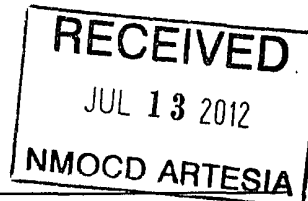


30-015-39658

WELL NAME AND NUMBER Puckett 13 Federal No. 8HLOCATION Section 12, T17S, R31E, Lot P, 232 FSL, 459 FEL, Eddy CountyOPERATOR COG Operating LLCDRILLING CONTRACTOR United Drilling, Inc.

The undersigned hereby certifies that he is an authorized representative of the drilling contractor who drilled the above described well and had conducted deviation test and obtained the following results:

Degrees @ Depth	Degrees @ Depth	Degrees @ Depth
.4° @ 100'	1.1° @ 4403'	
.3° @ 190'	.8° @ 4656'	
.3° @ 291'	.9° @ 5100'	
.6° @ 475'	.9° @ 5417'	
.3° @ 700'	.3° @ 5862'	
.5° @ 974'		
.6° @ 1200'		
.5° @ 1478'		
1.3° @ 1650'		
.9° @ 2216'		
.9° @ 2660'		
1.1° @ 3103'		
1.4° @ 3547'		
1.3° @ 3642'		
1.4° @ 3896'		
1.6° @ 4149'		

Drilling Contractor- UNITED DRILLING, INC.By: Luisa Noriega

(Luisa Noriega)

Title: Asst. Office ManagerSubscribed and sworn to before me this 8th day of May, 2012.
Carlene Machi
 Notary Public

Chaves New Mexico
 County State
My Commission Expires: 10/8/12

COG Operating LLC

Eddy County, NM

Puckett 13 Federal Com 8H

Puckett 13 Federal Com 8H

Wellbore #1

Survey: MWD Surveys

Standard Survey Report

26 April, 2012



COG Operating LLC
Puckett 13 Federal Com 8H
Eddy County, NM
Plan #2



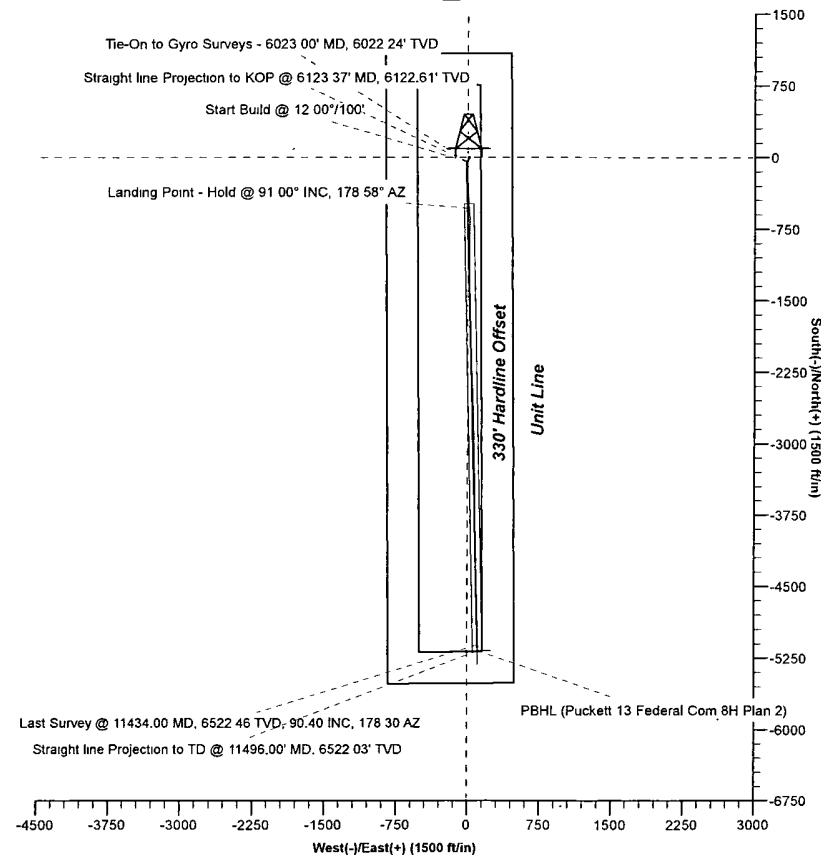
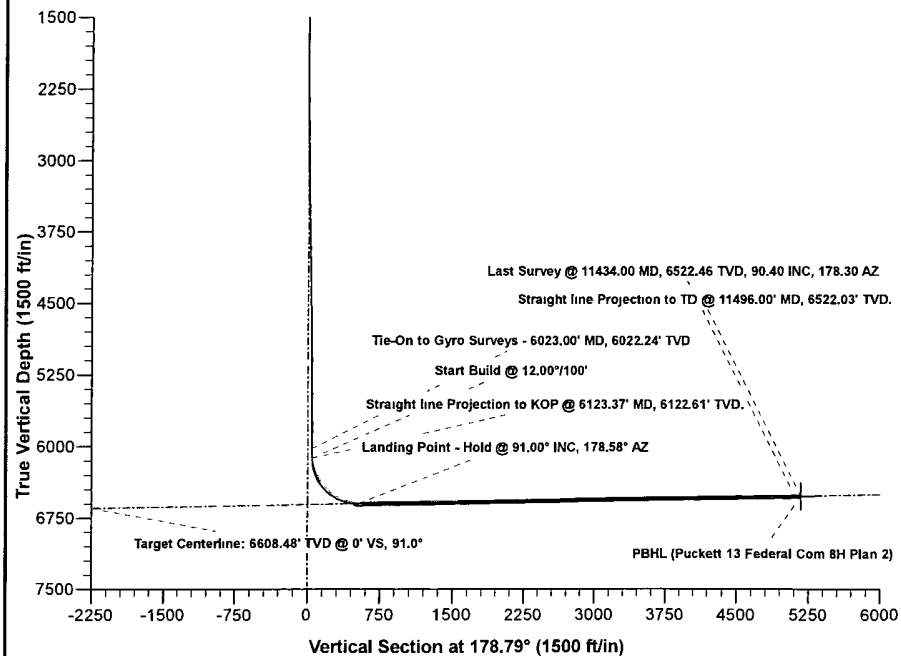
Surface Location		Ground Elev: 3967.00 WELL @ 3981.00ft (United #40)				
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	
0.00	0.00	670589.00	659043.10	32° 50' 32.85 N	103° 48' 55.80 W	

TARGET DETAILS							
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
PBHL (Puckett 13 Federal Com 8H Plan 2)	6519.01	-5171.30	108.80	665417.70	659151.90	32° 49' 41.68 N	103° 48' 54.82 W



Azimuths to Grd North
 True North -0 28°
 Magnetic North 7.37°

Magnetic Field
 Strength: 48879 3snT
 Dip Angle 60 70°
 Date 3/28/2012
 Model IGRF2010



SECTION DETAILS										
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Annotation
1	6023.00	0.41	268.69	6022.24	-47.32	-13.92	0.00	0.00	47.01	Tie-On to Gyro Surveys - 6023.00' MD, 6022.24' TVD
2	6123.37	0.41	268.69	6122.61	-47.33	-14.64	0.00	0.00	47.01	Start Build @ 12.00°/100'
3	6881.71	91.00	178.58	6600.00	-533.07	-6.09	12.00	-90.10	532.82	Landing Point - Hold @ 91.00° INC, 178.58° AZ
4	11522.08	91.00	178.58	6519.01	-5171.30	108.80	0.00	0.00	5172.44	TD @ 11522.08' MD, 6519.01' TVD

Crescent Directional Drilling

Survey Report

Company:	COG Operating LLC	Local Co-ordinate Reference:	Site Puckett 13 Federal Com 8H
Project:	Eddy County, NM	TVD Reference:	WELL @ 3981 00ft (United #40)
Site:	Puckett 13 Federal Com 8H	MD Reference:	WELL @ 3981 00ft (United #40)
Well:	Puckett 13 Federal Com 8H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	R5000 Houston DB

Project		Eddy County, NM	
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site: Puckett 13 Federal Com 8H					
Site Position:		Northing:	670,589 00 ft	Latitude:	32° 50' 32 85 N
From:	Map	Easting:	659,043 10 ft	Longitude:	103° 48' 55 80 W
Position Uncertainty:	0 00 ft	Slot Radius:	13 200 in	Grid Convergence:	0 28 °

Well: Puckett 13 Federal Com 8H						
Well Position	+N/-S	0.00 ft	Northing:	670,589.00 ft	Latitude:	32° 50' 32 85 N
	+E/-W	0 00 ft	Easting:	659,043 10 ft	Longitude:	103° 48' 55 80 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	3,967 00 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
	IGRF2010	3/28/2012	(°)	(°)	(nT)
			7 65	60 70	48,879

Design	Wellbore #1				
Audit Notes:					
Version:	1 0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction	
	(ft)	(ft)	(ft)	(°)	
	0 00	0 00	0 00	178 79	

Survey Program		Date	4/26/2012	
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
100 00	6,023 00	Gyro Surveys (Wellbore #1)	Good_mag	Good Magnetic
6,062 00	11,496 00	MWD Surveys (Wellbore #1)	Good_mag	Good Magnetic

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
6,023 00	0 41	268 69	6,022 24	-47 32	-13 92	47 01	0 00	0 00	0 00
6,062 00	0.60	224 60	6,061 24	-47 46	-14 21	47 15	1 07	0 49	-113 05
6,093 00	3 40	187 10	6,092 22	-48.49	-14 43	48 18	9 51	9 03	-120.97
6,125 00	6 80	181 10	6,124.08	-51 33	-14 59	51 01	10 74	10.63	-18 75
6,157 00	9.70	176 80	6,155 75	-55.92	-14.47	55.80	9 26	9.06	-13 44
6,188 00	12.70	175 30	6,186.16	-61 92	-14 05	61 61	9 72	9 68	-4 84
6,220 00	15.90	173 60	6,217 16	-69 78	-13 27	69 49	10 08	10 00	-5 31
6,252 00	19 50	173 40	6,247 64	-79 45	-12.17	79 17	11 25	11 25	-0 63
6,283 00	23 00	174 50	6,276 53	-90 62	-10 99	90 37	11 36	11 29	3.55
6,315 00	26 60	175 30	6,305 57	-103 99	-9 81	103 76	11.30	11 25	2 50

Crescent Directional Drilling

Survey Report

Company:	COG Operating LLC	Local Co-ordinate Reference:	Site Puckett 13 Federal Com 8H
Project:	Eddy County, NM	TVD Reference:	WELL @ 3981 00ft (United #40)
Site:	Puckett 13 Federal Com 8H	MD Reference:	WELL @ 3981 00ft (United #40)
Well:	Puckett 13 Federal Com 8H	North Reference:	Gnd
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	R5000 Houston DB

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
6,347 00	29 50	176 90	6,333 81	-119 00	-8 79	118 79	9.36	9 06	5 00
6,379 00	32 80	177 80	6,361 19	-135 53	-8 03	135 33	10 41	10 31	2 81
6,410 00	36 90	176 60	6,386 63	-153 22	-7 16	153 03	13 41	13 23	-3 87
6,442 00	40 80	176 40	6,411 55	-173 25	-5.93	173 09	12 19	12 19	-0 63
6,474 00	44 80	176 40	6,435 02	-194 95	-4 57	194.81	12 50	12 50	0 00
6,505 00	47 80	176 90	6,456 44	-217 32	-3 26	217.20	9 75	9 68	1 61
6,537 00	51 30	177 50	6,477 19	-241 64	-2.07	241 54	11 03	10.94	1 88
6,569.00	55 00	177.50	6,496 38	-267.21	-0 96	267.13	11 56	11 56	0 00
6,600 00	58 60	177 50	6,513.35	-293.12	0 17	293.06	11 61	11 61	0 00
6,632 00	62 50	177 50	6,529 08	-320 96	1 39	320 92	12.19	12 19	0 00
6,664 00	66 70	177 10	6,542 81	-349 83	2 75	349 81	13 17	13 13	-1 25
6,696 00	70 60	177 60	6,554 45	-379 59	4 13	379 59	12 27	12 19	1 56
6,727 00	74 00	177 30	6,563 88	-409 09	5 44	409 11	11 01	10 97	-0.97
6,759 00	76 90	176 80	6,571 92	-440 02	7.04	440 07	9 19	9 06	-1 56
6,791 00	79.70	176 60	6,578 40	-471 30	8 84	471.38	8 77	8 75	-0.63
6,824 00	80 70	176 00	6,584 02	-503 75	10 94	503.87	3 52	3 03	-1.82
6,856 00	82 60	175 60	6,588 67	-535 32	13.26	535 49	6 06	5 94	-1 25
6,887 00	84 00	176 20	6,592 28	-566.03	15 46	566 23	4 91	4 52	1.94
6,919 00	85.90	177 60	6,595 10	-597 86	17.18	598 09	7.37	5 94	4 38
6,951 00	86 80	178.70	6,597 14	-629 78	18 21	630 02	4 44	2 81	3 44
6,982 00	88 30	179 30	6,598 46	-660 74	18 75	660.99	5 21	4 84	1 94
7,014 00	90.80	180 20	6,598 71	-692 74	18 89	692.98	8 30	7 81	2 81
7,046 00	91.70	180 80	6,598 02	-724 73	18 61	724 96	3 38	2 81	1 88
7,109 00	92.30	180 70	6,595 82	-787 69	17 79	787 89	0.97	0 95	-0 16
7,204 00	93.10	180 40	6,591 34	-882 58	16 88	882 74	0 90	0 84	-0 32
7,299 00	91.50	180 30	6,587 53	-977 49	16 30	977 62	1.69	-1 68	-0 11
7,394 00	91.00	179 80	6,585 46	-1,072.47	16 22	1,072 57	0 74	-0 53	-0 53
7,490 00	91.90	179 80	6,583 03	-1,168 44	16 55	1,168 53	0 94	0 94	0 00
7,585 00	91.40	179.90	6,580.29	-1,263.40	16 80	1,263 47	0 54	-0 53	0 11
7,680 00	92.20	179 90	6,577 31	-1,358 35	16 97	1,358.41	0 84	0 84	0 00
7,775 00	92 00	179.30	6,573 83	-1,453 28	17.63	1,453.33	0 67	-0 21	-0 63
7,870 00	89 70	178 70	6,572 42	-1,548 25	19 29	1,548.31	2 50	-2 42	-0.63
7,965 00	89 70	178 20	6,572 92	-1,643.22	21 86	1,643 31	0 53	0 00	-0.53
8,060 00	90 20	179 90	6,573 00	-1,738 20	23 43	1,738 31	1 87	0 53	1 79
8,156 00	90 40	177 90	6,572 50	-1,834 18	25 27	1,834 30	2 09	0 21	-2 08
8,251 00	91.60	177 30	6,570 84	-1,929 08	29 25	1,929 26	1 41	1 26	-0 63
8,346 00	90 00	177 30	6,569 51	-2,023 96	33.73	2,024 22	1 68	-1 68	0.00
8,441 00	90.40	177 50	6,569.18	-2,118.86	38.04	2,119.19	0 47	0 42	0 21
8,536 00	91.70	177 70	6,567 44	-2,213 76	42.01	2,214 15	1 38	1.37	0 21
8,630 00	90 00	177 50	6,566 05	-2,307.66	45 95	2,308 12	1.82	-1 81	-0.21
8,725 00	88 90	177 90	6,566 96	-2,402 58	49 76	2,403 09	1 23	-1 16	0.42
8,821 00	89 70	178 20	6,568 13	-2,498 51	53.03	2,499 08	0 89	0.83	0 31
8,916 00	90.90	177 90	6,567 63	-2,593 46	56 26	2,594 07	1 30	1.26	-0 32

Crescent Directional Drilling

Survey Report

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Project:	Eddy County, NM	TVD Reference:	WELL @ 3981.00ft (United #40)
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Well:	Puckett 13 Federal Com 8H	North Reference:	Grid
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Design:	Wellbore #1	Database:	R5000 Houston DB

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
9,011.00	90.50	178.50	6,566.47	-2,688.40	59.24	2,689.05	0.76	-0.42	0.63
9,106.00	90.10	177.90	6,565.98	-2,783.35	62.23	2,784.05	0.76	-0.42	-0.63
9,201.00	90.40	178.90	6,565.56	-2,878.31	64.88	2,879.04	1.10	0.32	1.05
9,296.00	90.60	179.60	6,564.73	-2,973.30	66.12	2,974.04	0.77	0.21	0.74
9,391.00	91.50	179.70	6,562.99	-3,068.28	66.70	3,069.01	0.95	0.95	0.11
9,486.00	92.20	178.70	6,559.92	-3,163.22	68.03	3,163.95	1.28	0.74	-1.05
9,581.00	93.00	178.00	6,555.61	-3,258.08	70.76	3,258.85	1.12	0.84	-0.74
9,676.00	90.00	180.20	6,553.13	-3,353.02	72.25	3,353.80	3.92	-3.16	2.32
9,771.00	88.50	178.90	6,554.37	-3,448.01	73.00	3,448.78	2.09	-1.58	-1.37
9,867.00	89.80	179.20	6,555.79	-3,543.98	74.59	3,544.77	1.39	1.35	0.31
9,962.00	90.70	179.80	6,555.38	-3,638.98	75.42	3,639.76	1.14	0.95	0.63
10,057.00	90.70	180.00	6,554.22	-3,733.97	75.58	3,734.73	0.21	0.00	0.21
10,152.00	92.20	178.90	6,551.82	-3,828.93	76.50	3,829.69	1.96	1.58	-1.16
10,247.00	92.70	179.20	6,547.75	-3,923.83	78.07	3,924.60	0.61	0.53	0.32
10,342.00	93.10	179.70	6,542.95	-4,018.70	78.98	4,019.47	0.67	0.42	0.53
10,438.00	91.50	179.80	6,539.10	-4,114.62	79.40	4,115.38	1.67	-1.67	0.10
10,533.00	91.00	178.50	6,537.02	-4,209.59	80.81	4,210.35	1.47	-0.53	-1.37
10,628.00	90.90	178.90	6,535.45	-4,304.55	82.96	4,305.34	0.43	-0.11	0.42
10,723.00	90.80	179.00	6,534.04	-4,399.52	84.70	4,400.33	0.15	-0.11	0.11
10,818.00	91.40	178.00	6,532.22	-4,494.47	87.19	4,495.31	1.23	0.63	-1.05
10,913.00	91.30	178.20	6,529.98	-4,589.39	90.34	4,590.28	0.24	-0.11	0.21
11,009.00	91.50	178.60	6,527.63	-4,685.32	93.02	4,686.24	0.47	0.21	0.42
11,104.00	91.90	178.50	6,524.81	-4,780.25	95.42	4,781.20	0.43	0.42	-0.11
11,199.00	90.10	178.20	6,523.16	-4,875.19	98.16	4,876.18	1.92	-1.89	-0.32
11,294.00	90.20	178.30	6,522.91	-4,970.15	101.06	4,971.18	0.15	0.11	0.11
11,389.00	90.10	178.60	6,522.66	-5,065.11	103.63	5,066.17	0.33	-0.11	0.32
11,434.00	90.40	178.30	6,522.46	-5,110.10	104.84	5,111.17	0.94	0.67	-0.67
Last Survey @ 11434.00 MD, 6522.46 TVD, 90.40 INC, 178.30 AZ									
11,496.00	90.40	178.30	6,522.03	-5,172.07	106.68	5,173.17	0.00	0.00	0.00
Straight line Projection to TD @ 11496.00' MD, 6522.03' TVD.									

Survey Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
11,434.00	6,522.46	-5,110.10	104.84	Last Survey @ 11434.00 MD, 6522.46 TVD, 90.40 INC, 178.30 AZ
11,496.00	6,522.03	-5,172.07	106.68	Straight line Projection to TD @ 11496.00' MD, 6522.03' TVD

Checked By: _____ Approved By: _____ Date: _____