	-54.19	-54.10	0.64	-0.60	-1.86
4,366.71	6.79	343.37	4,358.85	89.35	-54.64	-54.55	0.55	-0.52	-1.34
4,380.14	6.73	343.28	4,372.19	90.86	-55.10	-55.00	0.45	-0.45	-0.67
4,393.57	6.69	343.34	4,385.53	92.36	-55.55	-55.45	0.30	-0.30	0.45
4,407.00	6.69	343.64	4,398.86	93.86	-55.99	-55.89	0.26	0.00	2.23
4,420.57	6.75	344.31	4,412.34	95.39	-56.43	-56.33	0.73	0.44	4.94
4,434.14	6.85	345.16	4,425.81	96.94	-56.85	-56.75	1.05	0.74	6.26
4,447.71	6.97	346.08	4,439.29	98.52	-57.26	-57.16	1.20	0.88	6.78
4,461.29	7.10	346.99	4,452.76	100.14	-57.65	-57.54	1.26	0.96	6.70
4,474.86	7.22	347.81	4,466.23	101.79	-58.01	-57.91	1.16	0.88	6.04
4,488.43	7.32	348.47	4,479.69	103.47	-58.37	-58.26	0.96	0.74	4.86
4,502.00	7.49	349.63	4,493.15	105.19	-58.70	-58.59	1.67	1.25	8.55
4,515.43	8.32	354.44	4,506.45	107.02	-58.95	-58.84	7.90	6.18	35.82
4,528.86	8.86	358.17	4,519.73	109.02	-59.08	-58.96	5.78	4.02	27.77
4,542.29	8.78	357.69	4,533.00	111.07	-59.15	-59.04	0.81	-0.60	-3.57
4,555.71	8.67	357.05	4,546.26	113.11	-59.25	-59.13	1.09	-0.82	-4.77
4,569.14	8.56	356.33	4,559.54	115.12	-59.36	-59.24	1.15	-0.82	-5.36
4,582.57	8.43	355.62	4,572.82	117.09	-59.50	-59.38	1.24	-0.97	-5.29
4,596.00	8.32	355.00	4,586.11	119.04	-59.66	-59.54	1.06	-0.82	-4.62
4,609.57	8.20	354.71	4,599.54	120.99	-59.84	-59.71	0.94	-0.88	-2.14
4,623.14	8.10	354.56	4,612.97	122.90	-60.02	-59.89	0.75	-0.74	-1.11
4,636.71	8.01	354.50	4,626.41	124.79	-60.20	-60.07	0.67	-0.66	-0.44
4,650.29	7.93	354.48	4,639.86	126.67	-60.38	-60.24	0.59	-0.59	-0.15
4,663.86	7.86	354.48	4,653.30	128.52	-60.56	-60.42	0.52	-0.52	0.00
4,677.43	7.79	354.46	4,666.74	130.36	-60.73	-60.60	0.52	-0.52	-0.15
4,691.00	7.74	354.39	4,680.19	132.19	-60.91	-60.77	0.37	-0.37	-0.52



Survey Report

Company:	Colgate Energy	Local Co-ordinate Reference:	Well Crazy Horse 32 State Fed Com 133H
Project:	Eddy County, NM (N83-NME)	TVD Reference:	3262+30 @ 3292.00usft (HP510)
Site:	Crazy Horse 32 State Fed Com	MD Reference:	3262+30 @ 3292.00usft (HP510)
Well:	Crazy Horse 32 State Fed Com 133H	North Reference:	Grid
Wellbore:	133H	Survey Calculation Method:	Minimum Curvature
Design:	133H	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)	
4,704.43	7.71	354.23	4,693.50	133.98	-61.09	-60.95	0.27	-0.22	-1.19	
4,717.86	7.70	354.00	4,706.81	135.77	-61.28	-61.13	0.24	-0.07	-1.71	
4,731.29	7.69	353.73	4,720.12	137.56	-61.47	-61.32	0.28	-0.07	-2.01	
4,744.71	7.68	353.43	4,733.41	139.35	-61.67	-61.52	0.31	-0.07	-2.24	
4,758.14	7.68	353.08	4,746.72	141.13	-61.88	-61.73	0.35	0.00	-2.61	
4,771.57	7.67	352.71	4,760.03	142.91	-62.10	-61.95	0.38	-0.07	-2.76	
4,785.00	7.66	352.30	4,773.34	144.68	-62.34	-62.18	0.41	-0.07	-3.05	
4,798.43	7.63	351.84	4,786.65	146.45	-62.58	-62.43	0.51	-0.22	-3.43	
4,811.86	7.59	351.36	4,799.97	148.21	-62.84	-62.69	0.56	-0.30	-3.57	
4,825.29	7.55	350.84	4,813.28	149.96	-63.12	-62.96	0.59	-0.30	-3.87	
4,838.71	7.50	350.31	4,826.58	151.69	-63.40	-63.24	0.64	-0.37	-3.95	
4,852.14	7.45	349.76	4,839.90	153.42	-63.71	-63.54	0.65	-0.37	-4.10	
4,865.57	7.40	349.19	4,853.22	155.12	-64.02	-63.86	0.66	-0.37	-4.24	
4,879.00	7.35	348.62	4,866.54	156.81	-64.35	-64.19	0.66	-0.37	-4.24	
4,892.43	7.29	348.07	4,879.86	158.49	-64.70	-64.53	0.69	-0.45	-4.10	
4,905.86	7.23	347.52	4,893.18	160.15	-65.06	-64.89	0.68	-0.45	-4.10	
4,919.29	7.18	346.96	4,906.50	161.79	-65.43	-65.26	0.64	-0.37	-4.17	
4,932.71	7.12	346.40	4,919.82	163.42	-65.82	-65.64	0.69	-0.45	-4.17	
4,946.14	7.07	345.83	4,933.15	165.03	-66.21	-66.04	0.64	-0.37	-4.24	
4,959.57	7.02	345.25	4,946.47	166.62	-66.62	-66.45	0.65	-0.37	-4.32	
4,973.00	6.99	344.67	4,959.80	168.20	-67.05	-66.87	0.57	-0.22	-4.32	
4,986.57	6.96	344.10	4,973.27	169.79	-67.49	-67.32	0.56	-0.22	-4.20	
5,000.14	6.94	343.53	4,986.74	171.37	-67.95	-67.77	0.53	-0.15	-4.20	
5,013.71	6.93	342.98	5,000.21	172.94	-68.42	-68.24	0.49	-0.07	-4.05	
5,027.29	6.92	342.44	5,013.70	174.50	-68.91	-68.73	0.49	-0.07	-3.98	
5,040.86	6.90	341.93	5,027.17	176.05	-69.41	-69.22	0.48	-0.15	-3.76	
5,054.43	6.88	341.48	5,040.64	177.60	-69.92	-69.73	0.42	-0.15	-3.32	
5,068.00	6.84	341.08	5,054.11	179.13	-70.44	-70.25	0.46	-0.29	-2.95	
5,081.43	6.79	340.82	5,067.45	180.64	-70.96	-70.77	0.44	-0.37	-1.94	
5,094.86	6.72	340.64	5,080.78	182.13	-71.48	-71.29	0.54	-0.52	-1.34	
5,108.29	6.64	340.53	5,094.12	183.61	-72.00	-71.81	0.60	-0.60	-0.82	
5,121.71	6.58	340.47	5,107.45	185.06	-72.52	-72.32	0.45	-0.45	-0.45	
5,135.14	6.52	340.48	5,120.80	186.51	-73.03	-72.83	0.45	-0.45	0.07	
5,148.57	6.48	340.57	5,134.14	187.94	-73.54	-73.34	0.31	-0.30	0.67	
5,162.00	6.48	340.75	5,147.48	189.37	-74.04	-73.84	0.15	0.00	1.34	
5,175.57	6.52	341.11	5,160.97	190.82	-74.54	-74.34	0.42	0.29	2.65	
5,189.14	6.60	341.54	5,174.45	192.29	-75.04	-74.83	0.69	0.59	3.17	
5,202.71	6.69	341.98	5,187.93	193.78	-75.53	-75.32	0.76	0.66	3.24	
5,216.29	6.80	342.40	5,201.41	195.30	-76.02	-75.81	0.89	0.81	3.09	
5,229.86	6.90	342.74	5,214.89	196.84	-76.50	-76.29	0.80	0.74	2.51	
5,243.43	7.00	342.97	5,228.36	198.41	-76.98	-76.78	0.76	0.74	1.69	
5,257.00	7.08	343.00	5,241.82	200.00	-77.47	-77.26	0.59	0.59	0.22	
5,270.43	7.63	345.71	5,255.14	201.66	-77.93	-77.72	4.84	4.10	20.18	
5,283.86	8.37	350.58	5,268.44	203.49	-78.31	-78.10	7.47	5.51	36.26	



Survey Report

Company:	Colgate Energy	Local Co-ordinate Reference:	Well Crazy Horse 32 State Fed Com 133H
Project:	Eddy County, NM (N83-NME)	TVD Reference:	3262+30 @ 3292.00usft (HP510)
Site:	Crazy Horse 32 State Fed Com	MD Reference:	3262+30 @ 3292.00usft (HP510)
Well:	Crazy Horse 32 State Fed Com 133H	North Reference:	Grid
Wellbore:	133H	Survey Calculation Method:	Minimum Curvature
Design:	133H	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)	
5,297.29	8.76	352.88	5,281.72	205.47	-78.60	-78.38	3.86	2.90	17.13	
5,310.71	8.76	352.17	5,294.99	207.49	-78.87	-78.65	0.81	0.00	-5.29	
5,324.14	8.75	351.39	5,308.26	209.52	-79.16	-78.94	0.89	-0.07	-5.81	
5,337.57	8.74	350.62	5,321.53	211.53	-79.48	-79.26	0.87	-0.07	-5.73	
5,351.00	8.73	349.94	5,334.81	213.54	-79.82	-79.60	0.77	-0.07	-5.06	
5,364.57	8.70	349.48	5,348.22	215.57	-80.19	-79.96	0.56	-0.22	-3.39	
5,378.14	8.66	349.16	5,361.64	217.58	-80.57	-80.34	0.46	-0.29	-2.36	
5,391.71	8.63	348.93	5,375.05	219.58	-80.96	-80.73	0.34	-0.22	-1.69	
5,405.29	8.60	348.76	5,388.48	221.58	-81.35	-81.12	0.29	-0.22	-1.25	
5,418.86	8.57	348.62	5,401.90	223.56	-81.75	-81.51	0.27	-0.22	-1.03	
5,432.43	8.54	348.50	5,415.31	225.54	-82.15	-81.91	0.26	-0.22	-0.88	
5,446.00	8.52	348.38	5,428.73	227.51	-82.55	-82.31	0.20	-0.15	-0.88	
5,459.43	8.50	348.25	5,442.02	229.46	-82.95	-82.71	0.21	-0.15	-0.97	
5,472.86	8.48	348.12	5,455.30	231.40	-83.36	-83.12	0.21	-0.15	-0.97	
5,486.29	8.47	347.99	5,468.58	233.34	-83.77	-83.52	0.16	-0.07	-0.97	
5,499.71	8.46	347.86	5,481.86	235.27	-84.18	-83.94	0.16	-0.07	-0.97	
5,513.14	8.44	347.74	5,495.14	237.20	-84.60	-84.35	0.20	-0.15	-0.89	
5,526.57	8.42	347.63	5,508.43	239.12	-85.02	-84.77	0.19	-0.15	-0.82	
5,540.00	8.40	347.55	5,521.71	241.04	-85.44	-85.19	0.17	-0.15	-0.60	
5,553.43	8.36	347.49	5,535.00	242.95	-85.86	-85.61	0.30	-0.30	-0.45	
5,566.86	8.32	347.46	5,548.29	244.85	-86.29	-86.03	0.30	-0.30	-0.22	
5,580.29	8.28	347.44	5,561.58	246.74	-86.71	-86.45	0.30	-0.30	-0.15	
5,593.71	8.23	347.42	5,574.86	248.63	-87.13	-86.87	0.37	-0.37	-0.15	
5,607.14	8.18	347.41	5,588.15	250.50	-87.54	-87.28	0.37	-0.37	-0.07	
5,620.57	8.13	347.39	5,601.44	252.35	-87.96	-87.70	0.37	-0.37	-0.15	
5,634.00	8.07	347.36	5,614.74	254.20	-88.37	-88.11	0.45	-0.45	-0.22	
5,647.43	8.02	347.31	5,628.04	256.04	-88.79	-88.52	0.38	-0.37	-0.37	
5,660.86	7.96	347.25	5,641.34	257.86	-89.20	-88.93	0.45	-0.45	-0.45	
5,674.29	7.90	347.16	5,654.64	259.66	-89.61	-89.33	0.46	-0.45	-0.67	
5,687.71	7.85	347.06	5,667.93	261.46	-90.02	-89.74	0.39	-0.37	-0.75	
5,701.14	7.79	346.94	5,681.24	263.24	-90.43	-90.15	0.46	-0.45	-0.89	
5,714.57	7.73	346.78	5,694.54	265.00	-90.84	-90.56	0.47	-0.45	-1.19	
5,728.00	7.67	346.58	5,707.85	266.75	-91.25	-90.98	0.49	-0.45	-1.49	
5,741.43	7.61	346.32	5,721.16	268.49	-91.67	-91.39	0.52	-0.45	-1.94	
5,754.86	7.55	346.01	5,734.48	270.21	-92.10	-91.81	0.54	-0.45	-2.31	
5,768.29	7.49	345.68	5,747.79	271.91	-92.53	-92.24	0.55	-0.45	-2.46	
5,781.71	7.43	345.34	5,761.10	273.60	-92.96	-92.68	0.56	-0.45	-2.53	
5,795.14	7.38	345.01	5,774.42	275.27	-93.41	-93.12	0.49	-0.37	-2.46	
5,808.57	7.32	344.71	5,787.73	276.93	-93.85	-93.56	0.53	-0.45	-2.23	
5,822.00	7.26	344.45	5,801.06	278.57	-94.31	-94.02	0.51	-0.45	-1.94	
5,835.57	7.20	344.31	5,814.52	280.22	-94.77	-94.47	0.46	-0.44	-1.03	
5,849.14	7.14	344.23	5,827.98	281.85	-95.23	-94.93	0.45	-0.44	-0.59	
5,862.71	7.09	344.18	5,841.45	283.47	-95.68	-95.39	0.37	-0.37	-0.37	



Survey Report

Company:	Colgate Energy	Local Co-ordinate Reference:	Well Crazy Horse 32 State Fed Com 133H
Project:	Eddy County, NM (N83-NME)	TVD Reference:	3262+30 @ 3292.00usft (HP510)
Site:	Crazy Horse 32 State Fed Com	MD Reference:	3262+30 @ 3292.00usft (HP510)
Well:	Crazy Horse 32 State Fed Com 133H	North Reference:	Grid
Wellbore:	133H	Survey Calculation Method:	Minimum Curvature
Design:	133H	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)	
5,876.29	7.03	344.14	5,854.92	285.07	-96.14	-95.84	0.44	-0.44	-0.29	
5,888.46	6.97	344.10	5,867.00	286.50	-96.54	-96.24	0.52	-0.52	-0.37	
Lower Brushy Canyon										
5,889.86	6.96	344.09	5,868.39	286.66	-96.59	-96.29	0.52	-0.52	-0.37	
5,903.43	6.90	344.01	5,881.86	288.24	-97.04	-96.74	0.45	-0.44	-0.59	
5,917.00	6.83	343.87	5,895.34	289.80	-97.49	-97.19	0.53	-0.52	-1.03	
5,930.43	6.75	343.63	5,908.67	291.32	-97.93	-97.63	0.63	-0.60	-1.79	
5,943.86	6.66	343.33	5,922.01	292.82	-98.38	-98.07	0.72	-0.67	-2.23	
5,957.29	6.58	343.03	5,935.35	294.30	-98.83	-98.52	0.65	-0.60	-2.23	
5,970.71	6.50	342.77	5,948.68	295.77	-99.28	-98.97	0.64	-0.60	-1.94	
5,984.14	6.44	342.60	5,962.03	297.21	-99.73	-99.42	0.47	-0.45	-1.27	
5,997.57	6.39	342.60	5,975.37	298.64	-100.18	-99.86	0.37	-0.37	0.00	
6,011.00	6.36	342.88	5,988.72	300.07	-100.62	-100.31	0.32	-0.22	2.08	
6,024.57	6.39	343.61	6,002.21	301.51	-101.05	-100.74	0.64	0.22	5.38	
6,038.14	6.44	344.57	6,015.69	302.97	-101.47	-101.15	0.87	0.37	7.07	
6,051.71	6.51	345.63	6,029.18	304.45	-101.86	-101.54	1.02	0.52	7.81	
6,065.29	6.58	346.68	6,042.67	305.95	-102.23	-101.91	1.02	0.52	7.73	
6,078.86	6.65	347.62	6,056.15	307.47	-102.58	-102.26	0.95	0.52	6.93	
6,092.43	6.71	348.36	6,069.63	309.02	-102.91	-102.59	0.77	0.44	5.45	
6,106.00	6.96	352.00	6,083.10	310.61	-103.18	-102.86	3.68	1.84	26.82	
6,119.43	7.45	358.66	6,096.42	312.28	-103.32	-102.99	7.20	3.65	49.59	
6,132.86	7.59	1.15	6,109.74	314.04	-103.32	-102.99	2.64	1.04	18.54	
6,146.29	7.53	0.56	6,123.05	315.81	-103.29	-102.96	0.73	-0.45	-4.39	
6,159.71	7.46	359.82	6,136.36	317.56	-103.29	-102.95	0.89	-0.52	-5.51	
6,173.14	7.38	358.99	6,149.67	319.29	-103.31	-102.97	1.00	-0.60	-6.18	
6,175.49	7.36	358.85	6,152.00	319.59	-103.31	-102.98	1.03	-0.67	-6.04	
Bone Spring Lime										
6,186.57	7.29	358.17	6,162.99	321.01	-103.35	-103.01	1.03	-0.67	-6.12	
6,200.00	7.20	357.45	6,176.32	322.70	-103.41	-103.07	0.95	-0.67	-5.36	
6,213.43	7.09	357.07	6,189.64	324.37	-103.49	-103.15	0.89	-0.82	-2.83	
6,226.86	6.97	356.84	6,202.97	326.01	-103.58	-103.24	0.92	-0.89	-1.71	
6,240.29	6.86	356.71	6,216.30	327.62	-103.67	-103.33	0.83	-0.82	-0.97	
6,253.71	6.75	356.64	6,229.63	329.21	-103.76	-103.42	0.82	-0.82	-0.52	
6,267.14	6.64	356.60	6,242.97	330.77	-103.85	-103.51	0.82	-0.82	-0.30	
6,280.57	6.54	356.56	6,256.31	332.31	-103.95	-103.60	0.75	-0.74	-0.30	
6,294.00	6.45	356.51	6,269.65	333.83	-104.04	-103.69	0.67	-0.67	-0.37	
6,307.57	6.37	356.39	6,283.14	335.34	-104.13	-103.78	0.60	-0.59	-0.88	
6,321.14	6.31	356.24	6,296.62	336.84	-104.23	-103.88	0.46	-0.44	-1.11	
6,334.71	6.24	356.06	6,310.11	338.32	-104.33	-103.97	0.54	-0.52	-1.33	
6,348.29	6.19	355.83	6,323.61	339.78	-104.43	-104.08	0.41	-0.37	-1.69	
6,361.86	6.13	355.56	6,337.11	341.23	-104.54	-104.18	0.49	-0.44	-1.99	
6,375.43	6.06	355.23	6,350.60	342.67	-104.66	-104.30	0.58	-0.52	-2.43	
6,389.00	5.99	354.84	6,364.09	344.09	-104.78	-104.42	0.60	-0.52	-2.87	
6,402.43	5.90	354.37	6,377.45	345.47	-104.91	-104.55	0.76	-0.67	-3.50	



Survey Report

Company:	Colgate Energy	Local Co-ordinate Reference:	Well Crazy Horse 32 State Fed Com 133H
Project:	Eddy County, NM (N83-NME)	TVD Reference:	3262+30 @ 3292.00usft (HP510)
Site:	Crazy Horse 32 State Fed Com	MD Reference:	3262+30 @ 3292.00usft (HP510)
Well:	Crazy Horse 32 State Fed Com 133H	North Reference:	Grid
Wellbore:	133H	Survey Calculation Method:	Minimum Curvature
Design:	133H	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)
6,415.86	5.81	353.83	6,390.81	346.84	-105.05	-104.69	0.79	-0.67	-4.02
6,429.29	5.72	353.25	6,404.17	348.18	-105.20	-104.84	0.80	-0.67	-4.32
6,442.71	5.63	352.64	6,417.53	349.49	-105.37	-105.00	0.81	-0.67	-4.55
6,456.14	5.57	352.04	6,430.89	350.79	-105.54	-105.17	0.62	-0.45	-4.47
6,469.57	5.54	351.48	6,444.26	352.08	-105.73	-105.36	0.46	-0.22	-4.17
6,483.00	5.55	351.02	6,457.63	353.36	-105.92	-105.55	0.34	0.07	-3.43
6,496.43	5.63	350.70	6,470.99	354.65	-106.13	-105.76	0.64	0.60	-2.38
6,509.86	5.75	350.45	6,484.36	355.97	-106.35	-105.98	0.91	0.89	-1.86
6,523.29	5.90	350.24	6,497.72	357.31	-106.58	-106.21	1.13	1.12	-1.56
6,536.71	6.05	350.02	6,511.07	358.69	-106.82	-106.44	1.13	1.12	-1.64
6,550.14	6.20	349.76	6,524.42	360.10	-107.07	-106.69	1.14	1.12	-1.94
6,563.57	6.33	349.42	6,537.77	361.54	-107.34	-106.96	1.01	0.97	-2.53
6,577.00	6.96	350.14	6,551.11	363.07	-107.61	-107.23	4.73	4.69	5.36
6,590.57	7.93	351.30	6,564.56	364.80	-107.89	-107.51	7.23	7.15	8.55
6,604.14	8.77	351.94	6,577.99	366.75	-108.18	-107.80	6.23	6.19	4.72
6,617.71	8.77	350.95	6,591.40	368.80	-108.49	-108.10	1.11	0.00	-7.30
6,631.29	8.75	349.82	6,604.82	370.84	-108.83	-108.44	1.28	-0.15	-8.32
6,644.86	8.73	348.68	6,618.24	372.86	-109.22	-108.83	1.28	-0.15	-8.40
6,658.43	8.70	347.61	6,631.65	374.88	-109.64	-109.25	1.22	-0.22	-7.89
6,672.00	8.67	346.74	6,645.06	376.88	-110.09	-109.70	0.99	-0.22	-6.41
6,685.43	8.61	346.31	6,658.34	378.84	-110.56	-110.17	0.66	-0.45	-3.20
6,698.86	8.55	346.11	6,671.62	380.78	-111.04	-110.64	0.50	-0.45	-1.49
6,712.29	8.48	346.07	6,684.90	382.71	-111.52	-111.12	0.52	-0.52	-0.30
6,725.71	8.41	346.12	6,698.18	384.63	-111.99	-111.59	0.52	-0.52	0.37
6,739.14	8.35	346.23	6,711.46	386.53	-112.46	-112.06	0.46	-0.45	0.82
6,752.57	8.28	346.34	6,724.75	388.41	-112.92	-112.52	0.53	-0.52	0.82
6,766.00	8.21	346.41	6,738.04	390.29	-113.38	-112.97	0.53	-0.52	0.52
6,779.43	8.14	346.34	6,751.34	392.14	-113.83	-113.41	0.53	-0.52	-0.52
6,792.86	8.08	346.22	6,764.63	393.98	-114.28	-113.86	0.46	-0.45	-0.89
6,806.29	8.01	346.08	6,777.93	395.81	-114.72	-114.31	0.54	-0.52	-1.04
6,819.71	7.95	345.96	6,791.22	397.61	-115.18	-114.76	0.46	-0.45	-0.89
6,833.14	7.90	345.89	6,804.52	399.41	-115.63	-115.21	0.38	-0.37	-0.52
6,846.57	7.85	345.93	6,817.83	401.20	-116.07	-115.65	0.37	-0.37	0.30
6,860.00	7.81	346.14	6,831.13	402.97	-116.51	-116.09	0.37	-0.30	1.56
6,873.57	7.79	346.62	6,844.57	404.76	-116.95	-116.52	0.50	-0.15	3.54
6,887.14	7.78	347.27	6,858.02	406.55	-117.36	-116.94	0.65	-0.07	4.79
6,900.71	7.78	348.00	6,871.46	408.35	-117.76	-117.33	0.73	0.00	5.38
6,914.29	7.79	348.75	6,884.92	410.15	-118.13	-117.70	0.75	0.07	5.52
6,927.86	7.81	349.47	6,898.36	411.96	-118.48	-118.04	0.74	0.15	5.31
6,941.43	7.83	350.10	6,911.81	413.77	-118.80	-118.37	0.65	0.15	4.64
6,955.00	7.85	350.55	6,925.25	415.60	-119.11	-118.68	0.48	0.15	3.32
6,968.43	8.30	355.78	6,938.55	417.47	-119.34	-118.90	6.41	3.35	38.94
6,981.86	8.73	1.33	6,951.83	419.45	-119.38	-118.94	6.90	3.20	41.33



Survey Report

Company:	Colgate Energy	Local Co-ordinate Reference:	Well Crazy Horse 32 State Fed Com 133H
Project:	Eddy County, NM (N83-NME)	TVD Reference:	3262+30 @ 3292.00usft (HP510)
Site:	Crazy Horse 32 State Fed Com	MD Reference:	3262+30 @ 3292.00usft (HP510)
Well:	Crazy Horse 32 State Fed Com 133H	North Reference:	Grid
Wellbore:	133H	Survey Calculation Method:	Minimum Curvature
Design:	133H	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)	
6,995.29	8.92	3.06	6,965.10	421.51	-119.30	-118.86	2.43	1.41	12.88	
7,008.71	8.99	2.71	6,978.36	423.60	-119.20	-118.76	0.66	0.52	-2.61	
7,022.14	9.05	2.29	6,991.62	425.70	-119.11	-118.66	0.66	0.45	-3.13	
7,035.57	9.12	1.86	7,004.88	427.82	-119.03	-118.58	0.73	0.52	-3.20	
7,049.00	9.16	1.46	7,018.14	429.95	-118.97	-118.52	0.56	0.30	-2.98	
7,062.57	9.16	1.15	7,031.54	432.11	-118.92	-118.47	0.36	0.00	-2.28	
7,076.14	9.15	0.91	7,044.94	434.27	-118.88	-118.43	0.29	-0.07	-1.77	
7,089.71	9.11	0.72	7,058.33	436.43	-118.85	-118.39	0.37	-0.29	-1.40	
7,103.29	9.07	0.57	7,071.74	438.57	-118.83	-118.37	0.34	-0.29	-1.10	
7,116.86	9.02	0.46	7,085.15	440.70	-118.81	-118.35	0.39	-0.37	-0.81	
7,130.43	8.97	0.40	7,098.55	442.83	-118.79	-118.33	0.37	-0.37	-0.44	
7,144.00	8.91	0.40	7,111.95	444.94	-118.78	-118.31	0.44	-0.44	0.00	
7,157.43	8.86	0.48	7,125.22	447.01	-118.76	-118.29	0.38	-0.37	0.60	
7,170.86	8.81	0.61	7,138.49	449.07	-118.74	-118.27	0.40	-0.37	0.97	
7,183.40	8.75	0.77	7,150.89	450.99	-118.72	-118.25	0.49	-0.45	1.27	
00-SJ 32 3H (CH-32-133H)										
7,184.29	8.75	0.78	7,151.77	451.12	-118.72	-118.24	0.49	-0.45	1.27	
7,197.71	8.69	0.97	7,165.03	453.16	-118.68	-118.21	0.50	-0.45	1.42	
7,211.14	8.62	1.18	7,178.31	455.18	-118.65	-118.17	0.57	-0.52	1.56	
7,224.57	8.53	1.39	7,191.59	457.18	-118.60	-118.12	0.71	-0.67	1.56	
7,238.00	8.43	1.60	7,204.87	459.16	-118.55	-118.07	0.78	-0.74	1.56	
7,251.57	8.29	1.77	7,218.30	461.13	-118.49	-118.01	1.05	-1.03	1.25	
7,265.14	8.13	1.92	7,231.73	463.07	-118.43	-117.95	1.19	-1.18	1.11	
7,278.71	7.96	2.04	7,245.16	464.97	-118.36	-117.88	1.26	-1.25	0.88	
7,292.29	7.77	2.12	7,258.62	466.82	-118.30	-117.81	1.40	-1.40	0.59	
7,305.86	7.57	2.15	7,272.06	468.63	-118.23	-117.74	1.47	-1.47	0.22	
7,319.43	7.36	2.08	7,285.52	470.39	-118.16	-117.67	1.55	-1.55	-0.52	
7,333.00	7.13	1.87	7,298.98	472.10	-118.11	-117.61	1.71	-1.69	-1.55	
7,346.43	6.87	1.40	7,312.31	473.74	-118.06	-117.56	1.98	-1.94	-3.50	
7,359.86	6.61	0.78	7,325.65	475.32	-118.03	-117.53	2.01	-1.94	-4.62	
7,373.29	6.35	0.06	7,338.99	476.83	-118.02	-117.52	2.03	-1.94	-5.36	
7,386.71	6.10	359.34	7,352.33	478.29	-118.02	-117.52	1.95	-1.86	-5.37	
7,400.14	5.88	358.70	7,365.69	479.69	-118.05	-117.55	1.71	-1.64	-4.77	
7,413.57	5.70	358.32	7,379.05	481.04	-118.08	-117.58	1.37	-1.34	-2.83	
7,427.00	5.58	358.41	7,392.42	482.36	-118.12	-117.62	0.90	-0.89	0.67	
7,440.57	5.57	359.34	7,405.92	483.68	-118.15	-117.64	0.67	-0.07	6.85	
7,454.14	5.63	0.68	7,419.43	485.00	-118.15	-117.64	1.06	0.44	9.87	
7,467.71	5.73	2.19	7,432.93	486.35	-118.11	-117.60	1.33	0.74	11.13	
7,481.29	5.85	3.69	7,446.44	487.71	-118.04	-117.53	1.42	0.88	11.05	
7,494.86	5.98	5.05	7,459.94	489.11	-117.94	-117.42	1.41	0.96	10.02	
7,508.43	6.08	6.18	7,473.43	490.53	-117.80	-117.28	1.14	0.74	8.33	
7,512.02	6.21	7.24	7,477.00	490.91	-117.75	-117.24	4.85	3.68	29.45	
1st Bone Spring SD										
7,522.00	6.59	9.95	7,486.92	492.01	-117.58	-117.07	4.85	3.79	27.18	



Survey Report

Company:	Colgate Energy	Local Co-ordinate Reference:	Well Crazy Horse 32 State Fed Com 133H
Project:	Eddy County, NM (N83-NME)	TVD Reference:	3262+30 @ 3292.00usft (HP510)
Site:	Crazy Horse 32 State Fed Com	MD Reference:	3262+30 @ 3292.00usft (HP510)
Well:	Crazy Horse 32 State Fed Com 133H	North Reference:	Grid
Wellbore:	133H	Survey Calculation Method:	Minimum Curvature
Design:	133H	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)	
7,535.43	7.40	14.87	7,500.25	493.60	-117.23	-116.71	7.50	6.03	36.63	
7,548.86	8.08	19.20	7,513.56	495.33	-116.70	-116.18	6.67	5.06	32.24	
7,562.29	8.00	18.88	7,526.86	497.11	-116.08	-115.56	0.68	-0.60	-2.38	
7,575.71	7.90	18.37	7,540.15	498.87	-115.49	-114.97	0.91	-0.75	-3.80	
7,589.14	7.79	17.73	7,553.45	500.61	-114.92	-114.40	1.05	-0.82	-4.77	
7,602.57	7.66	17.03	7,566.76	502.33	-114.38	-113.86	1.19	-0.97	-5.21	
7,616.00	7.53	16.32	7,580.07	504.03	-113.87	-113.35	1.19	-0.97	-5.29	
7,629.57	7.37	15.80	7,593.53	505.72	-113.39	-112.86	1.28	-1.18	-3.83	
7,643.14	7.21	15.34	7,606.99	507.38	-112.93	-112.39	1.26	-1.18	-3.39	
7,656.71	7.05	14.93	7,620.45	509.01	-112.49	-111.95	1.24	-1.18	-3.02	
7,670.29	6.89	14.56	7,633.93	510.60	-112.07	-111.53	1.22	-1.18	-2.72	
7,673.38	6.86	14.49	7,637.00	510.96	-111.97	-111.44	1.14	-1.11	-2.17	
2nd Bone Spring LM										
7,683.86	6.74	14.26	7,647.41	512.16	-111.67	-111.13	1.14	-1.11	-2.22	
7,697.43	6.61	14.05	7,660.89	513.69	-111.28	-110.74	0.97	-0.96	-1.55	
7,711.00	6.49	13.98	7,674.37	515.19	-110.90	-110.37	0.89	-0.88	-0.52	
7,724.43	6.42	14.17	7,687.71	516.66	-110.54	-110.00	0.54	-0.52	1.41	
7,737.86	6.36	14.51	7,701.06	518.10	-110.17	-109.62	0.53	-0.45	2.53	
7,751.29	6.32	14.96	7,714.41	519.54	-109.79	-109.25	0.47	-0.30	3.35	
7,764.71	6.28	15.49	7,727.75	520.96	-109.40	-108.86	0.53	-0.30	3.95	
7,778.14	6.24	16.11	7,741.10	522.37	-109.00	-108.46	0.58	-0.30	4.62	
7,791.57	6.17	16.81	7,754.45	523.76	-108.59	-108.05	0.77	-0.52	5.21	
7,805.00	6.09	17.65	7,767.80	525.13	-108.17	-107.62	0.89	-0.60	6.25	
7,818.57	5.94	18.60	7,781.29	526.48	-107.73	-107.18	1.33	-1.11	7.00	
7,832.14	5.77	19.64	7,794.79	527.79	-107.27	-106.72	1.48	-1.25	7.66	
7,845.71	5.58	20.71	7,808.30	529.05	-106.81	-106.26	1.60	-1.40	7.89	
7,859.29	5.41	21.73	7,821.82	530.26	-106.34	-105.79	1.44	-1.25	7.51	
7,872.86	5.24	22.57	7,835.33	531.43	-105.87	-105.31	1.38	-1.25	6.19	
7,886.43	5.11	23.04	7,848.84	532.56	-105.39	-104.83	1.01	-0.96	3.46	
7,900.00	5.04	22.89	7,862.36	533.66	-104.92	-104.36	0.53	-0.52	-1.11	
7,913.43	5.06	21.74	7,875.74	534.76	-104.47	-103.91	0.77	0.15	-8.56	
7,926.86	5.14	20.07	7,889.11	535.87	-104.05	-103.49	1.26	0.60	-12.43	
7,940.29	5.25	18.16	7,902.49	537.02	-103.65	-103.09	1.53	0.82	-14.22	
7,953.71	5.39	16.18	7,915.85	538.21	-103.28	-102.72	1.72	1.04	-14.75	
7,967.14	5.54	14.28	7,929.22	539.44	-102.95	-102.38	1.75	1.12	-14.15	
7,980.57	5.67	12.53	7,942.58	540.72	-102.64	-102.08	1.60	0.97	-13.03	
7,994.00	6.01	10.00	7,955.94	542.06	-102.38	-101.81	3.17	2.53	-18.84	
8,007.57	6.85	6.24	7,969.43	543.56	-102.17	-101.60	6.92	6.19	-27.71	
8,021.14	7.84	3.14	7,982.89	545.29	-102.03	-101.46	7.86	7.30	-22.84	
8,034.71	7.85	2.14	7,996.33	547.14	-101.94	-101.37	1.01	0.07	-7.37	
8,048.29	7.75	1.20	8,009.79	548.98	-101.89	-101.31	1.19	-0.74	-6.92	
8,061.86	7.65	0.32	8,023.23	550.80	-101.86	-101.29	1.14	-0.74	-6.48	
8,075.43	7.53	359.57	8,036.68	552.59	-101.87	-101.29	1.15	-0.88	-5.53	



Survey Report

Company:	Colgate Energy	Local Co-ordinate Reference:	Well Crazy Horse 32 State Fed Com 133H
Project:	Eddy County, NM (N83-NME)	TVD Reference:	3262+30 @ 3292.00usft (HP510)
Site:	Crazy Horse 32 State Fed Com	MD Reference:	3262+30 @ 3292.00usft (HP510)
Well:	Crazy Horse 32 State Fed Com 133H	North Reference:	Grid
Wellbore:	133H	Survey Calculation Method:	Minimum Curvature
Design:	133H	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)
8,089.00	7.40	359.05	8,050.14	554.36	-101.89	-101.31	1.08	-0.96	-3.83
8,102.43	7.26	358.99	8,063.46	556.07	-101.92	-101.33	1.04	-1.04	-0.45
8,115.86	7.12	359.20	8,076.78	557.75	-101.94	-101.36	1.06	-1.04	1.56
8,129.29	6.97	359.61	8,090.11	559.40	-101.96	-101.37	1.18	-1.12	3.05
8,142.71	6.82	0.17	8,103.44	561.01	-101.96	-101.38	1.22	-1.12	4.17
8,156.14	6.68	0.84	8,116.77	562.59	-101.95	-101.36	1.20	-1.04	4.99
8,169.57	6.53	1.61	8,130.11	564.13	-101.92	-101.33	1.30	-1.12	5.73
8,183.00	6.38	2.45	8,143.46	565.64	-101.86	-101.27	1.32	-1.12	6.25
8,196.57	6.22	3.20	8,156.95	567.13	-101.79	-101.20	1.33	-1.18	5.53
8,210.14	6.06	3.98	8,170.44	568.58	-101.70	-101.10	1.33	-1.18	5.75
8,223.71	5.92	4.74	8,183.93	569.99	-101.59	-101.00	1.19	-1.03	5.60
8,237.29	5.78	5.46	8,197.44	571.37	-101.47	-100.87	1.16	-1.03	5.30
8,246.90	5.70	5.90	8,207.00	572.32	-101.37	-100.77	0.93	-0.81	4.54
2nd Bone Spring SD									
8,250.86	5.67	6.08	8,210.95	572.71	-101.33	-100.73	0.93	-0.81	4.63
8,264.43	5.59	6.51	8,224.45	574.04	-101.19	-100.59	0.67	-0.59	3.17
8,278.00	5.55	6.62	8,237.96	575.34	-101.04	-100.43	0.31	-0.29	0.81
8,291.43	5.60	6.27	8,251.32	576.64	-100.89	-100.29	0.45	0.37	-2.61
8,304.86	5.69	5.66	8,264.69	577.96	-100.75	-100.15	0.81	0.67	-4.54
8,318.29	5.81	4.91	8,278.05	579.30	-100.63	-100.02	1.05	0.89	-5.58
8,331.71	5.95	4.09	8,291.40	580.67	-100.52	-99.91	1.22	1.04	-6.11
8,345.14	6.08	3.25	8,304.76	582.07	-100.43	-99.82	1.17	0.97	-6.25
8,358.57	6.19	2.42	8,318.11	583.50	-100.36	-99.75	1.05	0.82	-6.18
8,372.00	6.34	1.61	8,331.46	584.97	-100.31	-99.70	1.30	1.12	-6.03
8,385.43	7.31	0.89	8,344.79	586.56	-100.27	-99.66	7.25	7.22	-5.36
8,398.86	8.16	0.59	8,358.10	588.37	-100.25	-99.64	6.34	6.33	-2.23
8,412.29	8.09	359.92	8,371.40	590.27	-100.24	-99.63	0.88	-0.52	-4.99
8,425.71	8.00	359.21	8,384.68	592.15	-100.26	-99.64	1.00	-0.67	-5.29
8,439.14	7.88	358.50	8,397.98	594.00	-100.29	-99.67	1.15	-0.89	-5.29
8,452.57	7.75	357.82	8,411.29	595.83	-100.35	-99.73	1.19	-0.97	-5.06
8,466.00	7.59	357.22	8,424.60	597.62	-100.43	-99.80	1.33	-1.19	-4.47
8,479.57	7.41	356.85	8,438.05	599.39	-100.52	-99.89	1.37	-1.33	-2.73
8,493.14	7.20	356.60	8,451.51	601.11	-100.62	-99.99	1.57	-1.55	-1.84
8,506.71	6.99	356.47	8,464.98	602.78	-100.72	-100.09	1.55	-1.55	-0.96
8,520.29	6.77	356.44	8,478.46	604.41	-100.82	-100.19	1.62	-1.62	-0.22
8,533.86	6.55	356.52	8,491.94	605.98	-100.92	-100.28	1.62	-1.62	0.59
8,547.43	6.32	356.77	8,505.42	607.50	-101.01	-100.37	1.71	-1.69	1.84
8,561.00	6.10	357.23	8,518.92	608.96	-101.09	-100.45	1.66	-1.62	3.39
8,574.43	5.89	357.96	8,532.27	610.36	-101.14	-100.50	1.66	-1.56	5.44
8,584.21	5.74	358.64	8,542.00	611.35	-101.17	-100.53	1.72	-1.57	7.00
3rd Bone Spring LM									
8,587.86	5.68	358.91	8,545.63	611.72	-101.18	-100.54	1.72	-1.56	7.26
8,601.29	5.49	0.03	8,559.00	613.02	-101.19	-100.55	1.63	-1.41	8.34
8,614.71	5.32	1.23	8,572.36	614.29	-101.18	-100.54	1.52	-1.27	8.94



Survey Report

Company:	Colgate Energy	Local Co-ordinate Reference:	Well Crazy Horse 32 State Fed Com 133H
Project:	Eddy County, NM (N83-NME)	TVD Reference:	3262+30 @ 3292.00usft (HP510)
Site:	Crazy Horse 32 State Fed Com	MD Reference:	3262+30 @ 3292.00usft (HP510)
Well:	Crazy Horse 32 State Fed Com 133H	North Reference:	Grid
Wellbore:	133H	Survey Calculation Method:	Minimum Curvature
Design:	133H	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)	
8,628.14	5.18	2.42	8,585.73	615.51	-101.14	-100.50	1.32	-1.04	8.86	
8,641.57	5.09	3.49	8,599.11	616.71	-101.08	-100.43	0.98	-0.67	7.97	
8,655.00	5.06	4.26	8,612.49	617.90	-101.00	-100.35	0.55	-0.22	5.73	
8,668.57	5.12	4.59	8,626.00	619.10	-100.91	-100.26	0.49	0.44	2.43	
8,682.14	5.24	4.66	8,639.52	620.32	-100.81	-100.16	0.89	0.88	0.52	
8,695.71	5.40	4.57	8,653.03	621.58	-100.71	-100.05	1.18	1.18	-0.66	
8,709.29	5.56	4.39	8,666.55	622.87	-100.60	-99.95	1.18	1.18	-1.33	
8,722.86	5.71	4.15	8,680.05	624.20	-100.51	-99.85	1.12	1.11	-1.77	
8,736.43	5.84	3.90	8,693.55	625.56	-100.41	-99.75	0.98	0.96	-1.84	
8,750.00	6.33	3.43	8,707.05	627.00	-100.32	-99.66	3.63	3.61	-3.46	
8,763.43	7.21	3.60	8,720.38	628.58	-100.22	-99.56	6.55	6.55	1.27	
8,776.86	7.72	4.38	8,733.70	630.32	-100.10	-99.44	3.87	3.80	5.81	
8,790.29	7.57	4.13	8,747.01	632.10	-99.97	-99.30	1.14	-1.12	-1.86	
8,803.71	7.38	3.84	8,760.32	633.84	-99.84	-99.18	1.44	-1.42	-2.16	
8,817.14	7.17	3.50	8,773.64	635.54	-99.74	-99.07	1.60	-1.56	-2.53	
8,830.57	6.94	3.09	8,786.97	637.18	-99.64	-98.97	1.75	-1.71	-3.05	
8,844.00	6.72	2.61	8,800.30	638.78	-99.56	-98.89	1.69	-1.64	-3.57	
8,856.83	6.51	2.07	8,813.05	640.25	-99.50	-98.83	1.71	-1.64	-4.21	
8,869.67	6.32	1.47	8,825.80	641.69	-99.46	-98.78	1.57	-1.48	-4.67	
8,882.50	6.14	0.82	8,838.56	643.08	-99.43	-98.76	1.51	-1.40	-5.07	
8,895.33	5.99	0.19	8,851.32	644.44	-99.42	-98.74	1.28	-1.17	-4.91	
8,908.17	5.87	359.62	8,864.09	645.76	-99.42	-98.74	1.04	-0.93	-4.44	
8,921.00	5.80	359.20	8,876.85	647.07	-99.43	-98.75	0.64	-0.55	-3.27	
8,935.38	5.81	359.05	8,891.16	648.52	-99.45	-98.78	0.13	0.07	-1.04	
8,949.75	5.87	359.07	8,905.45	649.98	-99.48	-98.80	0.42	0.42	0.14	
8,964.13	5.96	359.19	8,919.76	651.47	-99.50	-98.82	0.63	0.63	0.83	
8,978.50	6.08	359.36	8,934.05	652.97	-99.52	-98.84	0.84	0.84	1.18	
8,992.88	6.19	359.54	8,948.35	654.51	-99.53	-98.85	0.78	0.76	1.25	
9,007.25	6.30	359.70	8,962.63	656.07	-99.54	-98.86	0.78	0.77	1.11	
9,015.00	6.51	1.56	8,970.33	656.94	-99.54	-98.85	3.83	2.75	23.95	
KOP: 9015.00' MD, -98.85' VS, 8970.33' TVD										
9,021.63	6.70	3.05	8,976.92	657.70	-99.50	-98.82	3.83	2.82	22.53	
9,036.00	7.61	10.51	8,991.18	659.47	-99.29	-98.60	9.04	6.33	51.91	
9,049.43	8.57	16.42	9,004.47	661.31	-98.84	-98.15	9.45	7.15	44.01	
9,062.86	9.69	19.93	9,017.73	663.33	-98.17	-97.48	9.31	8.34	26.14	
9,076.29	10.76	24.65	9,030.95	665.53	-97.26	-96.57	10.11	7.97	35.15	
9,089.71	11.78	29.15	9,044.11	667.87	-96.08	-95.38	10.03	7.60	33.53	
9,103.14	12.70	32.30	9,057.24	670.31	-94.62	-93.92	8.46	6.85	23.45	
9,116.57	13.57	34.18	9,070.31	672.86	-92.94	-92.24	7.22	6.48	14.00	
9,126.00	14.36	35.25	9,079.46	674.73	-91.65	-90.94	8.84	8.40	11.35	
100 FWL: 9126.00' MD, -90.94' VS, 9079.46' TVD										
9,130.00	14.70	35.67	9,083.34	675.55	-91.07	-90.36	8.84	8.44	10.49	
9,143.57	15.77	38.34	9,096.43	678.39	-88.92	-88.21	9.43	7.89	19.68	
9,157.14	16.91	41.22	9,109.45	681.33	-86.47	-85.76	10.30	8.40	21.22	



Survey Report

Company:	Colgate Energy	Local Co-ordinate Reference:	Well Crazy Horse 32 State Fed Com 133H
Project:	Eddy County, NM (N83-NME)	TVD Reference:	3262+30 @ 3292.00usft (HP510)
Site:	Crazy Horse 32 State Fed Com	MD Reference:	3262+30 @ 3292.00usft (HP510)
Well:	Crazy Horse 32 State Fed Com 133H	North Reference:	Grid
Wellbore:	133H	Survey Calculation Method:	Minimum Curvature
Design:	133H	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)
9,170.71	18.16	43.38	9,122.39	684.35	-83.72	-83.00	10.38	9.21	15.92
9,175.57	18.57	44.41	9,127.00	685.45	-82.66	-81.94	10.70	8.37	21.18
3rd Bone Spring SD									
9,184.29	19.31	46.15	9,135.25	687.44	-80.65	-79.93	10.70	8.52	19.96
9,197.86	20.58	47.68	9,148.01	690.60	-77.27	-76.54	10.12	9.36	11.27
9,211.43	21.21	50.99	9,160.69	693.75	-73.59	-72.87	9.86	4.64	24.39
9,225.00	21.98	53.97	9,173.30	696.79	-69.63	-68.90	9.87	5.67	21.96
9,238.43	22.97	56.96	9,185.71	699.70	-65.40	-64.67	11.26	7.37	22.26
9,251.86	24.00	59.79	9,198.03	702.50	-60.85	-60.11	11.37	7.67	21.07
9,265.29	25.08	62.46	9,210.25	705.19	-55.96	-55.22	11.52	8.04	19.88
9,278.71	26.22	64.87	9,222.35	707.77	-50.76	-50.01	11.51	8.49	17.96
9,292.14	27.25	67.27	9,234.34	710.21	-45.23	-44.49	11.11	7.67	17.87
9,305.57	28.13	69.86	9,246.23	712.49	-39.42	-38.68	11.10	6.55	19.29
9,319.00	29.17	72.00	9,258.02	714.59	-33.34	-32.59	10.88	7.74	15.93
9,332.57	29.99	74.70	9,269.82	716.51	-26.92	-26.17	11.53	6.04	19.90
9,346.14	31.26	76.39	9,281.50	718.23	-20.23	-19.48	11.31	9.36	12.45
9,359.71	32.54	78.12	9,293.02	719.81	-13.24	-12.48	11.59	9.43	12.75
9,373.29	33.89	79.47	9,304.38	721.26	-5.94	-5.18	11.33	9.94	9.94
9,386.86	35.24	80.64	9,315.55	722.59	1.64	2.40	11.09	9.95	8.62
9,400.43	36.46	81.95	9,326.55	723.79	9.50	10.26	10.62	8.99	9.65
9,414.00	37.64	83.21	9,337.38	724.84	17.61	18.37	10.34	8.70	9.29
9,427.43	39.04	83.85	9,347.92	725.78	25.89	26.65	10.84	10.42	4.77
9,440.86	40.30	84.71	9,358.25	726.63	34.42	35.18	10.23	9.38	6.40
9,454.29	41.63	85.27	9,368.40	727.40	43.19	43.95	10.27	9.90	4.17
9,467.71	42.98	85.75	9,378.32	728.11	52.19	52.95	10.34	10.06	3.58
9,481.14	44.09	86.10	9,388.06	728.77	61.42	62.18	8.46	8.27	2.61
9,492.38	44.89	86.29	9,396.07	729.29	69.27	70.04	7.25	7.15	1.72
01-FTP (CH-32-133H)									
9,494.57	45.05	86.33	9,397.62	729.39	70.82	71.59	7.25	7.15	1.69
9,508.00	46.23	86.56	9,407.01	729.98	80.41	81.17	8.87	8.79	1.71
9,521.43	47.54	86.93	9,416.19	730.54	90.19	90.96	9.96	9.75	2.76
9,534.86	48.89	87.12	9,425.14	731.06	100.19	100.96	10.11	10.05	1.41
9,548.29	50.16	87.71	9,433.86	731.52	110.40	111.16	10.03	9.46	4.39
9,561.71	51.45	88.33	9,442.34	731.88	120.79	121.56	10.26	9.61	4.62
9,575.14	52.58	88.52	9,450.60	732.17	131.37	132.14	8.49	8.41	1.41
9,588.57	53.64	88.14	9,458.67	732.48	142.11	142.88	8.21	7.89	-2.83
9,602.00	54.88	87.48	9,466.51	732.90	153.00	153.77	10.06	9.23	-4.91
9,615.57	56.16	86.90	9,474.19	733.45	164.18	164.94	10.07	9.43	-4.27
9,629.14	57.59	86.29	9,481.61	734.12	175.52	176.29	11.19	10.54	-4.50
9,642.71	59.04	85.65	9,488.74	734.94	187.04	187.81	11.41	10.69	-4.72
9,656.29	60.57	85.30	9,495.57	735.86	198.74	199.51	11.48	11.27	-2.58
9,669.86	62.13	85.20	9,502.07	736.85	210.61	211.38	11.51	11.50	-0.74
9,683.43	63.70	85.24	9,508.25	737.86	222.64	223.42	11.57	11.57	0.29



Survey Report

Company:	Colgate Energy	Local Co-ordinate Reference:	Well Crazy Horse 32 State Fed Com 133H
Project:	Eddy County, NM (N83-NME)	TVD Reference:	3262+30 @ 3292.00usft (HP510)
Site:	Crazy Horse 32 State Fed Com	MD Reference:	3262+30 @ 3292.00usft (HP510)
Well:	Crazy Horse 32 State Fed Com 133H	North Reference:	Grid
Wellbore:	133H	Survey Calculation Method:	Minimum Curvature
Design:	133H	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)
9,697.00	65.26	85.52	9,514.10	738.84	234.85	235.62	11.65	11.50	2.06
9,710.57	66.81	86.10	9,519.61	739.75	247.22	247.99	12.07	11.42	4.27
9,724.14	68.46	86.21	9,524.77	740.59	259.74	260.51	12.18	12.16	0.81
9,737.71	70.13	86.44	9,529.57	741.40	272.40	273.18	12.41	12.31	1.69
9,751.29	71.82	86.31	9,533.99	742.21	285.22	285.99	12.48	12.44	-0.96
9,764.86	73.13	86.77	9,538.08	742.99	298.13	298.91	10.18	9.65	3.39
9,778.43	74.59	87.16	9,541.85	743.68	311.15	311.93	11.11	10.76	2.87
9,792.00	76.24	87.52	9,545.27	744.29	324.27	325.05	12.43	12.16	2.65
9,805.43	77.91	88.03	9,548.27	744.80	337.35	338.13	12.97	12.43	3.80
9,818.86	79.55	88.67	9,550.90	745.18	350.51	351.29	13.08	12.21	4.77
9,832.29	81.10	89.19	9,553.16	745.43	363.75	364.53	12.16	11.54	3.87
9,845.71	82.75	89.83	9,555.04	745.54	377.03	377.81	13.17	12.30	4.77
9,859.14	84.24	90.15	9,556.56	745.54	390.38	391.16	11.34	11.09	2.38
9,872.57	85.82	90.27	9,557.73	745.49	403.76	404.54	11.80	11.76	0.89
9,886.00	87.59	90.31	9,558.50	745.43	417.16	417.94	13.18	13.18	0.30
9,899.57	89.35	90.35	9,558.86	745.35	430.73	431.51	12.97	12.97	0.29
9,907.00	89.95	90.40	9,558.91	745.30	438.16	438.94	8.06	8.03	0.66
EOC: 9907.00' MD, 438.94' VS, 9558.91' TVD									
9,913.14	90.44	90.44	9,558.88	745.25	444.30	445.08	8.06	8.03	0.66
9,926.71	90.28	90.50	9,558.80	745.14	457.87	458.65	1.26	-1.18	0.44
9,926.99	90.28	90.50	9,558.80	745.14	458.14	458.92	0.00	0.00	0.00
00-LP(CH-32-133H)									
9,940.29	90.11	90.56	9,558.75	745.02	471.45	472.23	1.36	-1.28	0.45
9,953.86	89.94	90.63	9,558.75	744.88	485.02	485.80	1.35	-1.25	0.52
9,967.43	89.81	90.69	9,558.78	744.72	498.58	499.36	1.06	-0.96	0.44
9,981.00	89.73	90.75	9,558.83	744.55	512.15	512.93	0.74	-0.59	0.44
9,994.43	89.74	90.81	9,558.89	744.37	525.58	526.36	0.45	0.07	0.45
10,007.86	89.82	90.85	9,558.95	744.17	539.01	539.79	0.67	0.60	0.30
10,021.29	89.93	90.90	9,558.97	743.97	552.44	553.22	0.90	0.82	0.37
10,034.71	90.06	90.94	9,558.98	743.75	565.86	566.64	1.01	0.97	0.30
10,048.14	90.19	90.98	9,558.95	743.53	579.29	580.06	1.01	0.97	0.30
10,061.57	90.32	91.02	9,558.89	743.29	592.71	593.49	1.01	0.97	0.30
10,075.00	90.41	91.06	9,558.80	743.05	606.14	606.92	0.73	0.67	0.30
10,088.57	90.46	91.11	9,558.70	742.79	619.71	620.49	0.52	0.37	0.37
10,102.14	90.47	91.16	9,558.59	742.52	633.27	634.05	0.38	0.07	0.37
10,115.71	90.46	91.21	9,558.48	742.24	646.84	647.62	0.38	-0.07	0.37
10,129.29	90.45	91.26	9,558.37	741.95	660.42	661.19	0.38	-0.07	0.37
10,142.86	90.43	91.31	9,558.27	741.65	673.98	674.76	0.40	-0.15	0.37
10,156.43	90.42	91.36	9,558.17	741.33	687.55	688.33	0.38	-0.07	0.37
10,170.00	90.42	91.40	9,558.07	741.00	701.12	701.89	0.29	0.00	0.29
10,183.43	90.45	91.43	9,557.96	740.67	714.54	715.32	0.32	0.22	0.22
10,196.86	90.49	91.45	9,557.85	740.33	727.97	728.74	0.33	0.30	0.15
10,210.29	90.53	91.47	9,557.73	739.99	741.39	742.17	0.33	0.30	0.15
10,223.71	90.59	91.48	9,557.60	739.65	754.81	755.58	0.45	0.45	0.07



Survey Report

Company:	Colgate Energy	Local Co-ordinate Reference:	Well Crazy Horse 32 State Fed Com 133H
Project:	Eddy County, NM (N83-NME)	TVD Reference:	3262+30 @ 3292.00usft (HP510)
Site:	Crazy Horse 32 State Fed Com	MD Reference:	3262+30 @ 3292.00usft (HP510)
Well:	Crazy Horse 32 State Fed Com 133H	North Calculation:	Grid
Wellbore:	133H	Survey Calculation Method:	Minimum Curvature
Design:	133H	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)	
10,237.14	90.64	91.47	9,557.46	739.30	768.23	769.00	0.38	0.37	-0.07	
10,250.57	90.68	91.46	9,557.30	738.96	781.66	782.43	0.31	0.30	-0.07	
10,264.00	90.72	91.43	9,557.14	738.62	795.08	795.85	0.37	0.30	-0.22	
10,277.43	90.73	91.36	9,556.97	738.29	808.51	809.28	0.53	0.07	-0.52	
10,290.86	90.74	91.28	9,556.80	737.98	821.93	822.70	0.60	0.07	-0.60	
10,304.29	90.74	91.19	9,556.62	737.69	835.36	836.13	0.67	0.00	-0.67	
10,317.71	90.75	91.10	9,556.45	737.42	848.77	849.54	0.67	0.07	-0.67	
10,331.14	90.76	91.01	9,556.27	737.18	862.20	862.97	0.67	0.07	-0.67	
10,344.57	90.79	90.93	9,556.09	736.95	875.63	876.40	0.64	0.22	-0.60	
10,358.00	90.85	90.86	9,555.90	736.74	889.05	889.82	0.69	0.45	-0.52	
10,371.57	90.95	90.83	9,555.69	736.54	902.62	903.39	0.77	0.74	-0.22	
10,385.14	91.07	90.81	9,555.45	736.35	916.19	916.96	0.90	0.88	-0.15	
10,398.71	91.21	90.81	9,555.18	736.15	929.75	930.52	1.03	1.03	0.00	
10,412.29	91.35	90.82	9,554.87	735.96	943.33	944.10	1.03	1.03	0.07	
10,425.86	91.49	90.83	9,554.54	735.77	956.89	957.66	1.03	1.03	0.07	
10,439.43	91.62	90.84	9,554.17	735.57	970.46	971.23	0.96	0.96	0.07	
10,453.00	91.72	90.86	9,553.77	735.37	984.02	984.79	0.75	0.74	0.15	
10,466.57	91.78	90.88	9,553.36	735.16	997.58	998.35	0.47	0.44	0.15	
10,480.14	91.81	90.90	9,552.93	734.95	1,011.14	1,011.91	0.27	0.22	0.15	
10,493.71	91.84	90.92	9,552.50	734.73	1,024.70	1,025.47	0.27	0.22	0.15	
10,507.29	91.86	90.94	9,552.06	734.51	1,038.27	1,039.04	0.21	0.15	0.15	
10,520.86	91.88	90.96	9,551.62	734.29	1,051.84	1,052.60	0.21	0.15	0.15	
10,534.43	90.83	90.50	9,551.30	734.12	1,065.40	1,066.17	8.45	-7.74	-3.39	
10,548.00	90.34	90.28	9,551.16	734.02	1,078.97	1,079.74	3.96	-3.61	-1.62	
10,561.43	90.42	90.33	9,551.07	733.95	1,092.40	1,093.17	0.70	0.60	0.37	
10,574.86	90.52	90.39	9,550.96	733.87	1,105.83	1,106.60	0.87	0.74	0.45	
10,588.29	90.63	90.46	9,550.83	733.77	1,119.26	1,120.02	0.97	0.82	0.52	
10,601.71	90.73	90.52	9,550.67	733.65	1,132.68	1,133.44	0.87	0.75	0.45	
10,615.14	90.84	90.57	9,550.48	733.53	1,146.10	1,146.87	0.90	0.82	0.37	
10,628.57	90.93	90.62	9,550.28	733.39	1,159.53	1,160.30	0.77	0.67	0.37	
10,642.00	91.01	90.64	9,550.05	733.24	1,172.96	1,173.73	0.61	0.60	0.15	
10,655.57	91.06	90.63	9,549.80	733.09	1,186.53	1,187.29	0.38	0.37	-0.07	
10,669.14	91.09	90.61	9,549.55	732.94	1,200.09	1,200.86	0.27	0.22	-0.15	
10,682.71	91.11	90.58	9,549.29	732.80	1,213.66	1,214.43	0.27	0.15	-0.22	
10,696.29	91.12	90.54	9,549.02	732.67	1,227.24	1,228.00	0.30	0.07	-0.29	
10,709.86	91.13	90.52	9,548.76	732.54	1,240.80	1,241.57	0.16	0.07	-0.15	
10,723.43	90.41	89.99	9,548.58	732.48	1,254.37	1,255.14	6.59	-5.31	-3.91	
10,737.00	89.69	89.47	9,548.56	732.55	1,267.94	1,268.71	6.54	-5.31	-3.83	
10,750.43	89.71	89.51	9,548.63	732.67	1,281.37	1,282.14	0.33	0.15	0.30	
10,763.86	89.73	89.58	9,548.70	732.77	1,294.80	1,295.57	0.54	0.15	0.52	
10,777.29	89.75	89.66	9,548.76	732.86	1,308.23	1,309.00	0.61	0.15	0.60	
10,790.71	89.78	89.74	9,548.82	732.93	1,321.65	1,322.42	0.64	0.22	0.60	
10,804.14	89.81	89.83	9,548.86	732.98	1,335.08	1,335.85	0.71	0.22	0.67	



Survey Report

Company:	Colgate Energy	Local Co-ordinate Reference:	Well Crazy Horse 32 State Fed Com 133H
Project:	Eddy County, NM (N83-NME)	TVD Reference:	3262+30 @ 3292.00usft (HP510)
Site:	Crazy Horse 32 State Fed Com	MD Reference:	3262+30 @ 3292.00usft (HP510)
Well:	Crazy Horse 32 State Fed Com 133H	North Reference:	Grid
Wellbore:	133H	Survey Calculation Method:	Minimum Curvature
Design:	133H	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)	
10,817.57	89.84	89.92	9,548.90	733.01	1,348.51	1,349.28	0.71	0.22	0.67	
10,831.00	89.89	90.01	9,548.94	733.02	1,361.94	1,362.71	0.77	0.37	0.67	
10,844.43	89.95	90.10	9,548.96	733.01	1,375.37	1,376.14	0.81	0.45	0.67	
10,857.86	90.03	90.18	9,548.96	732.97	1,388.80	1,389.57	0.84	0.60	0.60	
10,871.29	90.11	90.26	9,548.94	732.92	1,402.23	1,403.00	0.84	0.60	0.60	
10,884.71	90.20	90.35	9,548.90	732.85	1,415.65	1,416.41	0.95	0.67	0.67	
10,898.14	90.29	90.43	9,548.85	732.76	1,429.08	1,429.84	0.90	0.67	0.60	
10,911.57	90.40	90.52	9,548.77	732.65	1,442.51	1,443.27	1.06	0.82	0.67	
10,925.00	90.50	90.62	9,548.66	732.51	1,455.94	1,456.70	1.05	0.74	0.74	
10,938.57	90.63	90.73	9,548.53	732.36	1,469.50	1,470.27	1.25	0.96	0.81	
10,952.14	90.75	90.85	9,548.36	732.17	1,483.07	1,483.84	1.25	0.88	0.88	
10,965.71	90.88	90.97	9,548.17	731.95	1,496.64	1,497.40	1.30	0.96	0.88	
10,979.29	91.00	91.07	9,547.95	731.71	1,510.22	1,510.98	1.15	0.88	0.74	
10,992.86	91.11	91.16	9,547.70	731.45	1,523.78	1,524.55	1.05	0.81	0.66	
11,006.43	91.20	91.22	9,547.42	731.17	1,537.34	1,538.11	0.80	0.66	0.44	
11,020.00	91.27	91.23	9,547.13	730.88	1,550.91	1,551.67	0.52	0.52	0.07	
11,033.67	91.29	91.17	9,546.83	730.59	1,564.57	1,565.34	0.46	0.15	-0.44	
11,047.33	91.28	91.06	9,546.52	730.32	1,578.23	1,578.99	0.81	-0.07	-0.81	
11,061.00	91.25	90.93	9,546.22	730.09	1,591.89	1,592.65	0.98	-0.22	-0.95	
11,074.67	91.22	90.78	9,545.92	729.88	1,605.56	1,606.32	1.12	-0.22	-1.10	
11,088.33	91.19	90.63	9,545.64	729.71	1,619.21	1,619.97	1.12	-0.22	-1.10	
11,102.00	91.17	90.48	9,545.36	729.58	1,632.88	1,633.64	1.11	-0.15	-1.10	
11,115.67	90.04	89.39	9,545.21	729.60	1,646.55	1,647.31	11.48	-8.27	-7.97	
11,129.33	89.79	89.05	9,545.23	729.78	1,660.21	1,660.97	3.09	-1.83	-2.49	
11,143.00	89.81	88.94	9,545.28	730.02	1,673.87	1,674.64	0.82	0.15	-0.80	
11,156.57	89.87	88.86	9,545.32	730.28	1,687.44	1,688.20	0.74	0.44	-0.59	
11,170.14	89.96	88.81	9,545.34	730.56	1,701.01	1,701.77	0.76	0.66	-0.37	
11,183.71	90.06	88.77	9,545.33	730.85	1,714.58	1,715.34	0.79	0.74	-0.29	
11,197.29	90.17	88.75	9,545.31	731.14	1,728.15	1,728.92	0.82	0.81	-0.15	
11,210.86	90.28	88.73	9,545.25	731.44	1,741.72	1,742.48	0.82	0.81	-0.15	
11,224.43	90.40	88.73	9,545.17	731.74	1,755.28	1,756.05	0.88	0.88	0.00	
11,238.00	90.52	88.75	9,545.06	732.04	1,768.85	1,769.62	0.90	0.88	0.15	
11,251.43	90.64	88.78	9,544.93	732.33	1,782.28	1,783.04	0.92	0.89	0.22	
11,264.86	90.75	88.83	9,544.77	732.61	1,795.70	1,796.47	0.90	0.82	0.37	
11,278.29	90.86	88.89	9,544.58	732.87	1,809.13	1,809.90	0.93	0.82	0.45	
11,291.71	90.98	88.95	9,544.36	733.13	1,822.55	1,823.31	1.00	0.89	0.45	
11,305.14	91.10	89.01	9,544.12	733.37	1,835.97	1,836.74	1.00	0.89	0.45	
11,318.57	91.22	89.06	9,543.85	733.59	1,849.40	1,850.16	0.97	0.89	0.37	
11,332.00	91.35	89.11	9,543.54	733.81	1,862.82	1,863.59	1.04	0.97	0.37	
11,345.43	91.49	89.14	9,543.21	734.01	1,876.25	1,877.01	1.07	1.04	0.22	
11,358.86	91.64	89.15	9,542.85	734.21	1,889.67	1,890.44	1.12	1.12	0.07	
11,372.29	91.79	89.16	9,542.44	734.41	1,903.09	1,903.86	1.12	1.12	0.07	
11,385.71	91.94	89.16	9,542.01	734.61	1,916.50	1,917.27	1.12	1.12	0.00	
11,399.14	92.08	89.16	9,541.54	734.80	1,929.92	1,930.69	1.04	1.04	0.00	



Survey Report

Company:	Colgate Energy	Local Co-ordinate Reference:	Well Crazy Horse 32 State Fed Com 133H
Project:	Eddy County, NM (N83-NME)	TVD Reference:	3262+30 @ 3292.00usft (HP510)
Site:	Crazy Horse 32 State Fed Com	MD Reference:	3262+30 @ 3292.00usft (HP510)
Well:	Crazy Horse 32 State Fed Com 133H	North Reference:	Grid
Wellbore:	133H	Survey Calculation Method:	Minimum Curvature
Design:	133H	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)
11,412.57	92.11	89.13	9,541.04	735.00	1,943.34	1,944.11	0.32	0.22	-0.22
11,426.00	90.73	88.91	9,540.71	735.23	1,956.77	1,957.54	10.41	-10.28	-1.64
11,439.57	90.47	88.84	9,540.57	735.50	1,970.33	1,971.10	1.98	-1.92	-0.52
11,453.14	90.61	88.81	9,540.44	735.78	1,983.90	1,984.67	1.06	1.03	-0.22
11,466.71	90.74	88.77	9,540.28	736.06	1,997.47	1,998.24	1.00	0.96	-0.29
11,480.29	90.86	88.72	9,540.09	736.36	2,011.04	2,011.81	0.96	0.88	-0.37
11,493.86	90.98	88.67	9,539.87	736.67	2,024.61	2,025.38	0.96	0.88	-0.37
11,507.43	91.09	88.62	9,539.63	736.99	2,038.17	2,038.94	0.89	0.81	-0.37
11,521.00	91.19	88.56	9,539.36	737.33	2,051.73	2,052.50	0.86	0.74	-0.44
11,534.57	91.26	88.50	9,539.07	737.67	2,065.30	2,066.07	0.68	0.52	-0.44
11,548.14	91.31	88.43	9,538.76	738.04	2,078.86	2,079.63	0.63	0.37	-0.52
11,561.71	91.35	88.36	9,538.45	738.42	2,092.42	2,093.19	0.59	0.29	-0.52
11,575.29	91.36	88.28	9,538.13	738.81	2,105.99	2,106.76	0.59	0.07	-0.59
11,588.86	91.06	88.34	9,537.84	739.21	2,119.55	2,120.32	2.25	-2.21	0.44
11,602.43	89.85	88.89	9,537.73	739.54	2,133.11	2,133.89	9.79	-8.92	4.05
11,616.00	89.52	88.99	9,537.81	739.79	2,146.68	2,147.46	2.54	-2.43	0.74
11,629.43	89.31	88.90	9,537.95	740.04	2,160.11	2,160.88	1.70	-1.56	-0.67
11,642.86	89.06	88.80	9,538.14	740.31	2,173.54	2,174.31	2.00	-1.86	-0.74
11,656.29	88.78	88.69	9,538.39	740.60	2,186.96	2,187.73	2.24	-2.08	-0.82
11,669.71	88.50	88.59	9,538.71	740.92	2,200.37	2,201.15	2.22	-2.09	-0.75
11,683.14	88.23	88.50	9,539.09	741.26	2,213.79	2,214.57	2.12	-2.01	-0.67
11,696.57	88.01	88.42	9,539.53	741.62	2,227.21	2,227.99	1.74	-1.64	-0.60
11,710.00	87.86	88.37	9,540.02	742.00	2,240.63	2,241.40	1.18	-1.12	-0.37
11,723.57	87.83	88.35	9,540.53	742.39	2,254.18	2,254.96	0.27	-0.22	-0.15
11,737.14	87.88	88.35	9,541.03	742.78	2,267.74	2,268.51	0.37	0.37	0.00
11,750.71	87.97	88.37	9,541.53	743.17	2,281.29	2,282.07	0.68	0.66	0.15
11,764.29	88.10	88.40	9,541.99	743.55	2,294.86	2,295.64	0.98	0.96	0.22
11,777.86	88.26	88.43	9,542.42	743.92	2,308.42	2,309.19	1.20	1.18	0.22
11,791.43	88.42	88.47	9,542.82	744.29	2,321.98	2,322.75	1.22	1.18	0.29
11,805.00	88.58	88.50	9,543.17	744.65	2,335.54	2,336.31	1.20	1.18	0.22
11,818.43	88.74	88.53	9,543.48	745.00	2,348.96	2,349.74	1.21	1.19	0.22
11,831.86	88.89	88.56	9,543.76	745.34	2,362.38	2,363.16	1.14	1.12	0.22
11,845.29	89.04	88.59	9,544.01	745.67	2,375.80	2,376.58	1.14	1.12	0.22
11,858.71	89.20	88.61	9,544.21	746.00	2,389.22	2,390.00	1.20	1.19	0.15
11,872.14	89.36	88.63	9,544.38	746.32	2,402.64	2,403.42	1.20	1.19	0.15
11,885.57	89.52	88.65	9,544.51	746.64	2,416.07	2,416.85	1.20	1.19	0.15
11,899.00	89.69	88.67	9,544.60	746.96	2,429.50	2,430.28	1.27	1.27	0.15
11,912.57	89.88	88.68	9,544.65	747.27	2,443.06	2,443.84	1.40	1.40	0.07
11,926.14	90.07	88.69	9,544.66	747.58	2,456.63	2,457.41	1.40	1.40	0.07
11,939.71	90.26	88.69	9,544.62	747.89	2,470.19	2,470.98	1.40	1.40	0.00
11,953.29	90.45	88.70	9,544.54	748.20	2,483.77	2,484.55	1.40	1.40	0.07
11,966.86	90.62	88.70	9,544.41	748.51	2,497.34	2,498.12	1.25	1.25	0.00
11,968.08	90.64	88.70	9,544.40	748.54	2,498.55	2,499.33	1.25	1.25	0.07



Survey Report

Company:	Colgate Energy	Local Co-ordinate Reference:	Well Crazy Horse 32 State Fed Com 133H
Project:	Eddy County, NM (N83-NME)	TVD Reference:	3262+30 @ 3292.00usft (HP510)
Site:	Crazy Horse 32 State Fed Com	MD Reference:	3262+30 @ 3292.00usft (HP510)
Well:	Crazy Horse 32 State Fed Com 133H	North Reference:	Grid
Wellbore:	133H	Survey Calculation Method:	Minimum Curvature
Design:	133H	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)
02-V2500(CH-32-133H)									
11,980.43	90.79	88.71	9,544.24	748.82	2,510.90	2,511.68	1.25	1.25	0.07
11,994.00	90.92	88.71	9,544.04	749.12	2,524.47	2,525.25	0.96	0.96	0.00
12,007.43	91.01	88.72	9,543.82	749.42	2,537.89	2,538.68	0.67	0.67	0.07
12,020.86	91.07	88.74	9,543.57	749.72	2,551.32	2,552.10	0.47	0.45	0.15
12,034.29	91.12	88.75	9,543.31	750.01	2,564.74	2,565.52	0.38	0.37	0.07
12,047.71	91.17	88.77	9,543.05	750.31	2,578.15	2,578.94	0.40	0.37	0.15
12,061.14	91.22	88.80	9,542.77	750.59	2,591.58	2,592.36	0.43	0.37	0.22
12,074.57	90.58	89.20	9,542.56	750.82	2,605.00	2,605.79	5.62	-4.77	2.98
12,088.00	90.22	89.47	9,542.46	750.98	2,618.43	2,619.22	3.35	-2.68	2.01
12,101.57	90.35	89.54	9,542.39	751.10	2,632.00	2,632.79	1.09	0.96	0.52
12,115.14	90.50	89.63	9,542.29	751.20	2,645.57	2,646.36	1.29	1.11	0.66
12,128.71	90.66	89.71	9,542.16	751.27	2,659.14	2,659.93	1.32	1.18	0.59
12,142.29	90.82	89.80	9,541.98	751.33	2,672.72	2,673.51	1.35	1.18	0.66
12,155.86	90.96	89.86	9,541.77	751.37	2,686.29	2,687.07	1.12	1.03	0.44
12,169.43	91.08	89.90	9,541.53	751.40	2,699.86	2,700.64	0.93	0.88	0.29
12,183.00	91.17	89.90	9,541.26	751.42	2,713.42	2,714.21	0.66	0.66	0.00
12,196.43	91.19	89.83	9,540.99	751.46	2,726.85	2,727.64	0.54	0.15	-0.52
12,209.86	91.17	89.71	9,540.71	751.51	2,740.28	2,741.06	0.91	-0.15	-0.89
12,223.29	91.14	89.58	9,540.44	751.59	2,753.70	2,754.49	0.99	-0.22	-0.97
12,236.71	91.11	89.44	9,540.17	751.71	2,767.12	2,767.91	1.07	-0.22	-1.04
12,250.14	91.10	89.32	9,539.92	751.85	2,780.55	2,781.33	0.90	-0.07	-0.89
12,263.57	90.79	89.51	9,539.69	751.99	2,793.98	2,794.76	2.71	-2.31	1.41
12,277.00	89.61	90.35	9,539.65	752.01	2,807.41	2,808.19	10.79	-8.79	6.25
12,290.57	88.41	90.48	9,539.88	751.91	2,820.97	2,821.76	8.89	-8.84	0.96
12,304.14	88.61	90.47	9,540.23	751.80	2,834.54	2,835.32	1.48	1.47	-0.07
12,317.71	88.84	90.47	9,540.54	751.68	2,848.10	2,848.89	1.69	1.69	0.00
12,331.29	89.08	90.49	9,540.78	751.57	2,861.68	2,862.47	1.77	1.77	0.15
12,344.86	89.34	90.51	9,540.97	751.45	2,875.25	2,876.03	1.92	1.92	0.15
12,358.43	89.59	90.54	9,541.10	751.33	2,888.82	2,889.60	1.86	1.84	0.22
12,372.00	89.82	90.57	9,541.17	751.20	2,902.39	2,903.17	1.71	1.69	0.22
12,385.43	90.02	90.61	9,541.19	751.06	2,915.82	2,916.60	1.52	1.49	0.30
12,398.86	90.20	90.65	9,541.16	750.91	2,929.25	2,930.03	1.37	1.34	0.30
12,412.29	90.36	90.70	9,541.09	750.75	2,942.67	2,943.46	1.25	1.19	0.37
12,425.71	90.50	90.74	9,540.99	750.58	2,956.09	2,956.88	1.08	1.04	0.30
12,439.14	90.63	90.79	9,540.86	750.40	2,969.52	2,970.31	1.04	0.97	0.37
12,452.57	89.69	91.23	9,540.82	750.17	2,982.95	2,983.73	7.73	-7.00	3.28
12,466.00	88.77	91.74	9,541.00	749.82	2,996.37	2,997.16	7.83	-6.85	3.80
12,479.43	88.86	91.79	9,541.28	749.41	3,009.79	3,010.58	0.77	0.67	0.37
12,492.86	88.95	91.84	9,541.54	748.98	3,023.21	3,024.00	0.77	0.67	0.37
12,506.29	89.02	91.88	9,541.78	748.54	3,036.64	3,037.42	0.60	0.52	0.30
12,519.71	89.10	91.93	9,542.00	748.10	3,050.05	3,050.83	0.70	0.60	0.37
12,533.14	89.18	91.97	9,542.20	747.64	3,063.47	3,064.25	0.67	0.60	0.30



Survey Report

Company:	Colgate Energy	Local Co-ordinate Reference:	Well Crazy Horse 32 State Fed Com 133H
Project:	Eddy County, NM (N83-NME)	TVD Reference:	3262+30 @ 3292.00usft (HP510)
Site:	Crazy Horse 32 State Fed Com	MD Reference:	3262+30 @ 3292.00usft (HP510)
Well:	Crazy Horse 32 State Fed Com 133H	North Reference:	Grid
Wellbore:	133H	Survey Calculation Method:	Minimum Curvature
Design:	133H	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)
12,546.57	89.26	92.01	9,542.38	747.18	3,076.89	3,077.67	0.67	0.60	0.30
12,560.00	89.35	92.03	9,542.54	746.70	3,090.31	3,091.09	0.69	0.67	0.15
12,573.57	89.45	92.04	9,542.69	746.22	3,103.87	3,104.65	0.74	0.74	0.07
12,587.14	89.57	92.04	9,542.80	745.74	3,117.43	3,118.21	0.88	0.88	0.00
12,600.71	89.69	92.04	9,542.89	745.25	3,130.99	3,131.77	0.88	0.88	0.00
12,614.29	89.81	92.03	9,542.95	744.77	3,144.56	3,145.34	0.89	0.88	-0.07
12,627.86	89.93	92.02	9,542.98	744.29	3,158.12	3,158.90	0.89	0.88	-0.07
12,641.43	90.05	92.01	9,542.98	743.82	3,171.69	3,172.46	0.89	0.88	-0.07
12,655.00	90.17	92.02	9,542.96	743.34	3,185.25	3,186.02	0.89	0.88	0.07
12,668.43	90.27	92.04	9,542.90	742.86	3,198.67	3,199.44	0.76	0.74	0.15
12,681.86	90.37	92.06	9,542.83	742.38	3,212.09	3,212.87	0.76	0.74	0.15
12,695.29	90.46	92.09	9,542.73	741.90	3,225.51	3,226.29	0.71	0.67	0.22
12,708.71	90.55	92.12	9,542.61	741.40	3,238.92	3,239.70	0.71	0.67	0.22
12,722.14	90.64	92.15	9,542.47	740.90	3,252.34	3,253.11	0.71	0.67	0.22
12,735.57	90.73	92.18	9,542.31	740.40	3,265.76	3,266.53	0.71	0.67	0.22
12,749.00	90.82	92.21	9,542.13	739.88	3,279.18	3,279.95	0.71	0.67	0.22
12,762.57	90.91	92.22	9,541.93	739.36	3,292.74	3,293.51	0.67	0.66	0.07
12,776.14	91.00	92.23	9,541.70	738.83	3,306.30	3,307.07	0.67	0.66	0.07
12,789.71	91.09	92.23	9,541.45	738.30	3,319.85	3,320.62	0.66	0.66	0.00
12,803.29	91.18	92.21	9,541.18	737.78	3,333.42	3,334.19	0.68	0.66	-0.15
12,816.86	91.28	92.18	9,540.89	737.26	3,346.98	3,347.75	0.77	0.74	-0.22
12,830.43	91.39	92.11	9,540.58	736.75	3,360.53	3,361.30	0.96	0.81	-0.52
12,844.00	91.51	92.01	9,540.23	736.26	3,374.09	3,374.86	1.15	0.88	-0.74
12,857.43	91.66	91.84	9,539.86	735.81	3,387.51	3,388.28	1.69	1.12	-1.27
12,870.86	91.81	91.63	9,539.46	735.40	3,400.93	3,401.69	1.92	1.12	-1.56
12,884.29	91.97	91.41	9,539.01	735.05	3,414.34	3,415.11	2.02	1.19	-1.64
12,897.71	92.12	91.17	9,538.53	734.75	3,427.75	3,428.52	2.11	1.12	-1.79
12,911.14	92.25	90.94	9,538.02	734.50	3,441.17	3,441.94	1.97	0.97	-1.71
12,924.57	91.08	90.19	9,537.63	734.37	3,454.59	3,455.36	10.35	-8.71	-5.58
12,938.00	90.11	89.27	9,537.49	734.43	3,468.02	3,468.79	9.95	-7.22	-6.85
12,951.57	90.17	89.05	9,537.46	734.63	3,481.59	3,482.36	1.68	0.44	-1.62
12,965.14	90.20	88.82	9,537.42	734.88	3,495.16	3,495.93	1.71	0.22	-1.69
12,978.71	90.20	88.60	9,537.37	735.19	3,508.72	3,509.49	1.62	0.00	-1.62
12,992.29	90.18	88.38	9,537.32	735.54	3,522.30	3,523.07	1.63	-0.15	-1.62
13,005.86	90.12	88.18	9,537.29	735.95	3,535.86	3,536.63	1.54	-0.44	-1.47
13,019.43	90.00	88.01	9,537.27	736.40	3,549.43	3,550.19	1.53	-0.88	-1.25
13,033.00	89.80	87.88	9,537.30	736.89	3,562.99	3,563.76	1.76	-1.47	-0.96
13,046.43	89.48	87.82	9,537.38	737.39	3,576.41	3,577.18	2.42	-2.38	-0.45
13,059.86	89.10	87.80	9,537.55	737.91	3,589.83	3,590.60	2.83	-2.83	-0.15
13,073.29	88.69	87.81	9,537.81	738.42	3,603.24	3,604.02	3.05	-3.05	0.07
13,086.71	88.29	87.82	9,538.16	738.93	3,616.65	3,617.42	2.98	-2.98	0.07
13,100.14	87.95	87.83	9,538.60	739.44	3,630.06	3,630.84	2.53	-2.53	0.07
13,113.57	86.82	88.91	9,539.21	739.82	3,643.47	3,644.25	11.63	-8.41	8.04
13,127.00	86.50	89.03	9,540.00	740.06	3,656.88	3,657.65	2.54	-2.38	0.89



Survey Report

Company:	Colgate Energy	Local Co-ordinate Reference:	Well Crazy Horse 32 State Fed Com 133H
Project:	Eddy County, NM (N83-NME)	TVD Reference:	3262+30 @ 3292.00usft (HP510)
Site:	Crazy Horse 32 State Fed Com	MD Reference:	3262+30 @ 3292.00usft (HP510)
Well:	Crazy Horse 32 State Fed Com 133H	North Reference:	Grid
Wellbore:	133H	Survey Calculation Method:	Minimum Curvature
Design:	133H	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)	
13,140.43	86.45	89.00	9,540.82	740.29	3,670.28	3,671.05	0.43	-0.37	-0.22	
13,153.86	86.48	88.95	9,541.65	740.53	3,683.68	3,684.46	0.43	0.22	-0.37	
13,167.29	86.56	88.89	9,542.46	740.79	3,697.09	3,697.86	0.74	0.60	-0.45	
13,180.71	86.69	88.83	9,543.25	741.05	3,710.48	3,711.25	1.07	0.97	-0.45	
13,194.14	86.87	88.77	9,544.01	741.33	3,723.89	3,724.66	1.41	1.34	-0.45	
13,207.57	87.07	88.71	9,544.72	741.63	3,737.29	3,738.07	1.55	1.49	-0.45	
13,221.00	87.32	88.67	9,545.38	741.94	3,750.70	3,751.48	1.89	1.86	-0.30	
13,234.57	87.63	88.63	9,545.97	742.26	3,764.26	3,765.03	2.30	2.28	-0.29	
13,248.14	87.97	88.61	9,546.50	742.58	3,777.81	3,778.59	2.51	2.51	-0.15	
13,261.71	88.32	88.59	9,546.93	742.91	3,791.37	3,792.15	2.58	2.58	-0.15	
13,275.29	88.67	88.56	9,547.29	743.25	3,804.94	3,805.72	2.59	2.58	-0.22	
13,288.86	89.01	88.51	9,547.57	743.60	3,818.51	3,819.28	2.53	2.51	-0.37	
13,302.43	89.33	88.45	9,547.76	743.96	3,832.07	3,832.85	2.40	2.36	-0.44	
13,316.00	89.59	88.35	9,547.89	744.34	3,845.63	3,846.41	2.05	1.92	-0.74	
13,329.43	89.77	88.19	9,547.97	744.74	3,859.06	3,859.83	1.79	1.34	-1.19	
13,342.86	89.89	88.00	9,548.01	745.19	3,872.48	3,873.26	1.67	0.89	-1.41	
13,356.29	89.98	87.79	9,548.02	745.68	3,885.90	3,886.68	1.70	0.67	-1.56	
13,369.71	90.04	87.59	9,548.02	746.22	3,899.31	3,900.09	1.56	0.45	-1.49	
13,383.14	90.08	87.41	9,548.00	746.81	3,912.73	3,913.51	1.37	0.30	-1.34	
13,396.57	89.22	88.17	9,548.09	747.33	3,926.15	3,926.93	8.55	-6.40	5.66	
13,410.00	88.28	88.97	9,548.38	747.66	3,939.57	3,940.35	9.19	-7.00	5.96	
13,423.57	88.25	88.88	9,548.79	747.92	3,953.13	3,953.91	0.70	-0.22	-0.66	
13,437.14	88.21	88.80	9,549.21	748.19	3,966.69	3,967.47	0.66	-0.29	-0.59	
13,450.71	88.16	88.73	9,549.64	748.48	3,980.25	3,981.03	0.63	-0.37	-0.52	
13,464.29	88.11	88.67	9,550.08	748.79	3,993.82	3,994.60	0.57	-0.37	-0.44	
13,477.86	88.09	88.62	9,550.53	749.11	4,007.38	4,008.16	0.40	-0.15	-0.37	
13,491.43	87.11	89.46	9,551.10	749.34	4,020.93	4,021.72	9.51	-7.22	6.19	
13,505.00	86.07	90.36	9,551.91	749.36	4,034.48	4,035.26	10.13	-7.66	6.63	
13,518.43	85.90	90.64	9,552.85	749.24	4,047.88	4,048.66	2.43	-1.27	2.08	
13,531.86	85.99	90.58	9,553.80	749.10	4,061.27	4,062.05	0.80	0.67	-0.45	
13,545.29	86.09	90.52	9,554.72	748.97	4,074.67	4,075.45	0.87	0.74	-0.45	
13,558.71	86.20	90.45	9,555.63	748.86	4,088.06	4,088.84	0.97	0.82	-0.52	
13,572.14	86.34	90.40	9,556.50	748.76	4,101.46	4,102.24	1.11	1.04	-0.37	
13,585.57	86.49	90.34	9,557.34	748.67	4,114.86	4,115.65	1.20	1.12	-0.45	
13,599.00	86.66	90.30	9,558.14	748.60	4,128.27	4,129.05	1.30	1.27	-0.30	
13,612.43	86.88	90.27	9,558.90	748.53	4,141.68	4,142.46	1.65	1.64	-0.22	
13,625.86	87.11	90.25	9,559.60	748.47	4,155.09	4,155.87	1.72	1.71	-0.15	
13,639.29	87.37	90.23	9,560.25	748.41	4,168.50	4,169.29	1.94	1.94	-0.15	
13,652.71	87.65	90.21	9,560.83	748.36	4,181.91	4,182.69	2.09	2.09	-0.15	
13,666.14	87.94	90.18	9,561.35	748.32	4,195.33	4,196.11	2.17	2.16	-0.22	
13,679.57	88.25	90.15	9,561.80	748.28	4,208.75	4,209.53	2.32	2.31	-0.22	
13,693.00	88.60	90.11	9,562.16	748.25	4,222.18	4,222.96	2.62	2.61	-0.30	
13,706.57	88.99	90.05	9,562.45	748.23	4,235.75	4,236.53	2.91	2.87	-0.44	



Survey Report

Company:	Colgate Energy	Local Co-ordinate Reference:	Well Crazy Horse 32 State Fed Com 133H
Project:	Eddy County, NM (N83-NME)	TVD Reference:	3262+30 @ 3292.00usft (HP510)
Site:	Crazy Horse 32 State Fed Com	MD Reference:	3262+30 @ 3292.00usft (HP510)
Well:	Crazy Horse 32 State Fed Com 133H	North Reference:	Grid
Wellbore:	133H	Survey Calculation Method:	Minimum Curvature
Design:	133H	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)
13,720.14	89.39	89.98	9,562.64	748.22	4,249.31	4,250.10	2.99	2.95	-0.52
13,733.71	89.79	89.90	9,562.74	748.24	4,262.88	4,263.66	3.01	2.95	-0.59
13,747.29	90.15	89.83	9,562.75	748.27	4,276.46	4,277.24	2.70	2.65	-0.52
13,760.86	90.45	89.76	9,562.67	748.32	4,290.03	4,290.81	2.27	2.21	-0.52
13,774.43	89.47	90.81	9,562.68	748.25	4,303.60	4,304.38	10.58	-7.22	7.74
13,788.00	89.18	91.17	9,562.84	748.02	4,317.17	4,317.95	3.41	-2.14	2.65
13,801.43	89.14	91.15	9,563.04	747.75	4,330.60	4,331.38	0.33	-0.30	-0.15
13,814.86	89.03	91.14	9,563.26	747.48	4,344.02	4,344.80	0.82	-0.82	-0.07
13,828.29	88.87	91.14	9,563.50	747.21	4,357.45	4,358.23	1.19	-1.19	0.00
13,841.71	88.70	91.14	9,563.79	746.94	4,370.86	4,371.64	1.27	-1.27	0.00
13,855.14	88.54	91.14	9,564.11	746.68	4,384.28	4,385.06	1.19	-1.19	0.00
13,868.57	87.84	91.30	9,564.53	746.39	4,397.70	4,398.48	5.35	-5.21	1.19
13,882.00	87.78	91.27	9,565.05	746.09	4,411.12	4,411.90	0.50	-0.45	-0.22
13,895.57	87.83	91.23	9,565.57	745.79	4,424.68	4,425.46	0.47	0.37	-0.29
13,909.14	87.93	91.17	9,566.07	745.51	4,438.24	4,439.01	0.86	0.74	-0.44
13,922.71	88.07	91.11	9,566.54	745.24	4,451.79	4,452.57	1.12	1.03	-0.44
13,936.29	88.21	91.03	9,566.98	744.99	4,465.36	4,466.14	1.19	1.03	-0.59
13,949.86	88.32	90.96	9,567.39	744.75	4,478.93	4,479.70	0.96	0.81	-0.52
13,963.43	87.82	91.10	9,567.85	744.51	4,492.49	4,493.26	3.83	-3.68	1.03
13,977.00	87.81	91.01	9,568.37	744.26	4,506.04	4,506.82	0.67	-0.07	-0.66
13,990.43	87.67	90.92	9,568.90	744.03	4,519.46	4,520.24	1.24	-1.04	-0.67
14,003.86	87.46	90.82	9,569.47	743.83	4,532.88	4,533.66	1.73	-1.56	-0.74
14,017.29	87.21	90.72	9,570.09	743.65	4,546.29	4,547.07	2.00	-1.86	-0.74
14,030.71	86.96	90.63	9,570.78	743.49	4,559.69	4,560.47	1.98	-1.86	-0.67
14,044.14	86.36	90.90	9,571.56	743.31	4,573.10	4,573.88	4.90	-4.47	2.01
14,057.57	86.16	90.82	9,572.43	743.11	4,586.50	4,587.28	1.60	-1.49	-0.60
14,071.00	86.02	90.74	9,573.35	742.93	4,599.90	4,600.67	1.20	-1.04	-0.60
14,084.57	85.72	90.65	9,574.33	742.76	4,613.43	4,614.21	2.31	-2.21	-0.66
14,098.14	85.78	90.60	9,575.33	742.62	4,626.96	4,627.74	0.57	0.44	-0.37
14,111.71	85.88	90.55	9,576.32	742.48	4,640.50	4,641.27	0.82	0.74	-0.37
14,125.29	86.00	90.50	9,577.28	742.36	4,654.04	4,654.82	0.96	0.88	-0.37
14,138.86	86.12	90.45	9,578.21	742.24	4,667.58	4,668.35	0.96	0.88	-0.37
14,152.43	86.23	90.39	9,579.12	742.14	4,681.12	4,681.89	0.92	0.81	-0.44
14,166.00	86.28	90.33	9,580.00	742.06	4,694.66	4,695.43	0.57	0.37	-0.44
14,179.43	86.08	90.36	9,580.90	741.98	4,708.06	4,708.83	1.51	-1.49	0.22
14,192.86	85.05	91.03	9,581.94	741.82	4,721.45	4,722.22	9.14	-7.67	4.99
14,206.29	84.93	90.93	9,583.11	741.59	4,734.82	4,735.60	1.16	-0.89	-0.74
14,219.71	84.78	90.82	9,584.31	741.38	4,748.19	4,748.96	1.38	-1.12	-0.82
14,233.14	84.64	90.72	9,585.55	741.20	4,761.56	4,762.33	1.28	-1.04	-0.74
14,246.57	84.52	90.62	9,586.82	741.05	4,774.93	4,775.70	1.16	-0.89	-0.74
14,260.00	84.45	90.53	9,588.11	740.91	4,788.30	4,789.07	0.85	-0.52	-0.67
14,273.57	84.47	90.47	9,589.42	740.79	4,801.80	4,802.58	0.46	0.15	-0.44
14,287.14	84.55	90.42	9,590.72	740.69	4,815.31	4,816.08	0.69	0.59	-0.37



Survey Report

Company:	Colgate Energy	Local Co-ordinate Reference:	Well Crazy Horse 32 State Fed Com 133H
Project:	Eddy County, NM (N83-NME)	TVD Reference:	3262+30 @ 3292.00usft (HP510)
Site:	Crazy Horse 32 State Fed Com	MD Reference:	3262+30 @ 3292.00usft (HP510)
Well:	Crazy Horse 32 State Fed Com 133H	North Reference:	Grid
Wellbore:	133H	Survey Calculation Method:	Minimum Curvature
Design:	133H	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)	
14,300.71	84.68	90.38	9,591.99	740.60	4,828.82	4,829.59	1.00	0.96	-0.29	
14,314.29	84.82	90.35	9,593.24	740.51	4,842.34	4,843.12	1.05	1.03	-0.22	
14,327.86	84.99	90.32	9,594.44	740.43	4,855.86	4,856.63	1.27	1.25	-0.22	
14,341.43	85.17	90.30	9,595.61	740.36	4,869.38	4,870.15	1.33	1.33	-0.15	
14,355.00	85.35	90.29	9,596.73	740.29	4,882.90	4,883.67	1.33	1.33	-0.07	
14,368.43	85.54	90.28	9,597.79	740.22	4,896.29	4,897.06	1.42	1.41	-0.07	
14,381.86	85.72	90.28	9,598.82	740.16	4,909.68	4,910.45	1.34	1.34	0.00	
14,395.29	85.90	90.28	9,599.80	740.09	4,923.07	4,923.85	1.34	1.34	0.00	
14,408.71	86.07	90.27	9,600.74	740.03	4,936.46	4,937.23	1.27	1.27	-0.07	
14,422.14	86.22	90.26	9,601.64	739.96	4,949.86	4,950.63	1.12	1.12	-0.07	
14,435.57	86.36	90.25	9,602.51	739.90	4,963.26	4,964.03	1.05	1.04	-0.07	
14,449.00	86.45	90.22	9,603.35	739.85	4,976.67	4,977.44	0.71	0.67	-0.22	
14,462.57	86.49	90.16	9,604.19	739.80	4,990.21	4,990.98	0.53	0.29	-0.44	
14,469.22	86.49	90.13	9,604.59	739.79	4,996.85	4,997.62	0.44	0.00	-0.44	
03-V5000(CH-32-133H)										
14,476.14	86.49	90.10	9,605.02	739.77	5,003.75	5,004.53	0.44	0.00	-0.44	
14,489.71	86.48	90.02	9,605.85	739.76	5,017.30	5,018.07	0.59	-0.07	-0.59	
14,503.29	86.46	89.95	9,606.69	739.76	5,030.85	5,031.63	0.54	-0.15	-0.52	
14,516.86	86.26	89.91	9,607.55	739.78	5,044.40	5,045.17	1.50	-1.47	-0.29	
14,530.43	85.60	89.98	9,608.51	739.79	5,057.93	5,058.70	4.89	-4.86	0.52	
14,544.00	85.63	89.92	9,609.55	739.80	5,071.46	5,072.23	0.49	0.22	-0.44	
14,557.43	85.70	89.88	9,610.56	739.83	5,084.85	5,085.63	0.60	0.52	-0.30	
14,570.86	85.80	89.85	9,611.56	739.86	5,098.25	5,099.02	0.78	0.74	-0.22	
14,576.93	85.85	89.84	9,612.00	739.88	5,104.30	5,105.07	0.91	0.89	-0.15	
Wolfcamp A										
14,584.29	85.92	89.83	9,612.53	739.90	5,111.64	5,112.41	0.91	0.89	-0.15	
14,597.71	86.05	89.81	9,613.47	739.94	5,125.03	5,125.80	0.98	0.97	-0.15	
14,611.14	86.18	89.79	9,614.38	739.99	5,138.43	5,139.20	0.98	0.97	-0.15	
14,624.57	86.32	89.77	9,615.26	740.04	5,151.83	5,152.60	1.05	1.04	-0.15	
14,638.00	86.47	89.75	9,616.10	740.09	5,165.23	5,166.00	1.13	1.12	-0.15	
14,651.57	86.61	89.73	9,616.92	740.15	5,178.78	5,179.55	1.04	1.03	-0.15	
14,665.14	86.75	89.70	9,617.71	740.22	5,192.32	5,193.10	1.06	1.03	-0.22	
14,678.71	86.89	89.66	9,618.46	740.30	5,205.87	5,206.65	1.07	1.03	-0.29	
14,692.29	87.03	89.63	9,619.18	740.38	5,219.43	5,220.21	1.05	1.03	-0.22	
14,705.86	87.17	89.61	9,619.86	740.47	5,232.99	5,233.76	1.04	1.03	-0.15	
14,719.43	87.30	89.58	9,620.52	740.57	5,246.54	5,247.31	0.98	0.96	-0.22	
14,733.00	87.44	89.57	9,621.14	740.67	5,260.10	5,260.87	1.03	1.03	-0.07	
14,746.57	87.57	89.56	9,621.73	740.77	5,273.65	5,274.42	0.96	0.96	-0.07	
14,760.14	87.69	89.56	9,622.29	740.87	5,287.21	5,287.98	0.88	0.88	0.00	
14,773.71	87.82	89.57	9,622.83	740.98	5,300.77	5,301.54	0.96	0.96	0.07	
14,787.29	87.94	89.57	9,623.33	741.08	5,314.34	5,315.11	0.88	0.88	0.00	
14,800.86	88.05	89.57	9,623.80	741.18	5,327.90	5,328.67	0.81	0.81	0.00	
14,814.43	88.17	89.56	9,624.25	741.28	5,341.46	5,342.24	0.89	0.88	-0.07	
14,828.00	88.27	89.53	9,624.67	741.39	5,355.03	5,355.80	0.77	0.74	-0.22	



Survey Report

Company:	Colgate Energy	Local Co-ordinate Reference:	Well Crazy Horse 32 State Fed Com 133H
Project:	Eddy County, NM (N83-NME)	TVD Reference:	3262+30 @ 3292.00usft (HP510)
Site:	Crazy Horse 32 State Fed Com	MD Reference:	3262+30 @ 3292.00usft (HP510)
Well:	Crazy Horse 32 State Fed Com 133H	North Reference:	Grid
Wellbore:	133H	Survey Calculation Method:	Minimum Curvature
Design:	133H	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)	
14,841.57	88.36	89.48	9,625.07	741.51	5,368.59	5,369.36	0.76	0.66	-0.37	
14,855.14	88.45	89.41	9,625.45	741.64	5,382.15	5,382.93	0.84	0.66	-0.52	
14,868.71	88.53	89.34	9,625.81	741.79	5,395.72	5,396.49	0.78	0.59	-0.52	
14,882.29	88.63	89.26	9,626.14	741.95	5,409.29	5,410.07	0.94	0.74	-0.59	
14,895.86	88.73	89.18	9,626.46	742.14	5,422.86	5,423.63	0.94	0.74	-0.59	
14,909.43	88.86	89.11	9,626.74	742.34	5,436.42	5,437.20	1.09	0.96	-0.52	
14,923.00	89.02	89.06	9,626.99	742.56	5,449.99	5,450.76	1.24	1.18	-0.37	
14,936.43	89.23	89.03	9,627.20	742.78	5,463.42	5,464.19	1.58	1.56	-0.22	
14,949.86	89.47	89.01	9,627.35	743.01	5,476.84	5,477.62	1.79	1.79	-0.15	
14,963.29	89.73	89.00	9,627.44	743.24	5,490.27	5,491.05	1.94	1.94	-0.07	
14,976.71	90.00	89.00	9,627.47	743.48	5,503.69	5,504.46	2.01	2.01	0.00	
14,990.14	90.27	89.01	9,627.44	743.71	5,517.12	5,517.89	2.01	2.01	0.07	
15,003.57	90.52	89.02	9,627.35	743.94	5,530.54	5,531.32	1.86	1.86	0.07	
15,017.00	90.75	89.03	9,627.20	744.17	5,543.97	5,544.75	1.71	1.71	0.07	
15,030.43	90.94	89.04	9,627.00	744.40	5,557.40	5,558.17	1.42	1.41	0.07	
15,043.86	91.11	89.05	9,626.76	744.62	5,570.82	5,571.60	1.27	1.27	0.07	
15,057.29	91.26	89.06	9,626.49	744.84	5,584.25	5,585.03	1.12	1.12	0.07	
15,070.71	91.40	89.06	9,626.17	745.06	5,597.66	5,598.44	1.04	1.04	0.00	
15,084.14	91.53	89.05	9,625.83	745.28	5,611.09	5,611.87	0.97	0.97	-0.07	
15,097.57	90.50	89.39	9,625.59	745.47	5,624.51	5,625.29	8.08	-7.67	2.53	
15,111.00	90.33	89.44	9,625.50	745.60	5,637.94	5,638.72	1.32	-1.27	0.37	
15,124.57	90.48	89.34	9,625.40	745.75	5,651.51	5,652.29	1.33	1.11	-0.74	
15,138.14	90.63	89.23	9,625.27	745.92	5,665.08	5,665.86	1.37	1.11	-0.81	
15,151.71	90.77	89.10	9,625.10	746.12	5,678.65	5,679.43	1.41	1.03	-0.96	
15,165.29	90.90	88.96	9,624.90	746.35	5,692.22	5,693.00	1.41	0.96	-1.03	
15,178.86	91.00	88.82	9,624.68	746.61	5,705.79	5,706.57	1.27	0.74	-1.03	
15,192.43	91.07	88.69	9,624.43	746.90	5,719.35	5,720.13	1.09	0.52	-0.96	
15,206.00	91.09	88.58	9,624.18	747.23	5,732.92	5,733.70	0.82	0.15	-0.81	
15,219.43	91.02	88.48	9,623.93	747.57	5,746.34	5,747.12	0.91	-0.52	-0.74	
15,232.86	90.90	88.40	9,623.71	747.94	5,759.77	5,760.55	1.07	-0.89	-0.60	
15,246.29	90.75	88.34	9,623.51	748.32	5,773.19	5,773.97	1.20	-1.12	-0.45	
15,259.71	90.59	88.29	9,623.36	748.71	5,786.60	5,787.38	1.25	-1.19	-0.37	
15,273.14	90.42	88.27	9,623.24	749.12	5,800.02	5,800.81	1.27	-1.27	-0.15	
15,286.57	89.87	88.73	9,623.20	749.47	5,813.45	5,814.23	5.34	-4.10	3.43	
15,300.00	89.60	88.84	9,623.27	749.75	5,826.88	5,827.66	2.17	-2.01	0.82	
15,313.43	89.49	88.91	9,623.37	750.02	5,840.30	5,841.09	0.97	-0.82	0.52	
15,326.86	89.40	89.02	9,623.50	750.26	5,853.73	5,854.51	1.06	-0.67	0.82	
15,340.29	89.30	89.15	9,623.65	750.47	5,867.16	5,867.94	1.22	-0.74	0.97	
15,353.71	89.20	89.29	9,623.83	750.66	5,880.58	5,881.36	1.28	-0.75	1.04	
15,367.14	89.09	89.44	9,624.03	750.81	5,894.00	5,894.79	1.38	-0.82	1.12	
15,380.57	88.95	89.60	9,624.26	750.92	5,907.43	5,908.21	1.58	-1.04	1.19	
15,394.00	88.78	89.76	9,624.53	750.99	5,920.86	5,921.64	1.74	-1.27	1.19	
15,407.57	88.54	89.94	9,624.84	751.03	5,934.42	5,935.21	2.21	-1.77	1.33	



Survey Report

Company:	Colgate Energy	Local Co-ordinate Reference:	Well Crazy Horse 32 State Fed Com 133H
Project:	Eddy County, NM (N83-NME)	TVD Reference:	3262+30 @ 3292.00usft (HP510)
Site:	Crazy Horse 32 State Fed Com	MD Reference:	3262+30 @ 3292.00usft (HP510)
Well:	Crazy Horse 32 State Fed Com 133H	North Reference:	Grid
Wellbore:	133H	Survey Calculation Method:	Minimum Curvature
Design:	133H	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)	
15,421.14	88.27	90.11	9,625.22	751.02	5,947.99	5,948.77	2.35	-1.99	1.25	
15,434.71	87.97	90.28	9,625.67	750.98	5,961.55	5,962.34	2.54	-2.21	1.25	
15,448.29	87.67	90.44	9,626.18	750.89	5,975.12	5,975.91	2.50	-2.21	1.18	
15,461.86	87.38	90.58	9,626.77	750.77	5,988.68	5,989.46	2.37	-2.14	1.03	
15,475.43	87.10	90.70	9,627.42	750.62	6,002.23	6,003.01	2.24	-2.06	0.88	
15,489.00	86.86	90.77	9,628.14	750.44	6,015.78	6,016.56	1.84	-1.77	0.52	
15,502.43	86.69	90.77	9,628.89	750.26	6,029.19	6,029.97	1.27	-1.27	0.00	
15,515.86	86.55	90.73	9,629.68	750.09	6,042.60	6,043.38	1.08	-1.04	-0.30	
15,529.29	86.45	90.67	9,630.50	749.93	6,056.00	6,056.78	0.87	-0.74	-0.45	
15,542.71	86.37	90.58	9,631.34	749.78	6,069.39	6,070.17	0.90	-0.60	-0.67	
15,556.14	86.31	90.50	9,632.20	749.65	6,082.79	6,083.58	0.74	-0.45	-0.60	
15,569.57	86.29	90.94	9,633.07	749.48	6,096.20	6,096.98	3.27	-0.15	3.28	
15,583.00	86.23	91.78	9,633.95	749.17	6,109.59	6,110.37	6.26	-0.45	6.25	
15,596.43	86.27	91.70	9,634.82	748.76	6,122.99	6,123.77	0.66	0.30	-0.60	
15,609.86	86.34	91.61	9,635.69	748.37	6,136.38	6,137.16	0.85	0.52	-0.67	
15,623.29	86.42	91.53	9,636.54	748.01	6,149.78	6,150.56	0.84	0.60	-0.60	
15,636.71	86.51	91.44	9,637.36	747.66	6,163.17	6,163.95	0.95	0.67	-0.67	
15,650.14	86.60	91.34	9,638.17	747.33	6,176.57	6,177.35	1.00	0.67	-0.74	
15,663.57	86.68	91.24	9,638.96	747.03	6,189.98	6,190.76	0.95	0.60	-0.74	
15,677.00	86.74	91.12	9,639.73	746.76	6,203.38	6,204.16	1.00	0.45	-0.89	
15,690.57	86.76	90.98	9,640.50	746.51	6,216.93	6,217.71	1.04	0.15	-1.03	
15,704.14	86.77	90.84	9,641.26	746.29	6,230.48	6,231.25	1.03	0.07	-1.03	
15,717.71	86.76	90.69	9,642.03	746.11	6,244.02	6,244.80	1.11	-0.07	-1.11	
15,731.29	86.75	90.54	9,642.80	745.97	6,257.58	6,258.36	1.11	-0.07	-1.10	
15,744.86	86.74	90.39	9,643.57	745.86	6,271.13	6,271.90	1.11	-0.07	-1.11	
15,758.43	86.75	90.25	9,644.34	745.78	6,284.68	6,285.45	1.03	0.07	-1.03	
15,772.00	86.76	90.12	9,645.11	745.74	6,298.22	6,299.00	0.96	0.07	-0.96	
15,785.43	86.82	90.01	9,645.86	745.72	6,311.63	6,312.41	0.93	0.45	-0.82	
15,798.86	87.56	90.29	9,646.52	745.69	6,325.05	6,325.82	5.89	5.51	2.08	
15,812.29	87.64	90.20	9,647.08	745.63	6,338.46	6,339.24	0.90	0.60	-0.67	
15,825.71	87.73	90.12	9,647.62	745.59	6,351.87	6,352.65	0.90	0.67	-0.60	
15,839.14	87.81	90.05	9,648.15	745.57	6,365.29	6,366.07	0.79	0.60	-0.52	
15,852.57	87.88	89.97	9,648.65	745.57	6,378.71	6,379.49	0.79	0.52	-0.60	
15,866.00	87.92	89.89	9,649.14	745.58	6,392.13	6,392.91	0.67	0.30	-0.60	
15,879.57	87.90	89.80	9,649.64	745.62	6,405.70	6,406.47	0.68	-0.15	-0.66	
15,893.14	87.85	89.71	9,650.14	745.68	6,419.26	6,420.03	0.76	-0.37	-0.66	
15,906.71	87.79	89.62	9,650.66	745.76	6,432.82	6,433.59	0.80	-0.44	-0.66	
15,920.29	87.70	89.53	9,651.19	745.86	6,446.38	6,447.16	0.94	-0.66	-0.66	
15,933.86	87.61	89.44	9,651.75	745.98	6,459.94	6,460.72	0.94	-0.66	-0.66	
15,947.43	87.67	89.81	9,652.31	746.07	6,473.50	6,474.28	2.76	0.44	2.73	
15,961.00	87.91	90.77	9,652.83	746.00	6,487.06	6,487.84	7.29	1.77	7.07	
15,974.43	87.88	91.00	9,653.32	745.79	6,500.48	6,501.26	1.73	-0.22	1.71	
15,987.86	87.76	90.95	9,653.83	745.57	6,513.90	6,514.68	0.97	-0.89	-0.37	
16,001.29	87.63	90.90	9,654.37	745.35	6,527.32	6,528.09	1.04	-0.97	-0.37	



Survey Report

Company:	Colgate Energy	Local Co-ordinate Reference:	Well Crazy Horse 32 State Fed Com 133H
Project:	Eddy County, NM (N83-NME)	TVD Reference:	3262+30 @ 3292.00usft (HP510)
Site:	Crazy Horse 32 State Fed Com	MD Reference:	3262+30 @ 3292.00usft (HP510)
Well:	Crazy Horse 32 State Fed Com 133H	North Reference:	Grid
Wellbore:	133H	Survey Calculation Method:	Minimum Curvature
Design:	133H	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)
16,014.71	87.49	90.85	9,654.94	745.14	6,540.72	6,541.50	1.11	-1.04	-0.37
16,028.14	87.40	90.83	9,655.54	744.95	6,554.14	6,554.91	0.69	-0.67	-0.15
16,041.57	88.26	91.24	9,656.05	744.71	6,567.56	6,568.33	7.09	6.40	3.05
16,055.00	88.96	91.84	9,656.38	744.34	6,580.98	6,581.75	6.86	5.21	4.47
16,068.43	89.09	92.07	9,656.61	743.89	6,594.40	6,595.17	1.97	0.97	1.71
16,081.86	88.70	92.01	9,656.86	743.41	6,607.82	6,608.59	2.94	-2.90	-0.45
16,095.29	88.28	91.96	9,657.22	742.94	6,621.23	6,622.01	3.15	-3.13	-0.37
16,108.71	87.86	91.90	9,657.67	742.49	6,634.64	6,635.41	3.16	-3.13	-0.45
16,122.14	87.46	91.85	9,658.22	742.05	6,648.05	6,648.82	3.00	-2.98	-0.37
16,135.57	88.15	92.11	9,658.73	741.59	6,661.46	6,662.23	5.49	5.14	1.94
16,149.00	88.28	92.18	9,659.15	741.09	6,674.88	6,675.65	1.10	0.97	0.52
16,162.43	88.05	92.14	9,659.58	740.58	6,688.29	6,689.06	1.74	-1.71	-0.30
16,175.86	87.85	92.09	9,660.06	740.09	6,701.70	6,702.47	1.53	-1.49	-0.37
16,189.29	87.68	92.05	9,660.59	739.60	6,715.11	6,715.88	1.30	-1.27	-0.30
16,202.71	87.53	92.01	9,661.15	739.13	6,728.51	6,729.28	1.16	-1.12	-0.30
16,216.14	87.39	91.95	9,661.74	738.66	6,741.92	6,742.69	1.13	-1.04	-0.45
16,229.57	88.10	92.11	9,662.27	738.19	6,755.33	6,756.10	5.42	5.29	1.19
16,243.00	88.99	92.37	9,662.61	737.66	6,768.75	6,769.52	6.90	6.63	1.94
16,256.57	89.93	92.60	9,662.74	737.07	6,782.30	6,783.07	7.13	6.93	1.69
16,270.14	90.20	92.60	9,662.72	736.46	6,795.86	6,796.63	1.99	1.99	0.00
16,283.71	90.07	92.48	9,662.69	735.86	6,809.42	6,810.18	1.30	-0.96	-0.88
16,297.29	89.95	92.36	9,662.69	735.28	6,822.98	6,823.75	1.25	-0.88	-0.88
16,310.86	89.85	92.23	9,662.71	734.74	6,836.54	6,837.31	1.21	-0.74	-0.96
16,324.43	89.86	92.11	9,662.75	734.23	6,850.10	6,850.87	0.89	0.07	-0.88
16,338.00	90.83	92.05	9,662.67	733.73	6,863.66	6,864.43	7.16	7.15	-0.44
16,351.43	91.11	92.00	9,662.44	733.26	6,877.08	6,877.85	2.12	2.08	-0.37
16,364.86	91.20	91.89	9,662.17	732.80	6,890.50	6,891.27	1.06	0.67	-0.82
16,378.29	91.31	91.78	9,661.87	732.37	6,903.92	6,904.69	1.16	0.82	-0.82
16,391.71	91.43	91.67	9,661.55	731.97	6,917.33	6,918.10	1.21	0.89	-0.82
16,405.14	91.55	91.56	9,661.20	731.59	6,930.75	6,931.52	1.21	0.89	-0.82
16,418.57	91.65	91.46	9,660.83	731.24	6,944.17	6,944.94	1.05	0.74	-0.74
16,432.00	91.73	91.35	9,660.43	730.91	6,957.59	6,958.36	1.01	0.60	-0.82
16,445.57	91.76	91.26	9,660.02	730.60	6,971.15	6,971.91	0.70	0.22	-0.66
16,459.14	91.75	91.16	9,659.60	730.31	6,984.71	6,985.48	0.74	-0.07	-0.74
16,472.71	91.72	91.07	9,659.19	730.05	6,998.28	6,999.04	0.70	-0.22	-0.66
16,486.29	91.68	90.98	9,658.79	729.81	7,011.85	7,012.61	0.72	-0.29	-0.66
16,499.86	91.63	90.89	9,658.40	729.58	7,025.41	7,026.17	0.76	-0.37	-0.66
16,513.43	91.59	90.81	9,658.02	729.38	7,038.97	7,039.73	0.66	-0.29	-0.59
16,527.00	91.20	90.81	9,657.69	729.19	7,052.54	7,053.30	2.87	-2.87	0.00
16,540.43	91.03	90.76	9,657.42	729.01	7,065.96	7,066.72	1.32	-1.27	-0.37
16,553.86	91.01	90.67	9,657.19	728.84	7,079.39	7,080.15	0.69	-0.15	-0.67
16,567.29	91.00	90.59	9,656.95	728.69	7,092.82	7,093.58	0.60	-0.07	-0.60
16,580.71	91.01	90.50	9,656.71	728.56	7,106.24	7,106.99	0.67	0.07	-0.67



Survey Report

Company:	Colgate Energy	Local Co-ordinate Reference:	Well Crazy Horse 32 State Fed Com 133H
Project:	Eddy County, NM (N83-NME)	TVD Reference:	3262+30 @ 3292.00usft (HP510)
Site:	Crazy Horse 32 State Fed Com	MD Reference:	3262+30 @ 3292.00usft (HP510)
Well:	Crazy Horse 32 State Fed Com 133H	North Reference:	Grid
Wellbore:	133H	Survey Calculation Method:	Minimum Curvature
Design:	133H	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)	
16,594.14	91.03	90.40	9,656.48	728.46	7,119.66	7,120.42	0.76	0.15	-0.74	
16,607.57	91.08	90.29	9,656.23	728.38	7,133.09	7,133.85	0.90	0.37	-0.82	
16,621.00	91.16	90.18	9,655.97	728.32	7,146.52	7,147.28	1.01	0.60	-0.82	
16,634.43	91.30	90.04	9,655.68	728.30	7,159.94	7,160.70	1.47	1.04	-1.04	
16,647.86	91.48	89.89	9,655.35	728.31	7,173.37	7,174.13	1.74	1.34	-1.12	
16,661.29	91.65	89.73	9,654.99	728.35	7,186.80	7,187.55	1.74	1.27	-1.19	
16,674.71	91.80	89.57	9,654.58	728.43	7,200.21	7,200.97	1.63	1.12	-1.19	
16,688.14	91.90	89.42	9,654.15	728.55	7,213.63	7,214.39	1.34	0.74	-1.12	
16,701.57	91.14	90.04	9,653.79	728.61	7,227.06	7,227.82	7.30	-5.66	4.62	
16,715.00	90.69	90.98	9,653.58	728.49	7,240.48	7,241.24	7.76	-3.35	7.00	
16,728.57	90.42	91.24	9,653.45	728.23	7,254.05	7,254.81	2.76	-1.99	1.92	
16,742.14	90.17	91.06	9,653.38	727.96	7,267.62	7,268.38	2.27	-1.84	-1.33	
16,755.71	89.87	90.88	9,653.37	727.73	7,281.19	7,281.94	2.58	-2.21	-1.33	
16,769.29	89.57	90.72	9,653.44	727.54	7,294.76	7,295.52	2.50	-2.21	-1.18	
16,782.86	89.17	90.63	9,653.59	727.38	7,308.33	7,309.09	3.02	-2.95	-0.66	
16,796.43	88.29	90.90	9,653.89	727.20	7,321.90	7,322.66	6.78	-6.48	1.99	
16,810.00	88.11	90.84	9,654.31	726.99	7,335.46	7,336.22	1.40	-1.33	-0.44	
16,823.57	88.02	90.85	9,654.77	726.79	7,349.02	7,349.78	0.67	-0.66	0.07	
16,837.14	87.98	90.91	9,655.25	726.58	7,362.58	7,363.34	0.53	-0.29	0.44	
16,850.71	87.99	90.99	9,655.72	726.36	7,376.14	7,376.90	0.59	0.07	0.59	
16,864.29	88.02	91.09	9,656.19	726.11	7,389.71	7,390.47	0.77	0.22	0.74	
16,877.86	88.07	91.19	9,656.66	725.84	7,403.27	7,404.03	0.82	0.37	0.74	
16,891.43	88.12	91.29	9,657.11	725.55	7,416.83	7,417.58	0.82	0.37	0.74	
16,905.00	88.18	91.37	9,657.55	725.24	7,430.39	7,431.14	0.74	0.44	0.59	
16,918.43	88.23	91.42	9,657.97	724.91	7,443.81	7,444.56	0.53	0.37	0.37	
16,931.86	88.27	91.45	9,658.38	724.57	7,457.23	7,457.98	0.37	0.30	0.22	
16,945.29	88.31	91.46	9,658.78	724.23	7,470.65	7,471.40	0.31	0.30	0.07	
16,958.71	88.35	91.46	9,659.17	723.89	7,484.06	7,484.81	0.30	0.30	0.00	
16,971.24	88.40	91.44	9,659.53	723.57	7,496.58	7,497.33	0.40	0.37	-0.15	
04-V7500(CH-32-133H)										
16,972.14	88.40	91.44	9,659.55	723.55	7,497.48	7,498.23	0.40	0.37	-0.15	
16,985.57	88.45	91.40	9,659.92	723.22	7,510.90	7,511.65	0.48	0.37	-0.30	
16,999.00	88.50	91.35	9,660.28	722.90	7,524.32	7,525.07	0.53	0.37	-0.37	
17,012.43	88.55	91.26	9,660.62	722.59	7,537.74	7,538.49	0.77	0.37	-0.67	
17,025.86	88.61	91.14	9,660.96	722.31	7,551.16	7,551.92	1.00	0.45	-0.89	
17,039.29	88.68	91.02	9,661.27	722.06	7,564.59	7,565.34	1.03	0.52	-0.89	
17,052.71	88.74	90.89	9,661.58	721.83	7,578.00	7,578.75	1.07	0.45	-0.97	
17,066.14	88.79	90.75	9,661.86	721.64	7,591.43	7,592.18	1.11	0.37	-1.04	
17,079.57	88.84	90.62	9,662.14	721.48	7,604.85	7,605.61	1.04	0.37	-0.97	
17,093.00	88.87	90.50	9,662.41	721.35	7,618.28	7,619.03	0.92	0.22	-0.89	
17,106.57	88.39	90.15	9,662.74	721.27	7,631.85	7,632.60	4.38	-3.54	-2.58	
17,120.14	87.17	89.55	9,663.26	721.31	7,645.41	7,646.16	10.02	-8.99	-4.42	
17,133.71	87.15	89.45	9,663.93	721.42	7,658.96	7,659.71	0.75	-0.15	-0.74	
17,147.29	87.13	89.36	9,664.61	721.57	7,672.52	7,673.27	0.68	-0.15	-0.66	



Survey Report

Company:	Colgate Energy	Local Co-ordinate Reference:	Well Crazy Horse 32 State Fed Com 133H
Project:	Eddy County, NM (N83-NME)	TVD Reference:	3262+30 @ 3292.00usft (HP510)
Site:	Crazy Horse 32 State Fed Com	MD Reference:	3262+30 @ 3292.00usft (HP510)
Well:	Crazy Horse 32 State Fed Com 133H	North Reference:	Grid
Wellbore:	133H	Survey Calculation Method:	Minimum Curvature
Design:	133H	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)
17,160.86	87.10	89.27	9,665.29	721.73	7,686.07	7,686.82	0.70	-0.22	-0.66
17,174.43	87.09	89.20	9,665.98	721.91	7,699.62	7,700.38	0.52	-0.07	-0.52
17,188.00	87.10	89.14	9,666.67	722.10	7,713.18	7,713.93	0.45	0.07	-0.44
17,201.43	87.14	89.11	9,667.34	722.31	7,726.59	7,727.34	0.37	0.30	-0.22
17,214.86	87.20	89.10	9,668.01	722.52	7,740.00	7,740.75	0.45	0.45	-0.07
17,228.29	87.28	89.10	9,668.65	722.73	7,753.41	7,754.16	0.60	0.60	0.00
17,241.71	87.37	89.10	9,669.28	722.94	7,766.82	7,767.57	0.67	0.67	0.00
17,255.14	87.46	89.12	9,669.89	723.15	7,780.23	7,780.98	0.69	0.67	0.15
17,268.57	87.62	89.23	9,670.46	723.34	7,793.65	7,794.40	1.45	1.19	0.82
17,282.00	88.30	90.30	9,670.94	723.40	7,807.07	7,807.82	9.44	5.06	7.97
17,295.43	88.39	90.33	9,671.33	723.32	7,820.49	7,821.24	0.71	0.67	0.22
17,308.86	88.49	90.38	9,671.69	723.24	7,833.92	7,834.67	0.83	0.74	0.37
17,322.29	88.59	90.43	9,672.04	723.14	7,847.34	7,848.09	0.83	0.74	0.37
17,335.71	88.70	90.48	9,672.35	723.04	7,860.76	7,861.51	0.90	0.82	0.37
17,349.14	88.82	90.53	9,672.64	722.92	7,874.18	7,874.94	0.97	0.89	0.37
17,362.57	88.96	90.58	9,672.90	722.79	7,887.61	7,888.36	1.11	1.04	0.37
17,376.00	89.11	90.62	9,673.13	722.65	7,901.04	7,901.79	1.16	1.12	0.30
17,389.57	89.30	90.65	9,673.32	722.50	7,914.61	7,915.36	1.42	1.40	0.22
17,403.14	89.51	90.67	9,673.46	722.34	7,928.17	7,928.93	1.55	1.55	0.15
17,416.71	89.73	90.68	9,673.55	722.18	7,941.74	7,942.49	1.62	1.62	0.07
17,430.29	89.95	90.69	9,673.59	722.02	7,955.32	7,956.07	1.62	1.62	0.07
17,443.86	90.18	90.69	9,673.57	721.86	7,968.89	7,969.64	1.69	1.69	0.00
17,457.43	90.40	90.68	9,673.50	721.69	7,982.46	7,983.21	1.62	1.62	-0.07
17,471.00	90.60	90.66	9,673.39	721.54	7,996.03	7,996.78	1.48	1.47	-0.15
17,484.43	90.79	90.63	9,673.22	721.38	8,009.46	8,010.21	1.43	1.41	-0.22
17,497.86	90.96	90.60	9,673.02	721.24	8,022.88	8,023.64	1.29	1.27	-0.22
17,511.29	91.12	90.56	9,672.77	721.10	8,036.31	8,037.06	1.23	1.19	-0.30
17,524.71	91.27	90.51	9,672.49	720.98	8,049.73	8,050.48	1.18	1.12	-0.37
17,538.14	91.42	90.48	9,672.18	720.86	8,063.15	8,063.90	1.14	1.12	-0.22
17,551.57	90.18	90.05	9,671.99	720.80	8,076.58	8,077.33	9.77	-9.23	-3.20
17,565.00	88.71	89.63	9,672.12	720.84	8,090.01	8,090.76	11.38	-10.95	-3.13
17,578.57	88.15	89.45	9,672.49	720.95	8,103.58	8,104.33	4.33	-4.13	-1.33
17,592.14	88.32	89.44	9,672.91	721.08	8,117.14	8,117.89	1.25	1.25	-0.07
17,605.71	88.50	89.43	9,673.29	721.21	8,130.70	8,131.45	1.33	1.33	-0.07
17,619.29	88.66	89.42	9,673.62	721.35	8,144.28	8,145.03	1.18	1.18	-0.07
17,632.86	88.81	89.41	9,673.92	721.49	8,157.84	8,158.59	1.11	1.11	-0.07
17,646.43	88.92	89.40	9,674.19	721.63	8,171.41	8,172.16	0.81	0.81	-0.07
17,660.00	87.47	89.35	9,674.62	721.78	8,184.97	8,185.72	10.69	-10.69	-0.37
17,673.43	87.48	89.36	9,675.21	721.93	8,198.39	8,199.14	0.11	0.07	0.07
17,686.86	87.45	89.36	9,675.81	722.08	8,211.80	8,212.56	0.22	-0.22	0.00
17,700.29	87.41	89.37	9,676.41	722.23	8,225.22	8,225.97	0.31	-0.30	0.07
17,713.71	87.36	89.38	9,677.02	722.37	8,238.63	8,239.38	0.38	-0.37	0.07
17,727.14	87.32	89.39	9,677.64	722.52	8,252.04	8,252.79	0.31	-0.30	0.07



Survey Report

Company:	Colgate Energy	Local Co-ordinate Reference:	Well Crazy Horse 32 State Fed Com 133H
Project:	Eddy County, NM (N83-NME)	TVD Reference:	3262+30 @ 3292.00usft (HP510)
Site:	Crazy Horse 32 State Fed Com	MD Reference:	3262+30 @ 3292.00usft (HP510)
Well:	Crazy Horse 32 State Fed Com 133H	North Reference:	Grid
Wellbore:	133H	Survey Calculation Method:	Minimum Curvature
Design:	133H	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)	
17,740.57	87.29	89.41	9,678.27	722.66	8,265.45	8,266.21	0.27	-0.22	0.15	
17,754.00	86.12	89.78	9,679.05	722.75	8,278.86	8,279.61	9.14	-8.71	2.76	
17,767.57	86.17	89.83	9,679.96	722.80	8,292.40	8,293.15	0.52	0.37	0.37	
17,781.14	86.25	89.88	9,680.86	722.83	8,305.94	8,306.69	0.69	0.59	0.37	
17,794.71	86.33	89.94	9,681.73	722.85	8,319.48	8,320.23	0.74	0.59	0.44	
17,808.29	86.42	89.99	9,682.59	722.86	8,333.04	8,333.79	0.76	0.66	0.37	
17,821.86	86.51	90.04	9,683.43	722.86	8,346.58	8,347.33	0.76	0.66	0.37	
17,835.43	86.59	90.07	9,684.25	722.85	8,360.12	8,360.88	0.63	0.59	0.22	
17,849.00	86.65	90.09	9,685.05	722.83	8,373.67	8,374.42	0.47	0.44	0.15	
17,862.43	86.99	90.20	9,685.79	722.79	8,387.08	8,387.83	2.66	2.53	0.82	
17,875.86	88.25	90.69	9,686.35	722.69	8,400.50	8,401.25	10.07	9.38	3.65	
17,889.29	88.24	90.64	9,686.76	722.53	8,413.92	8,414.67	0.38	-0.07	-0.37	
17,902.71	88.24	90.59	9,687.17	722.39	8,427.33	8,428.09	0.37	0.00	-0.37	
17,916.14	88.24	90.53	9,687.58	722.26	8,440.76	8,441.51	0.45	0.00	-0.45	
17,929.57	88.25	90.48	9,688.00	722.14	8,454.18	8,454.93	0.38	0.07	-0.37	
17,943.00	88.30	90.45	9,688.40	722.03	8,467.60	8,468.36	0.43	0.37	-0.22	
17,956.57	88.41	90.45	9,688.79	721.92	8,481.17	8,481.92	0.81	0.81	0.00	
17,970.14	88.55	90.47	9,689.15	721.81	8,494.73	8,495.48	1.04	1.03	0.15	
17,983.71	88.71	90.50	9,689.47	721.70	8,508.30	8,509.05	1.20	1.18	0.22	
17,997.29	88.88	90.53	9,689.76	721.58	8,521.87	8,522.63	1.27	1.25	0.22	
18,010.86	89.05	90.55	9,690.00	721.45	8,535.44	8,536.19	1.26	1.25	0.15	
18,024.43	89.20	90.56	9,690.21	721.32	8,549.01	8,549.76	1.11	1.11	0.07	
18,038.00	89.33	90.55	9,690.39	721.19	8,562.58	8,563.33	0.96	0.96	-0.07	
18,051.43	89.40	90.50	9,690.53	721.06	8,576.01	8,576.76	0.64	0.52	-0.37	
18,064.86	89.45	90.43	9,690.67	720.95	8,589.44	8,590.19	0.64	0.37	-0.52	
18,078.29	89.49	90.35	9,690.79	720.86	8,602.86	8,603.61	0.67	0.30	-0.60	
18,091.71	89.52	90.26	9,690.91	720.79	8,616.28	8,617.03	0.71	0.22	-0.67	
18,105.14	89.54	90.17	9,691.02	720.74	8,629.71	8,630.46	0.69	0.15	-0.67	
18,118.57	88.82	89.54	9,691.21	720.78	8,643.14	8,643.89	7.12	-5.36	-4.69	
18,132.00	88.36	89.10	9,691.54	720.93	8,656.57	8,657.32	4.74	-3.43	-3.28	
18,145.43	88.42	89.05	9,691.92	721.15	8,669.99	8,670.74	0.58	0.45	-0.37	
18,158.86	88.49	89.01	9,692.28	721.38	8,683.41	8,684.16	0.60	0.52	-0.30	
18,172.29	88.56	88.98	9,692.63	721.61	8,696.84	8,697.59	0.57	0.52	-0.22	
18,185.71	88.65	88.94	9,692.95	721.86	8,710.25	8,711.00	0.73	0.67	-0.30	
18,199.14	88.73	88.92	9,693.26	722.11	8,723.67	8,724.43	0.61	0.60	-0.15	
18,212.57	88.83	88.89	9,693.55	722.37	8,737.10	8,737.85	0.78	0.74	-0.22	
18,226.00	88.94	88.86	9,693.81	722.63	8,750.52	8,751.28	0.85	0.82	-0.22	
18,239.57	89.06	88.84	9,694.05	722.90	8,764.09	8,764.84	0.90	0.88	-0.15	
18,253.14	89.20	88.81	9,694.25	723.18	8,777.65	8,778.41	1.06	1.03	-0.22	
18,266.71	89.34	88.78	9,694.42	723.46	8,791.22	8,791.97	1.06	1.03	-0.22	
18,280.29	89.47	88.74	9,694.57	723.76	8,804.80	8,805.55	1.00	0.96	-0.29	
18,293.86	89.61	88.69	9,694.67	724.06	8,818.36	8,819.12	1.10	1.03	-0.37	
18,307.43	89.73	88.62	9,694.75	724.38	8,831.93	8,832.68	1.02	0.88	-0.52	



Survey Report

Company:	Colgate Energy	Local Co-ordinate Reference:	Well Crazy Horse 32 State Fed Com 133H
Project:	Eddy County, NM (N83-NME)	TVD Reference:	3262+30 @ 3292.00usft (HP510)
Site:	Crazy Horse 32 State Fed Com	MD Reference:	3262+30 @ 3292.00usft (HP510)
Well:	Crazy Horse 32 State Fed Com 133H	North Reference:	Grid
Wellbore:	133H	Survey Calculation Method:	Minimum Curvature
Design:	133H	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)	
18,321.00	89.83	88.53	9,694.80	724.72	8,845.49	8,846.25	0.99	0.74	-0.66	
18,334.43	89.91	88.39	9,694.84	725.08	8,858.92	8,859.67	1.20	0.60	-1.04	
18,347.86	89.96	88.23	9,694.85	725.48	8,872.34	8,873.10	1.25	0.37	-1.19	
18,361.29	90.01	88.07	9,694.85	725.91	8,885.77	8,886.52	1.25	0.37	-1.19	
18,374.71	90.06	87.90	9,694.85	726.38	8,899.18	8,899.93	1.32	0.37	-1.27	
18,388.14	90.10	87.74	9,694.83	726.89	8,912.60	8,913.35	1.23	0.30	-1.19	
18,401.57	90.16	87.61	9,694.80	727.44	8,926.02	8,926.77	1.07	0.45	-0.97	
18,415.00	88.97	87.68	9,694.90	727.99	8,939.44	8,940.19	8.88	-8.86	0.52	
18,428.43	89.07	87.63	9,695.13	728.54	8,952.85	8,953.61	0.83	0.74	-0.37	
18,441.86	89.17	87.61	9,695.33	729.10	8,966.27	8,967.03	0.76	0.74	-0.15	
18,455.29	89.28	87.60	9,695.52	729.66	8,979.69	8,980.44	0.82	0.82	-0.07	
18,468.71	89.40	87.59	9,695.67	730.22	8,993.09	8,993.85	0.90	0.89	-0.07	
18,482.14	89.52	87.59	9,695.80	730.78	9,006.51	9,007.27	0.89	0.89	0.00	
18,495.57	89.64	87.58	9,695.90	731.35	9,019.93	9,020.69	0.90	0.89	-0.07	
18,509.00	89.76	87.56	9,695.97	731.92	9,033.35	9,034.11	0.91	0.89	-0.15	
18,522.57	89.88	87.51	9,696.01	732.50	9,046.90	9,047.67	0.96	0.88	-0.37	
18,536.14	89.99	87.45	9,696.02	733.10	9,060.46	9,061.22	0.92	0.81	-0.44	
18,549.71	90.10	87.38	9,696.01	733.71	9,074.02	9,074.78	0.96	0.81	-0.52	
18,563.29	90.21	87.31	9,695.98	734.34	9,087.58	9,088.35	0.96	0.81	-0.52	
18,576.86	90.31	87.26	9,695.91	734.98	9,101.14	9,101.90	0.82	0.74	-0.37	
18,590.43	89.60	87.63	9,695.93	735.59	9,114.69	9,115.46	5.90	-5.23	2.73	
18,604.00	89.09	87.91	9,696.08	736.12	9,128.25	9,129.02	4.29	-3.76	2.06	
18,617.57	89.16	87.92	9,696.29	736.61	9,141.81	9,142.58	0.52	0.52	0.07	
18,631.14	89.23	87.95	9,696.48	737.10	9,155.37	9,156.14	0.56	0.52	0.22	
18,644.71	89.30	87.99	9,696.65	737.58	9,168.93	9,169.70	0.59	0.52	0.29	
18,658.29	89.36	88.05	9,696.81	738.05	9,182.50	9,183.27	0.62	0.44	0.44	
18,671.86	89.43	88.12	9,696.95	738.50	9,196.06	9,196.83	0.73	0.52	0.52	
18,685.43	89.49	88.20	9,697.08	738.94	9,209.63	9,210.40	0.74	0.44	0.59	
18,699.00	89.57	88.30	9,697.19	739.35	9,223.19	9,223.96	0.94	0.59	0.74	
18,712.43	89.66	88.42	9,697.28	739.74	9,236.61	9,237.38	1.12	0.67	0.89	
18,725.86	89.75	88.55	9,697.35	740.09	9,250.04	9,250.81	1.18	0.67	0.97	
18,739.29	89.85	88.69	9,697.40	740.42	9,263.46	9,264.24	1.28	0.74	1.04	
18,752.71	89.95	88.82	9,697.42	740.71	9,276.88	9,277.65	1.22	0.75	0.97	
18,766.14	90.06	88.95	9,697.42	740.97	9,290.31	9,291.08	1.27	0.82	0.97	
18,779.57	90.16	89.05	9,697.40	741.20	9,303.74	9,304.51	1.05	0.74	0.74	
18,793.00	89.41	89.12	9,697.45	741.42	9,317.17	9,317.94	5.61	-5.58	0.52	
18,806.57	89.07	89.15	9,697.63	741.62	9,330.73	9,331.50	2.52	-2.51	0.22	
18,820.14	89.17	89.16	9,697.84	741.82	9,344.30	9,345.07	0.74	0.74	0.07	
18,833.71	89.27	89.15	9,698.02	742.02	9,357.87	9,358.64	0.74	0.74	-0.07	
18,847.29	89.35	89.14	9,698.18	742.23	9,371.44	9,372.22	0.59	0.59	-0.07	
18,860.86	89.43	89.12	9,698.33	742.43	9,385.01	9,385.78	0.61	0.59	-0.15	
18,874.43	89.48	89.11	9,698.46	742.64	9,398.58	9,399.35	0.38	0.37	-0.07	
18,888.00	89.50	89.11	9,698.58	742.85	9,412.15	9,412.92	0.15	0.15	0.00	
18,901.43	89.47	89.12	9,698.70	743.06	9,425.58	9,426.35	0.24	-0.22	0.07	



Survey Report

Company:	Colgate Energy	Local Co-ordinate Reference:	Well Crazy Horse 32 State Fed Com 133H
Project:	Eddy County, NM (N83-NME)	TVD Reference:	3262+30 @ 3292.00usft (HP510)
Site:	Crazy Horse 32 State Fed Com	MD Reference:	3262+30 @ 3292.00usft (HP510)
Well:	Crazy Horse 32 State Fed Com 133H	North Reference:	Grid
Wellbore:	133H	Survey Calculation Method:	Minimum Curvature
Design:	133H	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)
18,914.86	89.40	89.15	9,698.83	743.26	9,439.00	9,439.78	0.57	-0.52	0.22
18,928.29	89.33	89.19	9,698.98	743.46	9,452.43	9,453.20	0.60	-0.52	0.30
18,941.71	89.25	89.23	9,699.15	743.64	9,465.85	9,466.62	0.67	-0.60	0.30
18,955.14	89.17	89.27	9,699.33	743.82	9,479.28	9,480.05	0.67	-0.60	0.30
18,968.57	89.11	89.31	9,699.53	743.98	9,492.70	9,493.48	0.54	-0.45	0.30
18,982.00	88.07	89.38	9,699.86	744.14	9,506.13	9,506.90	7.76	-7.74	0.52
18,995.57	88.08	89.41	9,700.32	744.28	9,519.69	9,520.46	0.23	0.07	0.22
19,009.14	88.12	89.43	9,700.77	744.42	9,533.25	9,534.03	0.33	0.29	0.15
19,022.71	88.17	89.46	9,701.21	744.55	9,546.81	9,547.59	0.43	0.37	0.22
19,036.29	88.25	89.48	9,701.63	744.67	9,560.39	9,561.16	0.61	0.59	0.15
19,049.86	88.34	89.51	9,702.04	744.79	9,573.95	9,574.72	0.70	0.66	0.22
19,063.43	88.47	89.53	9,702.41	744.91	9,587.51	9,588.29	0.97	0.96	0.15
19,077.00	88.63	89.57	9,702.76	745.01	9,601.08	9,601.85	1.22	1.18	0.29
19,090.43	88.84	89.61	9,703.05	745.11	9,614.51	9,615.28	1.59	1.56	0.30
19,103.86	89.08	89.66	9,703.30	745.20	9,627.93	9,628.71	1.83	1.79	0.37
19,117.29	89.35	89.70	9,703.48	745.27	9,641.36	9,642.14	2.03	2.01	0.30
19,130.71	89.62	89.75	9,703.60	745.34	9,654.78	9,655.56	2.05	2.01	0.37
19,144.14	89.90	89.79	9,703.66	745.39	9,668.21	9,668.99	2.11	2.08	0.30
19,157.57	90.17	89.83	9,703.65	745.43	9,681.64	9,682.42	2.03	2.01	0.30
19,171.00	90.43	89.85	9,703.58	745.47	9,695.07	9,695.85	1.94	1.94	0.15
19,184.57	90.66	89.85	9,703.45	745.51	9,708.64	9,709.42	1.69	1.69	0.00
19,198.14	90.87	89.85	9,703.27	745.54	9,722.21	9,722.98	1.55	1.55	0.00
19,211.71	91.06	89.83	9,703.04	745.58	9,735.78	9,736.55	1.41	1.40	-0.15
19,225.29	91.22	89.82	9,702.77	745.62	9,749.35	9,750.13	1.18	1.18	-0.07
19,238.86	91.37	89.80	9,702.46	745.67	9,762.92	9,763.70	1.12	1.11	-0.15
19,252.43	90.18	89.34	9,702.28	745.77	9,776.49	9,777.26	9.40	-8.77	-3.39
19,266.00	89.35	89.16	9,702.34	745.95	9,790.06	9,790.83	6.26	-6.12	-1.33
19,279.43	89.37	89.15	9,702.49	746.14	9,803.49	9,804.26	0.17	0.15	-0.07
19,292.86	89.36	89.14	9,702.64	746.34	9,816.91	9,817.69	0.11	-0.07	-0.07
19,306.29	89.34	89.13	9,702.79	746.55	9,830.34	9,831.12	0.17	-0.15	-0.07
19,319.71	89.31	89.13	9,702.95	746.75	9,843.76	9,844.53	0.22	-0.22	0.00
19,333.14	89.29	89.14	9,703.11	746.95	9,857.19	9,857.96	0.17	-0.15	0.07
19,346.57	89.31	89.15	9,703.27	747.15	9,870.61	9,871.39	0.17	0.15	0.07
19,360.00	88.04	88.87	9,703.58	747.39	9,884.04	9,884.81	9.68	-9.46	-2.08
19,373.43	87.77	88.82	9,704.08	747.66	9,897.46	9,898.23	2.04	-2.01	-0.37
19,386.86	87.90	88.87	9,704.58	747.93	9,910.87	9,911.65	1.04	0.97	0.37
19,400.29	88.06	88.93	9,705.06	748.18	9,924.29	9,925.07	1.27	1.19	0.45
19,413.71	88.23	88.99	9,705.49	748.43	9,937.70	9,938.48	1.34	1.27	0.45
19,427.14	88.40	89.06	9,705.89	748.66	9,951.13	9,951.90	1.37	1.27	0.52
19,440.57	88.58	89.12	9,706.24	748.87	9,964.55	9,965.33	1.41	1.34	0.45
19,454.00	89.29	89.24	9,706.49	749.06	9,977.97	9,978.75	5.36	5.29	0.89
19,467.57	89.45	89.29	9,706.64	749.24	9,991.54	9,992.32	1.24	1.18	0.37
19,474.38	89.54	89.32	9,706.70	749.32	9,998.35	9,999.13	1.33	1.25	0.44



Survey Report

Company:	Colgate Energy	Local Co-ordinate Reference:	Well Crazy Horse 32 State Fed Com 133H
Project:	Eddy County, NM (N83-NME)	TVD Reference:	3262+30 @ 3292.00usft (HP510)
Site:	Crazy Horse 32 State Fed Com	MD Reference:	3262+30 @ 3292.00usft (HP510)
Well:	Crazy Horse 32 State Fed Com 133H	North Reference:	Grid
Wellbore:	133H	Survey Calculation Method:	Minimum Curvature
Design:	133H	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)	
05-V10000(CH-32-133H)										
19,481.14	89.62	89.35	9,706.75	749.40	10,005.11	10,005.89	1.33	1.25	0.44	
19,494.71	89.78	89.40	9,706.82	749.55	10,018.68	10,019.46	1.24	1.18	0.37	
19,508.29	89.94	89.45	9,706.85	749.68	10,032.26	10,033.04	1.23	1.18	0.37	
19,521.86	90.10	89.49	9,706.85	749.81	10,045.83	10,046.61	1.22	1.18	0.29	
19,535.43	90.25	89.52	9,706.81	749.92	10,059.40	10,060.18	1.13	1.11	0.22	
19,549.00	90.41	89.54	9,706.73	750.04	10,072.97	10,073.75	1.19	1.18	0.15	
19,562.43	90.57	89.54	9,706.61	750.14	10,086.40	10,087.18	1.19	1.19	0.00	
19,575.86	90.72	89.52	9,706.46	750.25	10,099.83	10,100.61	1.13	1.12	-0.15	
19,589.29	90.87	89.50	9,706.28	750.37	10,113.25	10,114.03	1.13	1.12	-0.15	
19,602.71	91.03	89.49	9,706.05	750.49	10,126.67	10,127.45	1.19	1.19	-0.07	
19,616.14	91.18	89.47	9,705.79	750.61	10,140.10	10,140.88	1.13	1.12	-0.15	
19,629.57	91.34	89.47	9,705.50	750.73	10,153.52	10,154.31	1.19	1.19	0.00	
19,643.00	91.49	89.48	9,705.17	750.86	10,166.95	10,167.73	1.12	1.12	0.07	
19,656.57	91.65	89.52	9,704.80	750.97	10,180.51	10,181.30	1.22	1.18	0.29	
19,670.14	91.81	89.57	9,704.39	751.08	10,194.08	10,194.86	1.24	1.18	0.37	
19,683.71	91.97	89.64	9,703.94	751.18	10,207.64	10,208.42	1.29	1.18	0.52	
19,697.29	92.13	89.72	9,703.45	751.25	10,221.21	10,221.99	1.32	1.18	0.59	
19,710.86	92.28	89.80	9,702.93	751.31	10,234.77	10,235.55	1.25	1.11	0.59	
19,724.43	92.43	89.88	9,702.37	751.35	10,248.33	10,249.11	1.25	1.11	0.59	
19,738.00	92.57	89.96	9,701.78	751.36	10,261.89	10,262.67	1.19	1.03	0.59	
19,751.50	92.70	90.03	9,701.16	751.37	10,275.37	10,276.15	1.09	0.96	0.52	
19,761.00	92.78	90.08	9,700.71	751.36	10,284.86	10,285.64	1.03	0.89	0.52	
100 FEL: 19761.00' MD, 10285.64' VS, 9700.71' TVD										
19,765.00	92.82	90.10	9,700.51	751.35	10,288.86	10,289.64	1.03	0.89	0.52	
19,766.33	92.83	90.11	9,700.44	751.35	10,290.18	10,290.96	1.03	0.89	0.52	
06-LTP(CH-32-133H)										
19,778.50	92.94	90.17	9,699.83	751.32	10,302.34	10,303.12	1.03	0.89	0.52	
19,792.00	93.04	90.22	9,699.13	751.27	10,315.82	10,316.60	0.83	0.74	0.37	
Final MWD Survey: 19792.00' MD, 93.04°INC, 90.22°AZ										
19,851.00	93.04	90.22	9,696.00	751.05	10,374.74	10,375.52	0.00	0.00	0.00	
PTB: 19851.00' MD, 10375.52' VS, 9696.00' TVD - 07-PBHL(CH-32-133H)										



Survey Report

Company:	Colgate Energy	Local Co-ordinate Reference:	Well Crazy Horse 32 State Fed Com 133H
Project:	Eddy County, NM (N83-NME)	TVD Reference:	3262+30 @ 3292.00usft (HP510)
Site:	Crazy Horse 32 State Fed Com	MD Reference:	3262+30 @ 3292.00usft (HP510)
Well:	Crazy Horse 32 State Fed Com 133H	North Reference:	Grid
Wellbore:	133H	Survey Calculation Method:	Minimum Curvature
Design:	133H	Database:	EDM 5000.14 Single User Db

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
142.00	142.00	Rustler				
382.07	382.00	Top of Salt				
1,297.60	1,297.00	Base of Salt				
1,467.76	1,467.00	Yates				
1,828.24	1,827.00	Capitan				
3,394.77	3,392.00	DLWR Mnt Group				
5,888.46	5,867.00	Lower Brushy Canyon				
6,175.49	6,152.00	Bone Spring Lime				
7,512.02	7,477.00	1st Bone Spring SD				
7,673.38	7,637.00	2nd Bone Spring LM				
8,246.90	8,207.00	2nd Bone Spring SD				
8,584.21	8,542.00	3rd Bone Spring LM				
9,175.57	9,127.00	3rd Bone Spring SD				
14,576.93	9,612.00	Wolfcamp A				

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
9,015.00	8,970.33	656.94	-99.54	KOP: 9015.00' MD, -98.85' VS, 8970.33' TVD	
9,126.00	9,079.46	674.73	-91.65	100 FWL: 9126.00' MD, -90.94' VS, 9079.46' TVD	
9,907.00	9,558.91	745.30	438.16	EOC: 9907.00' MD, 438.94' VS, 9558.91' TVD	
19,761.00	9,700.71	751.36	10,284.86	100 FEL: 19761.00' MD, 10285.64' VS, 9700.71' TVD	
19,792.00	9,699.13	751.27	10,315.82	Final MWD Survey: 19792.00' MD, 93.04°INC, 90.22°AZ	
19,851.00	9,696.00	751.05	10,374.74	PTB: 19851.00' MD, 10375.52' VS, 9696.00' TVD	

Checked By: _____	Approved By: _____	Date: _____
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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 67894

ACKNOWLEDGMENTS

Operator: COLGATE OPERATING, LLC 300 North Marienfeld Street Midland, TX 79701	OGRID: 371449
	Action Number: 67894
	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
1625 N. French Dr., Hobbs, NM 88240
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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 67894

CONDITIONS

Operator: COLGATE OPERATING, LLC 300 North Marienfeld Street Midland, TX 79701	OGRID: 371449
	Action Number: 67894
	Action Type: [C-104] Completion Packet (C-104C)

CONDITIONS

Created By	Condition	Condition Date
Ilowe	RT Expires on 03/20/2022	12/29/2021