

Results of Directional Survey

API number:	30-025-40130		
OGRID:		Operator:	COG OPERATING LLC
		Property:	CORAZON STATE UNIT 4 # 4H

surface	ULSTR:	D	04	T 21S	R 33E
				330 FNL	330 FWL

BH Loc	ULSTR:	A	04	T 21S	R 33E
15661	MD	11427.6	TVD	322 FNL	4965 FWL
					315 FEL

Top Perf/OH	ULSTR:	D	04	T 21S	R 33E
11725	MD	11415.9	TVD	369 FNL	1033 FWL

Bot Perf/OH	ULSTR:	A	04	T 21S	R 33E
15450	MD	11422.6	TVD	329 FNL	4754 FWL
					526 FEL

	MD	N/S	E/W	VD
	11695	-35.40	674.80	11407.8
TOP PERFS/OH	11725	-38.96	703.49	11415.86
	11727	-39.20	705.40	11416.40
	15426	-0.01	4400.10	11422.10
BOT PERFS/OH	15450	0.71	4424.08	11422.64
	15533	3.20	4507.00	11424.50

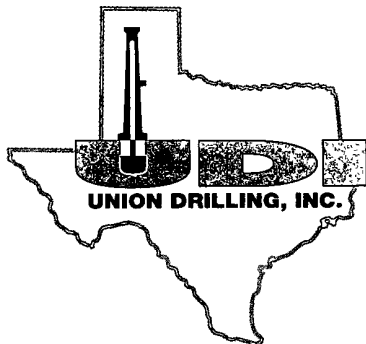
NEXT TO LAST	15643.2	7.00	4617.10	11427.20
LAST READING	15661	7.70	4634.90	11427.60
TD	15661	7.70	4634.90	11427.60

Surface Location	330 FN	330 FW
Projected BHL	322 FN	4965 FW
Location of		
Top Perfs/OH	369 FN	1033 FW
Bottom Perfs/OH	329 FN	4754 FW

SUMMARY of Subsurface Locations

Surface Location	D-04-21S-33E	330 FN	330 FW	Vert. Depth
Top Perfs/OH	D-04-21S-33E	369 FN	1033 FW	11415.86
Bottom Perfs/OH	A-04-21S-33E	329 FN	4754 FW	11422.64
Projected TD	A-04-21S-33E	322 FN	4965 FW	11427.60

NOV 08 2011



COG OPERATING, LLC
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 SEP 01 2011
 ARTESIA WEST

HOBBS OCD
 NOV 02 2011
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Well Name & Number: Corazon State Unit 4 #004H

API Number: 30-025-40130

Location: 330' FNL & 330' FWL, Lot D, Sec. 4, Township 21S, Range 33E, Lea County, New Mexico

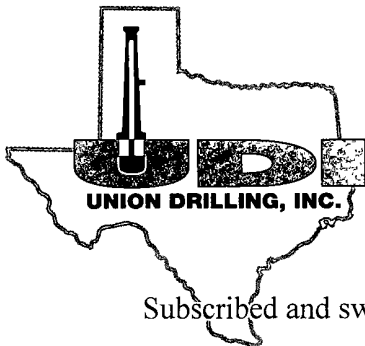
Operator: COG Operating, LLC

Drilling Contractor: Union Drilling, Inc.

The undersigned hereby certifies that she is an authorized representative of the drilling Contractor who drilled the above described well and that deviation survey tests were conducted and she obtained the following results:

RECORD OF INCLINATION

*11 Measured Depth (feet)	12 Course Length (Hundreds of feet)	*13 Angle of Inclination (Degrees)	14 Displacement per Hundred Feet (Sine of Angle X100)	15 Course Displacement (feet)	16 Accumulative Displacement (feet)
235	235	1	1.75	4.10	4.10
1150	915	.71	1.24	11.34	15.44
2041	891	.61	1.06	9.49	24.93
2985	944	.85	1.48	14.00	38.93
3938	953	1	1.75	16.63	55.56
4732	794	.75	1.31	10.39	65.96
5460	728	.5	0.87	6.35	72.31
6295	835	.35	0.61	5.10	77.41
7243	948	1	1.75	16.55	93.96
8127	884	1.25	2.18	19.29	113.24
8764	637	.75	1.31	8.34	121.58
9700	936	1	1.75	16.34	137.92
10490	790	1	1.75	13.79	151.70
10869	379	6.5	11.34	42.97	194.68
DIRECTIONAL					
TOOK OVER					



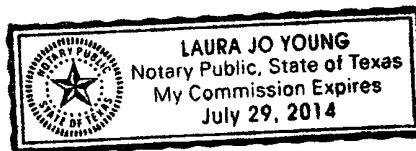
Drilling Contractor: Union Drilling, Inc.

By: Jim Mayfield
Jim Mayfield
Title: Division Manager

Subscribed and sworn to before me this 30th Day of August, 2011.

Laura Jo Young
Notary Public
My Commission Expires: July 29, 2014

COUNTY OF TAYLOR)
)
STATE OF TEXAS)



HOBBS OCD

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SUR: D-4-21s-33e, 330/N & 330/W
BHL: A-4-21s-33e, 322/N & 315/E
API # 30-025-40130

COG OPERATING

Wildcat (Lea County, NM)
Lea County, NM
Corazon State Unit 4 #4H
VH - Job #32K0711656

HOBBS OCD

NOV 02 2011

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Survey: Actual

SDI Standard Survey Report

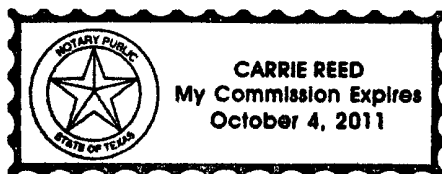
This survey is correct to the best of my knowledge and is supported by actual field data.

Richard

Notarized this date 1st of August, 2011.

Carrie Reed

Notary Signature
County of Midland
State of Texas



Scientific Drilling International, Inc.

SDI Standard Survey Report



Company:	COG OPERATING	Local Co-ordinate Reference:	Well Corazon State Unit 4 #4H
Project:	Wildcat (Lea County, NM)	TVD Reference:	WELL @ 0 0usft (Original Well Elev)
Site:	Lea County, NM	MD Reference:	WELL @ 0 0usft (Original Well Elev)
Well:	Corazon State Unit 4 #4H	North Reference:	Grid
Wellbore:	VH - Job #32K0711656	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #32K0711656	Database:	EDM-Regulatory

Project	Wildcat (Lea 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	Lea County, NM		
Site Position:		Northing:	764,295 41 usft
From:	Lat/Long	Easting:	769,294 77 usft
Position Uncertainty:	0 0 usft	Slot Radius:	0"
		Latitude:	33° 5' 52 800 N
		Longitude:	103° 27' 14 400 W
		Grid Convergence:	0 48 °

Well	Corazon State Unit 4 #4H, Directional (DDC)		
Well Position	+N/-S	0 0 usft	Northing: 554,062 11 usft
	+E/-W	0 0 usft	Easting: 730,660 87 usft
Position Uncertainty	0 0 usft	Wellhead Elevation:	usft
		Latitude:	32° 31' 15 600 N
		Longitude:	103° 35' 6 000 W
		Ground Level:	0 0 usft

Wellbore	VH - Job #32K0711656				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
			(°)	(°)	(nT)
	IGRF2010	7/12/2011	7 61	60 46	48,813

Design	VH - Job #32K0711656			
Audit Notes:				
Version:	1 0	Phase:	ACTUAL	Tie On Depth: 0 0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(usft)	(usft)	(usft)	(°)
	0 0	0 0	0 0	179 00

Survey Program	Date	8/25/2011			
From	To	Survey (Wellbore)	Tool Name	Description	
(usft)	(usft)				
100 0	11,650 0	Actual (VH - Job #32K0711656)	Keeper	Keeper Gyro	

Survey								
Measured Depth	Inclination	Azimuth	True Vertical	North/South	East/West	Closure Azimuth	Closure Distance	
(usft)	(°)	(°)	Depth	(usft)	(usft)	(°)	(usft)	
0 0	0 00	0 00	0 0	0 0	0 0	0 00	0 0	0 0
100 0	0 53	41 44	100 0	0 3	0 3	41 44	0 5	
200 0	0 36	95 36	200 0	0 7	0 9	54 32	1 1	
300 0	0 27	64 84	300 0	0 7	1 5	63 14	1 6	
400 0	0 32	70 11	400 0	0 9	1 9	64 23	2 1	
500 0	0 48	54 85	500 0	1 3	2 5	63 43	2 8	
600 0	0 26	73 58	600 0	1 6	3 1	63 06	3 5	
700 0	0 19	65 04	700 0	1 7	3 5	63 76	3 9	
800 0	0 22	79 06	800 0	1 8	3 8	64 50	4 2	
900 0	0 33	60 48	900 0	2 0	4 2	64 84	4 7	
1,000 0	0 25	60 17	1,000 0	2 2	4 7	64 40	5 2	
1,100 0	0 47	44 66	1,100 0	2 6	5 2	62 87	5 8	

Scientific Drilling International, Inc.

SDI Standard Survey Report



Company:	COG OPERATING	Local Co-ordinate Reference:	Well Corazon State Unit 4 #4H
Project:	Wildcat (Lea County, NM)	TVD Reference:	WELL @ 0 0usft (Original Well Elev)
Site:	Lea County, NM	MD Reference:	WELL @ 0 0usft (Original Well Elev)
Well:	Corazon State Unit 4 #4H	North Reference:	Grid
Wellbore:	VH - Job #32K0711656	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #32K0711656	Database:	EDM-Regulatory

Survey							
Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)
1,200 0	0 35	68 54	1,200 0	3 0	5 7	62 01	6 5
1,300 0	0 35	63 76	1,300 0	3 3	6 3	62 36	7 1
1,400 0	0 14	77 16	1,400 0	3 5	6 7	62 66	7 5
1,500 0	0 24	5 93	1,500 0	3 7	6 8	61 59	7 8
1,600 0	0 13	357 10	1,600 0	4 0	6 8	59 60	7 9
1,700 0	0 28	24 84	1,700 0	4 3	6 9	57 92	8 2
1,800 0	0 32	41 36	1,800 0	4 8	7 2	56 51	8 7
1,900 0	0 87	48 81	1,900 0	5 5	8 0	55 48	9 7
2,000 0	0 81	48 97	2,000 0	6 5	9 1	54 61	11 1
2,100 0	0 76	59 31	2,099 9	7 3	10 2	54 54	12 5
2,200 0	0 61	48 76	2,199 9	7 9	11 2	54 55	13 7
2,300 0	0 67	68 78	2,299 9	8 5	12 1	54 90	14 8
2,400 0	0 54	55 97	2,399 9	9 0	13 0	55 44	15 8
2,500 0	0 46	40 92	2,499 9	9 5	13 7	55 11	16 7
2,600 0	0 47	43 54	2,599 9	10 1	14 2	54 51	17 5
2,700 0	0 45	46 81	2,699 9	10 7	14 8	54 10	18 3
2,800 0	0 57	50 34	2,799 9	11 3	15 5	53 86	19 2
2,900 0	1 01	45 85	2,899 9	12 2	16 5	53 43	20 5
3,000 0	1 46	47 72	2,999 9	13 7	18 1	52 82	22 7
3,100 0	1 66	50 81	3,099 8	15 5	20 1	52 45	25 4
3,200 0	1 86	50 53	3,199 8	17 4	22 5	52 25	28 5
3,300 0	1 96	50 74	3,299 7	19 5	25 1	52 08	31 8
3,400 0	1 86	51 26	3,399 7	21 6	27 7	51 98	35 1
3,500 0	2 00	49 88	3,499 6	23 8	30 3	51 85	38 5
3,600 0	1 30	38 51	3,599 6	25 8	32 3	51 41	41 3
3,700 0	1 15	30 77	3,699 6	27 5	33 5	50 61	43 4
3,800 0	0 91	12 82	3,799 5	29 2	34 2	49 55	45 0
3,900 0	0 89	355 19	3,899 5	30 7	34 3	48 18	46 1
4,000 0	0 79	344 35	3,999 5	32 2	34 1	46 66	46 9
4,100 0	0 71	333 60	4,099 5	33 4	33 6	45 21	47 4
4,200 0	0 50	311 80	4,199 5	34 2	33 0	43 97	47 6
4,300 0	0 37	291 15	4,299 5	34 6	32 4	43 09	47 4
4,400 0	0 40	331 63	4,399 5	35 1	31 9	42 33	47 4
4,500 0	0 50	13 93	4,499 5	35 8	31 9	41 68	47 9
4,600 0	0 48	16 04	4,599 5	36 6	32 1	41 23	48 7
4,700 0	0 45	39 64	4,699 5	37 3	32 5	41 01	49 5
4,800 0	0 37	50 08	4,799 5	37 8	32 9	41 06	50 2
4,900 0	0 47	26 30	4,899 5	38 4	33 4	41 00	50 9
5,000 0	0 48	31 40	4,999 5	39 1	33 8	40 81	51 7
5,100 0	0 47	25 47	5,099 5	39 9	34 2	40 61	52 5
5,200 0	0 44	33 90	5,199 5	40 5	34 6	40 45	53 3
5,300 0	0 56	18 12	5,299 5	41 3	34 9	40 21	54 1
5,400 0	0 51	21 79	5,399 5	42 2	35 2	39 87	55 0
5,500 0	0 45	35 01	5,499 5	42 9	35 6	39 69	55 8

Scientific Drilling International, Inc.

SDI Standard Survey Report



Company:	COG OPERATING	Local Co-ordinate Reference:	Well Corazon State Unit 4 #4H
Project:	Wildcat (Lea County, NM)	TVD Reference:	WELL @ 0 0usft (Original Well Elev)
Site:	Lea County, NM	MD Reference:	WELL @ 0 0usft (Original Well Elev)
Well:	Corazon State Unit 4 #4H	North Reference:	Grid
Wellbore:	VH - Job #32K0711656	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #32K0711656	Database:	EDM-Regulatory

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)
5,600 0	0 38	50 89	5,599 5	43 5	36 1	39 72	56 5
5,700 0	0 19	55 97	5,699 5	43 8	36 5	39 84	57 0
5,800 0	0 15	59 52	5,799 5	43 9	36 8	39 93	57 3
5,900 0	0 19	84 18	5,899 5	44 0	37 0	40 09	57 5
6,000 0	0 28	96 65	5,999 5	44 0	37 5	40 40	57 8
6,100 0	0 35	113 42	6,099 5	43 9	38 0	40 89	58 0
6,200 0	0 35	110 10	6,199 5	43 6	38 5	41 46	58 2
6,300 0	0 33	109 05	6,299 5	43 4	39 1	42 00	58 4
6,400 0	0 30	102 65	6,399 5	43 3	39 6	42 48	58 7
6,500 0	0 72	134 83	6,499 5	42 8	40 3	43 31	58 8
6,600 0	0 42	135 73	6,599 4	42 1	41 0	44 28	58 8
6,700 0	0 52	148 34	6,699 4	41 4	41 5	45 07	58 7
6,800 0	0 75	166 02	6,799 4	40 4	41 9	46 06	58 2
6,900 0	0 86	169 46	6,899 4	39 0	42 2	47 25	57 5
7,000 0	0 88	183 64	6,999 4	37 5	42 3	48 43	56 5
7,100 0	1 05	181 56	7,099 4	35 8	42 2	49 68	55 4
7,200 0	1 09	184 98	7,199 4	34 0	42 1	51 11	54 1
7,300 0	1 12	182 26	7,299 4	32 1	42 0	52 65	52 8
7,400 0	0 95	184 43	7,399 4	30 2	41 9	54 17	51 7
7,500 0	0 92	183 93	7,499 3	28 6	41 8	55 59	50 6
7,600 0	0 80	183 85	7,599 3	27 1	41 7	56 94	49 7
7,700 0	0 78	184 15	7,699 3	25 7	41 6	58 23	48 9
7,800 0	0 78	173 06	7,799 3	24 4	41 6	59 62	48 2
7,900 0	0 81	181 39	7,899 3	23 0	41 7	61 10	47 6
8,000 0	0 95	187 98	7,999 3	21 5	41 5	62 66	46 8
8,100 0	1 00	186 43	8,099 3	19 8	41 3	64 41	45 8
8,200 0	0 96	186 29	8,199 3	18 1	41 1	66 26	44 9
8,300 0	0 92	193 66	8,299 2	16 5	40 9	68 03	44 1
8,400 0	1 01	190 44	8,399 2	14 8	40 5	69 89	43 1
8,500 0	1 01	190 21	8,499 2	13 1	40 2	71 95	42 3
8,600 0	1 03	188 99	8,599 2	11 3	39 9	74 13	41 5
8,700 0	1 00	188 87	8,699 2	9 6	39 6	76 39	40 8
8,800 0	0 90	198 77	8,799 2	8 0	39 2	78 49	40 0
8,900 0	0 77	212 63	8,899 2	6 7	38 6	80 18	39 2
9,000 0	0 72	272 12	8,999 2	6 1	37 6	80 73	38 1
9,100 0	0 79	279 80	9,099 1	6 3	36 3	80 19	36 9
9,200 0	0 75	296 41	9,199 1	6 7	35 1	79 20	35 7
9,300 0	0 80	294 96	9,299 1	7 3	33 8	77 87	34 6
9,400 0	0 90	294 81	9,399 1	7 9	32 5	76 34	33 4
9,500 0	1 50	277 25	9,499 1	8 4	30 5	74 61	31 6
9,600 0	1 49	275 43	9,599 1	8 7	27 9	72 71	29 2
9,700 0	1 01	335 49	9,699 0	9 6	26 2	69 89	27 9
9,800 0	1 19	347 61	9,799 0	11 4	25 6	65 99	28 1
9,900 0	1 15	346 24	9,899 0	13 4	25 2	61 96	28 5

Scientific Drilling International, Inc.

SDI Standard Survey Report



Company:	COG OPERATING	Local Co-ordinate Reference:	Well Corazon State Unit 4 #4H
Project:	Wildcat (Lea County, NM)	TVD Reference:	WELL @ 0 0usft (Original Well Elev)
Site:	Lea County, NM	MD Reference:	WELL @ 0 0usft (Original Well Elev)
Well:	Corazon State Unit 4 #4H	North Reference:	Grd
Wellbore:	VH - Job #32K0711656	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #32K0711656	Database:	EDM-Regulatory

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)
10,000 0	1 16	337 56	9,999 0	15 3	24 6	58 04	28 9
10,100 0	1 04	351 04	10,099 0	17 2	24 0	54 48	29 5
10,200 0	0 85	325 63	10,198 9	18 7	23 5	51 51	30 0
10,300 0	0 93	305 25	10,298 9	19 7	22 4	48 59	29 9
10,400 0	0 88	305 54	10,398 9	20 7	21 1	45 61	29 5
10,500 0	1 12	312 62	10,498 9	21 8	19 8	42 23	29 4
10,600 0	0 94	301 45	10,598 9	22 9	18 3	38 74	29 3
10,700 0	1 02	275 25	10,698 9	23 4	16 8	35 64	28 7
10,800 0	1 03	267 59	10,798 9	23 4	15 0	32 59	27 8
10,900 0	1 36	267 51	10,898 8	23 3	12 9	28 92	26 6
11,000 0	1 43	267 36	10,998 8	23 2	10 5	24 24	25 5
11,100 0	1 54	268 57	11,098 8	23 1	7 9	18 78	24 4
11,200 0	1 85	265 74	11,198 7	23 0	4 9	12 07	23 5
11,300 0	1 67	263 77	11,298 7	22 7	1 9	4 66	22 8
11,400 0	1 69	268 01	11,398 6	22 5	-1 1	357 27	22 5
11,500 0	1 41	271 13	11,498 6	22 5	-3 8	350 46	22 8
11,600 0	0 99	273 52	11,598 6	22 5	-5 9	345 40	23 3
11,650 0	0 98	275 36	11,648 6	22 6	-6 7	343 43	23 6



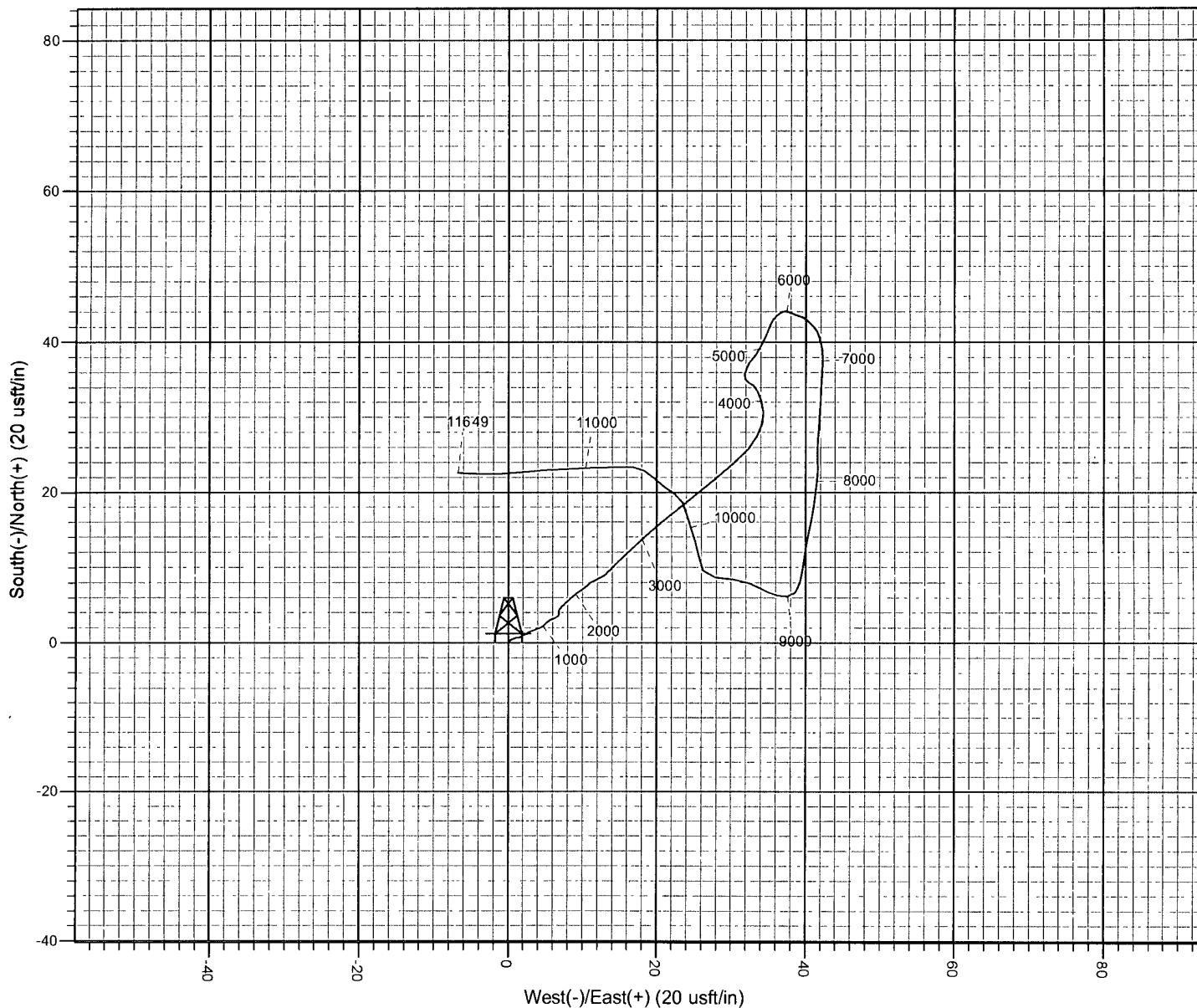
Project: Wildcat (Lea County, NM)
 Lea County, NM
 Well: Corazon State Unit 4 #4H
 Wellbore: VH - Job #32K0711656
 Design: VH - Job #32K0711656



Azimuths to Grid North
 True North -0 40°
 Magnetic North 7 20°
 Magnetic Field
 Strength 48813 0snT
 Dip Angle 60 46°
 Date 7/12/2011
 Model IGRF2010

WELL DETAILS: Corazon State Unit 4 #4H
 WELL @ 0.0usft (Original Well Elev)
 Ground Level: 0.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	554062.11	730660.87	32° 31' 15.600 N	103° 35' 6.000 W	



PROJECT DETAILS: Wildcat (Lea County, NM)
 Geodetic System: US State Plane 1927 (Exact solution)
 Datum: NAD 1927 (NADCON CONUS)
 Ellipsoid: Clarke 1866
 Zone: New Mexico East 3001
 System Datum: Mean Sea Level

SITE DETAILS: Lea County, NM
 Site Centre Latitude: 33° 5' 52.800 N
 Longitude: 103° 27' 14.400 W
 Positional Uncertainty: 0.0
 Convergence: 0.48
 Local North: Grid

SUR: D-4-21s-33e, 330/N & 330/W
BHL: A-4-21s-33e, 322/N & 315/E
API # 30-025-40130

COG Operating, LLC

Lea County, NM
Sec 4, T-21-S, R-33-E
Corazon State Unit 4 #4H

HOBBS OCD

NOV 02 2011

Sidetrack #1

RECEIVED

Survey: Sidetrack #1

DDC Survey Report

01 September, 2011



DDC Survey Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Corazon State Unit 4 #4H
Project:	Lea County, NM	TVD Reference:	WELL @ 3776.0usft (Union #216)
Site:	Sec 4, T-21-S, R-33-E	MD Reference:	WELL @ 3776.0usft (Union #216)
Well:	Corazon State Unit 4 #4H	North Reference:	Grid
Wellbore:	Sidetrack #1	Survey Calculation Method:	Minimum Curvature
Design:	Sidetrack	Database:	EDM 5000.1 Single User Db

Project	Lea 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		Sec 4, T-21-S, R-33-E			
Site Position:		Northing:	554,171.40 usft	Latitude:	32° 31' 16.672 N
From:	Map	Easting:	730,792.90 usft	Longitude:	103° 35' 4.449 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.40 °

Well	Corazon State Unit 4 #4H					
Well Position	+N/-S	0.0 usft	Northing:	554,171.40 usft	Latitude:	32° 31' 16.672 N
	+E/-W	0.0 usft	Easting:	730,792.90 usft	Longitude:	103° 35' 4.449 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level:	3,755.0 usft

Wellbore	Sidetrack #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	8/7/2011	7.60	60.46	48,778

Design	Sidetrack				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	10,700.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.0	0.0	0.0	176.33	

Survey Program	Date 9/1/2011			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.0	10,700.0	Gyro (Wellbore #1)	Good_gyro	Good Gyro
10,800.0	11,796.0	Sidetrack #1 (Sidetrack #1)	MWD default	MWD - Standard

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)
Tie into MWD Surveys									
10,700.0	1.02	275.25	10,698.9	23.4	16.8	-22.2	0.00	0.00	0.00
10,800.0	1.03	267.59	10,798.9	23.4	15.0	-22.4	0.14	0.01	-7.66
10,862.0	2.20	232.50	10,860.8	22.7	13.5	-21.8	2.39	1.89	-56.60
10,893.0	5.50	204.30	10,891.8	20.9	12.4	-20.1	11.97	10.65	-90.97
10,925.0	8.40	196.50	10,923.5	17.3	11.1	-16.6	9.51	9.06	-24.38
10,956.0	11.70	192.40	10,954.0	12.1	9.8	-11.4	10.89	10.65	-13.23
10,988.0	15.60	190.00	10,985.1	4.7	8.3	-4.1	12.31	12.19	-7.50
Crossed Hard Line @ 11019' MD									

DDC
Survey Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Corazon State Unit 4 #4H
Project:	Lea County, NM	TVD Reference:	WELL @ 3776.0usft (Union #216)
Site:	Sec 4, T-21-S, R-33-E	MD Reference:	WELL @ 3776.0usft (Union #216)
Well:	Corazon State Unit 4 #4H	North Reference:	Grid
Wellbore:	Sidetrack #1	Survey Calculation Method:	Minimum Curvature
Design:	Sidetrack	Database:	EDM 5000.1 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)
11,005.0	18.18	189.21	11,001.4	-0.2	7.5	0.7	15.22	15.16	-4.67
11,019.0	20.30	188.70	11,014.6	-4.8	6.8	5.2	15.22	15.17	-3.62
11,051.0	25.10	185.90	11,044.1	-17.0	5.2	17.3	15.37	15.00	-8.75
11,083.0	26.80	184.00	11,072.9	-31.0	4.0	31.2	5.91	5.31	-5.94
11,114.0	26.70	184.80	11,100.6	-44.9	3.0	45.0	1.21	-0.32	2.58
11,146.0	26.40	185.40	11,129.2	-59.1	1.7	59.1	1.26	-0.94	1.88
Crossed Hard Line @ 11146' MD									
11,176.0	28.04	187.05	11,155.9	-72.8	0.2	72.6	6.03	5.48	5.49
11,177.0	28.10	187.10	11,156.8	-73.2	0.2	73.1	6.03	5.51	5.19
11,208.0	30.90	189.10	11,183.8	-88.3	-2.0	88.0	9.57	9.03	6.45
11,240.0	32.90	189.50	11,210.9	-105.0	-4.7	104.5	6.28	6.25	1.25
11,271.0	36.90	186.10	11,236.3	-122.6	-7.1	121.9	14.34	12.90	-10.97
11,303.0	42.00	182.60	11,261.0	-142.9	-8.6	142.0	17.38	15.94	-10.94
11,335.0	47.60	178.90	11,283.7	-165.4	-8.9	164.5	19.30	17.50	-11.56
11,366.0	51.70	178.10	11,303.8	-189.0	-8.3	188.1	13.37	13.23	-2.58
11,398.0	54.40	176.60	11,323.0	-214.5	-7.1	213.6	9.23	8.44	-4.69
11,429.0	56.10	175.80	11,340.7	-240.0	-5.4	239.1	5.88	5.48	-2.58
11,461.0	58.40	175.70	11,358.0	-266.8	-3.4	266.0	7.19	7.19	-0.31
11,493.0	62.60	174.90	11,373.8	-294.5	-1.1	293.9	13.30	13.13	-2.50
11,524.0	66.40	174.10	11,387.1	-322.4	1.6	321.8	12.48	12.26	-2.58
Crossed Hard Line @ 11524' MD									
11,533.0	67.44	173.96	11,390.7	-330.6	2.4	330.1	11.65	11.56	-1.59
11,556.0	70.10	173.60	11,399.0	-351.9	4.8	351.5	11.65	11.56	-1.55
11,587.0	71.80	172.40	11,409.1	-381.0	8.3	380.8	6.59	5.48	-3.87
11,619.0	74.30	172.00	11,418.4	-411.3	12.5	411.3	7.90	7.81	-1.25
11,651.0	78.80	171.10	11,425.9	-442.1	17.1	442.3	14.33	14.06	-2.81
11,682.0	83.40	170.60	11,430.7	-472.3	21.9	472.8	14.92	14.84	-1.61
11,714.0	88.30	171.80	11,433.0	-503.9	26.8	504.6	15.76	15.31	3.75
11,733.0	90.30	172.60	11,433.2	-522.7	29.4	523.5	11.34	10.53	4.21
Projection to Bit									
11,796.0	90.30	172.60	11,432.9	-585.2	37.5	586.4	0.00	0.00	0.00

Survey Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
10,700.0	10,698.9	23.4	16.8	Tie into MWD Surveys
11,005.0	11,001.4	-0.2	7.5	Crossed Hard Line @ 11019' MD
11,176.0	11,155.9	-72.8	0.2	Crossed Hard Line @ 11146' MD
11,533.0	11,390.7	-330.6	2.4	Crossed Hard Line @ 11524' MD
11,796.0	11,432.9	-585.2	37.5	Projection to Bit

Checked By: _____ Approved By: _____ Date: _____

SUR: D-4-21s-33e, 330/N & 330/W
BHL: A-4-21s-33e, 322/N & 315/E
API # 30-025-40130

COG Operating, LLC

Lea County, NM
Sec 4, T-21-S, R-33-E
Corazon State Unit 4 #4H

Sidetrack #2

HOBBS OCD

NOV 02 2011

Survey: Sidetrack #2

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DDC Survey Report

01 September, 2011



DDC
Survey Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Corazon State Unit 4 #4H
Project:	Lea County, NM	TVD Reference:	WELL @ 3776.0usft (Union #216)
Site:	Sec 4, T-21-S, R-33-E	MD Reference:	WELL @ 3776.0usft (Union #216)
Well:	Corazon State Unit 4 #4H	North Reference:	Grid -
Wellbore:	Sidetrack #2	Survey Calculation Method:	Minimum Curvature
Design:	Sidetrack #2	Database:	EDM 5000.1 Single User Db

Project	Lea 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	Sec 4, T-21-S, R-33-E		
Site Position:		Northing:	554,171.40 usft
From:	Map	Easting:	730,792.90 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 31' 16.672 N
		Longitude:	103° 35' 4.449 W
		Grid Convergence:	0.40 °

Well	Corazon State Unit 4 #4H		
Well Position	+N/-S	0.0 usft	Northing: 554,171.40 usft
	+E/-W	0.0 usft	Easting: 730,792.90 usft
Position Uncertainty	0.0 usft	Wellhead Elevation:	usft
		Latitude:	32° 31' 16.672 N
		Longitude:	103° 35' 4.449 W
		Ground Level:	3,755.0 usft

Wellbore	Sidetrack #2		
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Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	8/7/2011	7.60	60.46	48,778

Design	Sidetrack #2		
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Audit Notes:				
Version:	1.0	Phase:	ACTUAL	Tie On Depth: 10,500.0

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	89.16

Survey Program		Date	9/1/2011		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100.0	10,500.0	Gyro (Wellbore #1)	Good_gyro	Good Gyro	
10,636.0	11,382.0	Sidetrack #2 (Sidetrack #2)	MWD default	MWD - Standard	

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)
Tie into Gyro									
10,500.0	1.12	312.62	10,498.9	21.8	19.8	20.1	0.00	0.00	0.00
10,636.0	1.00	315.90	10,634.9	23.5	18.0	18.3	0.10	-0.09	2.41
10,668.0	2.00	78.50	10,666.9	23.8	18.3	18.7	8.36	3.13	383.13
10,700.0	5.10	93.90	10,698.8	23.8	20.3	20.6	10.05	9.69	48.13
10,731.0	8.30	94.10	10,729.6	23.6	23.9	24.2	10.32	10.32	0.65
10,763.0	11.00	94.70	10,761.1	23.2	29.2	29.6	8.44	8.44	1.88
10,794.0	13.40	94.50	10,791.4	22.7	35.8	36.1	7.74	7.74	-0.65
10,826.0	15.20	92.10	10,822.4	22.2	43.6	44.0	5.92	5.63	-7.50
10,858.0	17.10	92.20	10,853.2	21.9	52.5	52.9	5.94	5.94	0.31

DDC
Survey Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Corazon State Unit 4 #4H
Project:	Lea County, NM	TVD Reference:	WELL @ 3776.0usft (Union #216)
Site:	Sec 4, T-21-S, R-33-E	MD Reference:	WELL @ 3776.0usft (Union #216)
Well:	Corazon State Unit 4 #4H	North Reference:	Grid
Wellbore:	Sidetrack #2	Survey Calculation Method:	Minimum Curvature
Design:	Sidetrack #2	Database:	EDM 5000 1 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)
10,889.0	19.40	92.70	10,882.6	21.5	62.2	62.5	7.44	7.42	1.61
10,921.0	21.30	93.90	10,912.6	20.8	73.3	73.6	6.08	5.94	3.75
10,952.0	22.90	94.00	10,941.3	20.0	85.0	85.3	5.16	5.16	0.32
10,984.0	25.00	93.30	10,970.6	19.2	97.9	98.2	6.62	6.56	-2.19
11,015.0	27.40	92.40	10,998.4	18.5	111.6	111.9	7.85	7.74	-2.90
11,047.0	29.70	92.40	11,026.5	17.9	126.9	127.1	7.19	7.19	0.00
11,078.0	31.60	92.70	11,053.2	17.2	142.7	142.9	6.15	6.13	0.97
11,110.0	33.70	92.50	11,080.1	16.4	159.9	160.1	6.57	6.56	-0.63
11,141.0	36.10	92.40	11,105.5	15.6	177.6	177.9	7.74	7.74	-0.32
11,173.0	37.60	91.80	11,131.1	14.9	196.8	197.0	4.82	4.69	-1.88
11,204.0	39.40	91.80	11,155.4	14.3	216.1	216.3	5.81	5.81	0.00
11,268.0	42.60	93.80	11,203.7	12.2	258.0	258.2	5.40	5.00	3.13
11,299.0	44.70	95.20	11,226.1	10.6	279.4	279.5	7.46	6.77	4.52
11,331.0	47.00	95.30	11,248.4	8.5	302.2	302.3	7.19	7.19	0.31
Projection to Bit									
11,382.0	51.10	95.00	11,281.8	5.0	340.6	340.6	8.05	8.04	-0.59

Survey Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
10,500.0	10,498.9	21.8	19.8	Tie into Gyro
11,382.0	11,281.8	5.0	340.6	Projection to Bit

Checked By: _____	Approved By: _____	Date: _____
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SUR: D-4-21s-33e, 330/N & 330/W
BHL: A-4-21s-33e, 322/N & 315/E
API # 30-025-40130

COG Operating, LLC

Lea County, NM
Sec 4, T-21-S, R-33-E
Corazon State Unit 4 #4H

Sidetrack #3

HOBBS OCD

NOV 02 2011

Survey: Sidetrack #3

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DDC Survey Report

01 September, 2011



DDC Survey Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Corazon State Unit 4 #4H
Project:	Lea County, NM	TVD Reference:	WELL @ 3776.0usft (Union #216)
Site:	Sec 4, T-21-S, R-33-E	MD Reference:	WELL @ 3776.0usft (Union #216)
Well:	Corazon State Unit 4 #4H	North Reference:	Grid
Wellbore:	Sidetrack #3	Survey Calculation Method:	Minimum Curvature
Design:	Sidetrack #3	Database:	EDM 5000.1 Single User Db

Project	Lea 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: Sec 4, T-21-S, R-33-E					
Site Position:		Northing:	554,171.40 usft	Latitude:	32° 31' 16.672 N
From:	Map	Easting:	730,792.90 usft	Longitude:	103° 35' 4.449 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.40 °

Well	Corazon State Unit 4 #4H					
Well Position	+N/-S	0.0 usft	Northing:	554,171.40 usft	Latitude:	32° 31' 16.672 N
	+E/-W	0.0 usft	Easting:	730,792.90 usft	Longitude:	103° 35' 4.449 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level:	3,755.0 usft

Wellbore	Sidetrack #3				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	9/1/2011	7.59	60.46	48.771

Design:	Sidetrack #3			
Audit Notes:				
Version:	1.0	Phase:	ACTUAL	Tie On Depth: 10,500.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(usft)	(usft)	(usft)	(°)
	0.0	0.0	0.0	89.89

Survey Program		Date	9/1/2011		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100.0	10,500.0	Gyro (Wellbore #1)	Good_gyro	Good Gyro	
10,543.0	15,661.0	Sidetrack #3 (Sidetrack #3)	MWD default	MWD - Standard	

Survey									
Measured Depth	Inclination	Azimuth	Vertical Depth	+N/-S	+E/-W	Vertical Section	Dogleg Rate	Build Rate	Turn Rate
(usft)	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(°/100usft)	(°/100usft)	(°/100usft)
Tie into Gyro									
10,500.0	1.12	312.62	10,498.9	21.8	19.8	19.8	0.00	0.00	0.00
10,543.0	1.00	315.90	10,541.9	22.3	19.2	19.2	0.31	-0.28	7.63
10,575.0	2.00	78.50	10,573.9	22.6	19.5	19.6	8.36	3.13	383.13
10,607.0	5.10	93.90	10,605.8	22.6	21.5	21.5	10.05	9.69	48.13
10,638.0	8.30	94.10	10,636.6	22.4	25.1	25.2	10.32	10.32	0.65
10,670.0	11.00	94.70	10,668.2	22.0	30.5	30.5	8.44	8.44	1.88
10,701.0	13.40	94.50	10,698.5	21.5	37.0	37.0	7.74	7.74	-0.65
10,733.0	15.20	92.10	10,729.5	21.0	44.9	44.9	5.92	5.63	-7.50
10,765.0	17.10	92.20	10,760.2	20.7	53.8	53.8	5.94	5.94	0.31

DDC Survey Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Corazon State Unit 4 #4H
Project:	Lea County, NM	TVD Reference:	WELL @ 3776.0usft (Union #216)
Site:	Sec 4, T-21-S, R-33-E	MD Reference:	WELL @ 3776.0usft (Union #216)
Well:	Corazon State Unit 4 #4H	North Reference:	Grid
Wellbore:	Sidetrack #3	Survey Calculation Method:	Minimum Curvature
Design:	Sidetrack #3	Database:	EDM 5000.1 Single User-Db

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)
10,796.0	19.40	92.70	10,789.6	20.3	63.5	63.5	7.44	7.42	1.61
10,828.0	21.30	93.90	10,819.6	19.6	74.6	74.6	6.08	5.94	3.75
10,859.0	22.90	94.00	10,848.4	18.8	86.2	86.3	5.16	5.16	0.32
10,891.0	25.00	93.30	10,877.6	18.0	99.2	99.2	6.62	6.56	-2.19
10,922.0	27.40	92.40	10,905.4	17.3	112.8	112.9	7.85	7.74	-2.90
10,954.0	29.70	92.40	10,933.5	16.7	128.1	128.2	7.19	7.19	0.00
10,985.0	31.60	92.70	10,960.2	16.0	143.9	143.9	6.15	6.13	0.97
11,017.0	33.70	92.50	10,987.1	15.2	161.2	161.2	6.57	6.56	-0.63
11,048.0	36.10	92.40	11,012.6	14.4	178.9	178.9	7.74	7.74	-0.32
11,080.0	37.70	91.80	11,038.1	13.7	198.1	198.1	5.13	5.00	-1.88
11,111.0	39.40	91.80	11,062.4	13.1	217.4	217.4	5.48	5.48	0.00
11,143.0	41.00	92.50	11,086.8	12.3	238.0	238.0	5.20	5.00	2.19
11,175.0	42.60	93.80	11,110.7	11.2	259.3	259.3	5.69	5.00	4.06
11,206.0	44.70	95.20	11,133.1	9.5	280.7	280.7	7.46	6.77	4.52
11,238.0	47.00	95.30	11,155.4	7.4	303.5	303.5	7.19	7.19	0.31
11,252.0	47.50	95.10	11,164.9	6.4	313.8	313.8	3.72	3.57	-1.43
11,284.0	45.30	93.30	11,187.0	4.7	336.9	336.9	7.99	-6.88	-5.63
11,316.0	44.80	92.70	11,209.6	3.6	359.5	359.5	2.05	-1.56	-1.88
11,347.0	45.80	92.80	11,231.4	2.5	381.5	381.5	3.23	3.23	0.32
Crossed Hard Line @ 11356' MD									
11,356.0	46.22	93.11	11,237.6	2.2	387.9	388.0	5.31	4.68	3.50
11,379.0	47.30	93.90	11,253.4	1.1	404.7	404.7	5.31	4.69	3.41
11,410.0	50.10	95.40	11,273.9	-0.8	427.9	427.9	9.74	9.03	4.84
11,442.0	53.00	96.60	11,293.7	-3.4	452.8	452.8	9.53	9.06	3.75
11,474.0	55.50	97.40	11,312.4	-6.5	478.6	478.6	8.07	7.81	2.50
11,505.0	58.00	97.90	11,329.4	-10.0	504.3	504.2	8.18	8.06	1.61
11,537.0	60.50	98.60	11,345.8	-13.9	531.5	531.5	8.04	7.81	2.19
11,568.0	63.00	99.00	11,360.5	-18.1	558.5	558.4	8.14	8.06	1.29
11,600.0	65.40	98.90	11,374.4	-22.6	586.9	586.9	7.51	7.50	-0.31
11,632.0	68.00	98.50	11,387.1	-27.1	616.0	615.9	8.21	8.13	-1.25
11,663.0	70.90	98.20	11,397.9	-31.3	644.7	644.6	9.40	9.35	-0.97
11,695.0	73.20	97.60	11,407.8	-35.4	674.8	674.8	7.41	7.19	-1.88
11,727.0	75.70	96.50	11,416.4	-39.2	705.4	705.4	8.49	7.81	-3.44
11,758.0	78.90	95.70	11,423.2	-42.4	735.5	735.4	10.63	10.32	-2.58
11,790.0	82.80	95.30	11,428.3	-45.5	766.9	766.9	12.25	12.19	-1.25
11,821.0	86.30	95.20	11,431.2	-48.3	797.7	797.6	11.29	11.29	-0.32
11,857.0	90.10	94.70	11,432.4	-51.4	833.5	833.4	10.65	10.56	-1.39
11,888.0	90.90	94.70	11,432.1	-53.9	864.4	864.3	2.58	2.58	0.00
11,920.0	91.10	94.70	11,431.5	-56.6	896.3	896.2	0.63	0.63	0.00
11,951.0	91.00	94.50	11,431.0	-59.0	927.2	927.1	0.72	-0.32	-0.65
12,015.0	89.50	92.40	11,430.7	-62.9	991.1	990.9	4.03	-2.34	-3.28
12,109.0	89.60	91.80	11,431.4	-66.3	1,085.0	1,084.9	0.65	0.11	-0.64
12,204.0	89.50	91.50	11,432.2	-69.1	1,180.0	1,179.8	0.33	-0.11	-0.32

DDC Survey Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Corazon State Unit 4 #4H
Project:	Lea County, NM	TVD Reference:	WELL @ 3776.0usft (Union #216)
Site:	Sec 4, T-21-S, R-33-E	MD Reference:	WELL @ 3776.0usft (Union #216)
Well:	Corazon State Unit 4 #4H	North Reference:	Grid
Wellbore:	Sidetrack #3	Survey Calculation Method:	Minimum Curvature
Design:	Sidetrack #3	Database:	EDM 5000.1 Single User Db

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)
12,299.0	89.40	89.90	11,433.1	-70.2	1,274.9	1,274.8	1.69	-0.11	-1.68
12,393.0	89.50	89.60	11,434.0	-69.8	1,368.9	1,368.8	0.34	0.11	-0.32
12,488.0	89.30	89.00	11,435.0	-68.7	1,463.9	1,463.8	0.67	-0.21	-0.63
12,583.0	89.10	88.90	11,436.3	-66.9	1,558.9	1,558.8	0.24	-0.21	-0.11
12,677.0	89.40	88.40	11,437.5	-64.7	1,652.9	1,652.7	0.62	0.32	-0.53
12,772.0	89.40	88.10	11,438.5	-61.8	1,747.8	1,747.7	0.32	0.00	-0.32
12,867.0	89.20	87.90	11,439.7	-58.5	1,842.7	1,842.6	0.30	-0.21	-0.21
12,962.0	90.20	87.90	11,440.2	-55.0	1,937.7	1,937.6	1.05	1.05	0.00
13,056.0	90.20	89.20	11,439.8	-52.6	2,031.6	2,031.5	1.38	0.00	1.38
13,151.0	90.30	90.60	11,439.4	-52.5	2,126.6	2,126.5	1.48	0.11	1.47
13,246.0	90.40	91.80	11,438.9	-54.5	2,221.6	2,221.5	1.27	0.11	1.26
13,339.0	90.30	90.40	11,438.3	-56.2	2,314.6	2,314.5	1.51	-0.11	-1.51
13,434.0	90.30	90.30	11,437.8	-56.8	2,409.6	2,409.5	0.11	0.00	-0.11
13,529.0	91.30	90.10	11,436.5	-57.2	2,504.6	2,504.5	1.07	1.05	-0.21
13,624.0	90.20	89.50	11,435.2	-56.8	2,599.6	2,599.5	1.32	-1.16	-0.63
13,718.0	91.50	89.70	11,433.8	-56.2	2,693.6	2,693.4	1.40	1.38	0.21
13,813.0	89.80	89.30	11,432.7	-55.3	2,788.5	2,788.4	1.84	-1.79	-0.42
13,908.0	90.90	89.10	11,432.2	-54.0	2,883.5	2,883.4	1.18	1.16	-0.21
14,006.0	91.70	87.00	11,429.9	-50.7	2,981.4	2,981.3	2.29	0.82	-2.14
14,100.0	90.90	87.30	11,427.8	-46.0	3,075.3	3,075.2	0.91	-0.85	0.32
14,195.0	91.30	87.00	11,426.0	-41.3	3,170.2	3,170.1	0.53	0.42	-0.32
14,290.0	89.40	86.70	11,425.4	-36.1	3,265.0	3,264.9	2.02	-2.00	-0.32
14,384.0	89.70	86.40	11,426.1	-30.4	3,358.8	3,358.8	0.45	0.32	-0.32
14,479.0	90.10	85.80	11,426.3	-23.9	3,453.6	3,453.6	0.76	0.42	-0.63
14,574.0	90.40	87.40	11,425.9	-18.3	3,548.5	3,548.4	1.71	0.32	1.68
14,668.0	89.20	89.10	11,426.2	-15.4	3,642.4	3,642.4	2.21	-1.28	1.81
14,763.0	89.60	88.70	11,427.2	-13.6	3,737.4	3,737.3	0.60	0.42	-0.42
14,858.0	89.90	89.30	11,427.6	-12.0	3,832.4	3,832.3	0.71	0.32	0.63
14,953.0	90.90	88.60	11,427.0	-10.2	3,927.3	3,927.3	1.28	1.05	-0.74
15,047.0	91.70	87.90	11,424.8	-7.3	4,021.3	4,021.3	1.13	0.85	-0.74
15,142.0	91.50	89.00	11,422.2	-4.8	4,116.2	4,116.2	1.18	-0.21	1.16
15,237.0	91.00	89.40	11,420.1	-3.5	4,211.2	4,211.2	0.67	-0.53	0.42
15,332.0	88.90	89.00	11,420.2	-2.1	4,306.2	4,306.1	2.25	-2.21	-0.42
15,426.0	88.80	88.50	11,422.1	-0.1	4,400.1	4,400.1	0.54	-0.11	-0.53
15,533.0	88.60	88.00	11,424.5	3.2	4,507.0	4,507.0	0.50	-0.19	-0.47
Crossed Hard Line @ 15643' MD									
15,643.2	88.60	88.00	11,427.2	7.0	4,617.1	4,617.1	0.00	0.00	0.00
Projection to TD									
15,661.0	88.60	88.00	11,427.6	7.7	4,634.9	4,634.9	0.00	0.00	0.00

DDC Survey Report



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Wellbore:	Sidetrack #3	Survey Calculation Method:	Minimum Curvature
Design:	Sidetrack #3	Database:	EDM 5000.1 Single User Db

Survey Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
10,500.0	10,498.9	21.8	19.8	Tie into Gyro
11,356.0	11,237.6	2.2	387.9	Crossed Hard Line @ 11356' MD
15,643.2	11,427.2	7.0	4,617.1	Crossed Hard Line @ 15643' MD
15,661.0	11,427.6	7.7	4,634.9	Projection to TD

Checked By: _____ Approved By: _____ Date: _____