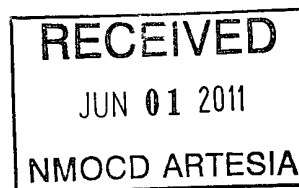


30-015-38295

COG OPERATING

Hackberry
Eddy County, NM
Birdseye 32 State #1H
VH - Job #32K0311238

Survey: Actual



SDI Standard Survey Report

16 March, 2011

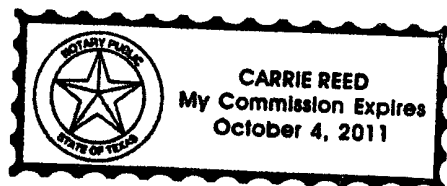
This survey is correct to the best of my knowledge and is supported by actual field data.

Robert

Notarized this date 14 of April, 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 Birdseye 32 State #1H
Project:	Hackberry	TVD Reference:	WELL @ 0 0usft (Original Well Elev)
Site:	Eddy County, NM	MD Reference:	WELL @ 0 0usft (Original Well Elev)
Well:	Birdseye 32 State #1H	North Reference:	Grid
Wellbore:	VH - Job #32K0311238	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #32K0311238	Database:	EDM-Regulatory

Project:	Hackberry		
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		Eddy County, NM			
Site Position:		Northing:	585,914 14 usft	Latitude:	32° 36' 36 000 N
From:	Lat/Long	Easting:	636,513 95 usft	Longitude:	103° 53' 24 000 W
Position Uncertainty:	0 0 usft	Slot Radius:	13-3/16"	Grid Convergence:	0 24 °

Well	Birdseye 32 State #1H, Directional (Pathfinder)					
Well Position	+N/-S	0 0 usft	Northing:	585,914 14 usft	Latitude:	32° 36' 36 000 N
	+E/-W	0 0 usft	Easting:	636,513 95 usft	Longitude:	103° 53' 24 000 W
Position Uncertainty		0 0 usft	Wellhead Elevation:	usft	Ground Level:	0 0 usft

Wellbore		VH - Job #32K0311238			
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2010	3/14/2011	7 85	60 50	48,899

Design:	VH - Job #32K0311238			
Audit Notes:				
Version:	1 0	Phase:	ACTUAL	Tie On Depth: 0 0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0 0	0 0	0 0	359 59

Survey Program		Date	3/16/2011		
From	To	Survey (Wellbore)	Tool Name	Description	
(usft)	(usft)				
100 0	8,171 7	Actual (VH - Job #32K0311238)	Keeper	Keeper Gyro	

Survey								
Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)	
0 0	0 00	0 00	0 0	0 0	0 0	0 00	0 0	
100 0	0 22	73 37	100 0	0 1	0 2	73 37	0 2	
200 0	0 66	57 77	200 0	0 4	0 9	64 00	1 0	
300 0	0 55	59 95	300 0	1 0	1 8	61 24	2 0	
400 0	0 60	62 09	400 0	1 4	2 6	61 19	3 0	
500 0	0 84	59 71	500 0	2 1	3 7	61 04	4 3	
600 0	1 10	60 43	600 0	2 9	5 2	60 78	6 0	
700 0	1 26	59 06	699 9	3 9	7 0	60 50	8 0	
800 0	1 24	59 93	799 9	5 1	8 9	60 29	10 2	
900 0	1 35	59 24	899 9	6 2	10 8	60 16	12 5	
1,000 0	1 36	53 61	999 9	7 5	12 8	59 56	14 8	
1,100 0	1 33	50 58	1,099 8	8 9	14 6	58 54	17 1	

Scientific Drilling International, Inc.

SDI Standard Survey Report



Company:	COG OPERATING	Local Co-ordinate Reference:	Well Birdseye 32 State #1H
Project:	Hackberry	TVD Reference:	WELL @ 0 0usft (Original Well Elev)
Site:	Eddy County, NM	MD Reference:	WELL @ 0 0usft (Original Well Elev)
Well:	Birdseye 32 State #1H	North Reference:	Grid
Wellbore:	VH - Job #32K0311238	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #32K0311238	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	1 37	51 40	1,199 8	10 4	16 5	57 63	19 5
1,300 0	1 43	53 16	1,299 8	11 9	18 4	57 04	21 9
1,400 0	0 25	170 09	1,399 8	12 5	19 4	57 33	23 1
1,500 0	0 23	197 12	1,499 8	12 0	19 4	58 16	22 8
1,600 0	0 49	91 47	1,599 8	11 8	19 8	59 07	23 0
1,700 0	0 56	52 50	1,699 8	12 1	20 6	59 48	23 9
1,800 0	0 49	6 71	1,799 8	12 9	21 0	58 56	24 6
1,900 0	0 55	32 64	1,899 8	13 7	21 3	57 32	25 3
2,000 0	1 62	60 32	1,999 7	14 8	22 8	57 05	27 2
2,100 0	2 72	53 64	2,099 7	16 9	26 0	56 94	31 0
2,200 0	1 94	63 04	2,199 6	19 1	29 4	57 01	35 0
2,300 0	1 36	152 05	2,299 6	18 8	31 4	59 14	36 6
2,400 0	2 30	183 68	2,399 5	15 7	31 9	63 72	35 5
2,500 0	1 52	213 52	2,499 4	12 6	31 0	67 84	33 5
2,600 0	0 89	264 89	2,599 4	11 5	29 5	68 78	31 6
2,700 0	1 00	293 55	2,699 4	11 7	27 9	67 21	30 3
2,800 0	1 02	306 90	2,799 4	12 6	26 4	64 47	29 3
2,900 0	2 17	311 98	2,899 4	14 4	24 3	59 32	28 3
3,000 0	2 46	305 27	2,999 3	16 9	21 1	51 32	27 1
3,100 0	3 57	248 71	3,099 2	17 0	16 5	44 07	23 7
3,200 0	2 45	237 35	3,199 0	14 7	11 8	38 63	18 9
3,300 0	1 44	274 06	3,299 0	13 7	8 7	32 54	16 2
3,400 0	0 51	296 68	3,398 9	14 0	7 1	26 87	15 7
3,500 0	0 49	271 67	3,498 9	14 2	6 3	23 80	15 5
3,600 0	0 56	217 11	3,598 9	13 8	5 5	21 84	14 9
3,700 0	0 39	185 80	3,698 9	13 1	5 2	21 70	14 1
3,800 0	0 35	168 32	3,798 9	12 4	5 2	22 81	13 5
3,900 0	0 28	169 53	3,898 9	11 9	5 3	24 15	13 0
4,000 0	0 09	133 98	3,998 9	11 6	5 4	25 10	12 8
4,100 0	0 20	177 53	4,098 9	11 4	5 5	25 81	12 6
4,200 0	0 27	192 35	4,198 9	11 0	5 5	26 45	12 3
4,300 0	0 36	174 76	4,298 9	10 4	5 4	27 53	11 8
4,400 0	0 39	190 46	4,398 9	9 8	5 4	28 92	11 2
4,500 0	0 34	197 94	4,498 9	9 2	5 3	29 81	10 6
4,600 0	0 39	195 79	4,598 9	8 6	5 1	30 64	9 9
4,700 0	0 31	220 98	4,698 9	8 0	4 8	30 87	9 4
4,800 0	0 33	214 78	4,798 9	7 6	4 5	30 44	8 8
4,900 0	0 50	245 04	4,898 9	7 2	3 9	28 54	8 2
5,000 0	0 42	240 14	4,998 9	6 8	3 2	25 09	7 5
5,100 0	0 43	218 80	5,098 9	6 3	2 6	22 59	6 8
5,200 0	0 31	188 37	5,198 9	5 8	2 4	22 23	6 2
5,300 0	0 58	115 43	5,298 9	5 3	2 8	27 72	6 0
5,400 0	0 52	105 53	5,398 9	4 9	3 7	36 60	6 2
5,500 0	0 20	82 89	5,498 9	4 8	4 3	41 48	6 5

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SDI Standard Survey Report



Company:	COG OPERATING	Local Co-ordinate Reference:	Well Birdseye 32 State #1H
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Site:	Eddy County, NM	MD Reference:	WELL @ 0 0usft (Original Well Elev)
Well:	Birdseye 32 State #1H	North Reference:	Grid
Wellbore:	VH - Job #32K0311238	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #32K0311238	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 16	36 89	5,598 9	5 0	4 5	42 37	6 7
5,700 0	0 22	1 76	5,698 9	5 3	4 6	41 24	7 0
5,800 0	0 28	350 33	5,798 9	5 7	4 6	38 80	7 3
5,900 0	0 37	357 99	5,898 9	6 3	4 5	35 88	7 7
6,000 0	0 33	346 90	5,998 9	6 9	4 5	32 98	8 2
6,100 0	0 64	353 11	6,098 9	7 7	4 3	29 31	8 8
6,200 0	0 95	345 71	6,198 9	9 1	4 1	24 10	9 9
6,300 0	1 05	339 03	6,298 9	10 7	3 5	18 19	11 3
6,400 0	1 22	336 26	6,398 8	12 6	2 8	12 43	12 9
6,500 0	1 32	335 00	6,498 8	14 6	1 9	7 24	14 7
6,600 0	1 33	332 47	6,598 8	16 6	0 8	2 85	16 7
6,700 0	1 31	332 99	6,698 8	18 7	-0 2	359 31	18 7
6,800 0	1 30	329 23	6,798 7	20 7	-1 3	356 33	20 7
6,900 0	0 86	313 65	6,898 7	22 2	-2 4	353 70	22 3
7,000 0	0 78	297 91	6,998 7	23 0	-3 6	351 13	23 3
7,100 0	1 07	243 63	7,098 7	22 9	-5 0	347 62	23 5
7,200 0	1 54	235 93	7,198 7	21 8	-7 0	342 21	22 8
7,300 0	1 67	232 02	7,298 6	20 1	-9 2	335 31	22 1
7,400 0	1 16	231 30	7,398 6	18 6	-11 2	328 95	21 7
7,500 0	0 76	256 86	7,498 6	17 8	-12 6	324 66	21 8
7,600 0	0 74	271 18	7,598 6	17 7	-13 9	321 77	22 5
7,700 0	0 74	272 34	7,698 6	17 7	-15 2	319 34	23 3
7,800 0	0 26	291 40	7,798 6	17 8	-16 1	317 95	24 0
7,900 0	0 05	351 85	7,898 6	17 9	-16 3	317 77	24 2
8,000 0	0 52	81 82	7,998 6	18 0	-15 8	318 73	24 0
8,100 0	0 62	99 15	8,098 6	18 0	-14 8	320 51	23 3
8,171 7	0 45	106 87	8,170 3	17 9	-14 2	321 54	22 8



Project: Hackberry
Eddy County, NM
Well: Birdseye 32 State #1H
Wellbore: VH - Job #32K0311238
Design: VH - Job #32K0311238

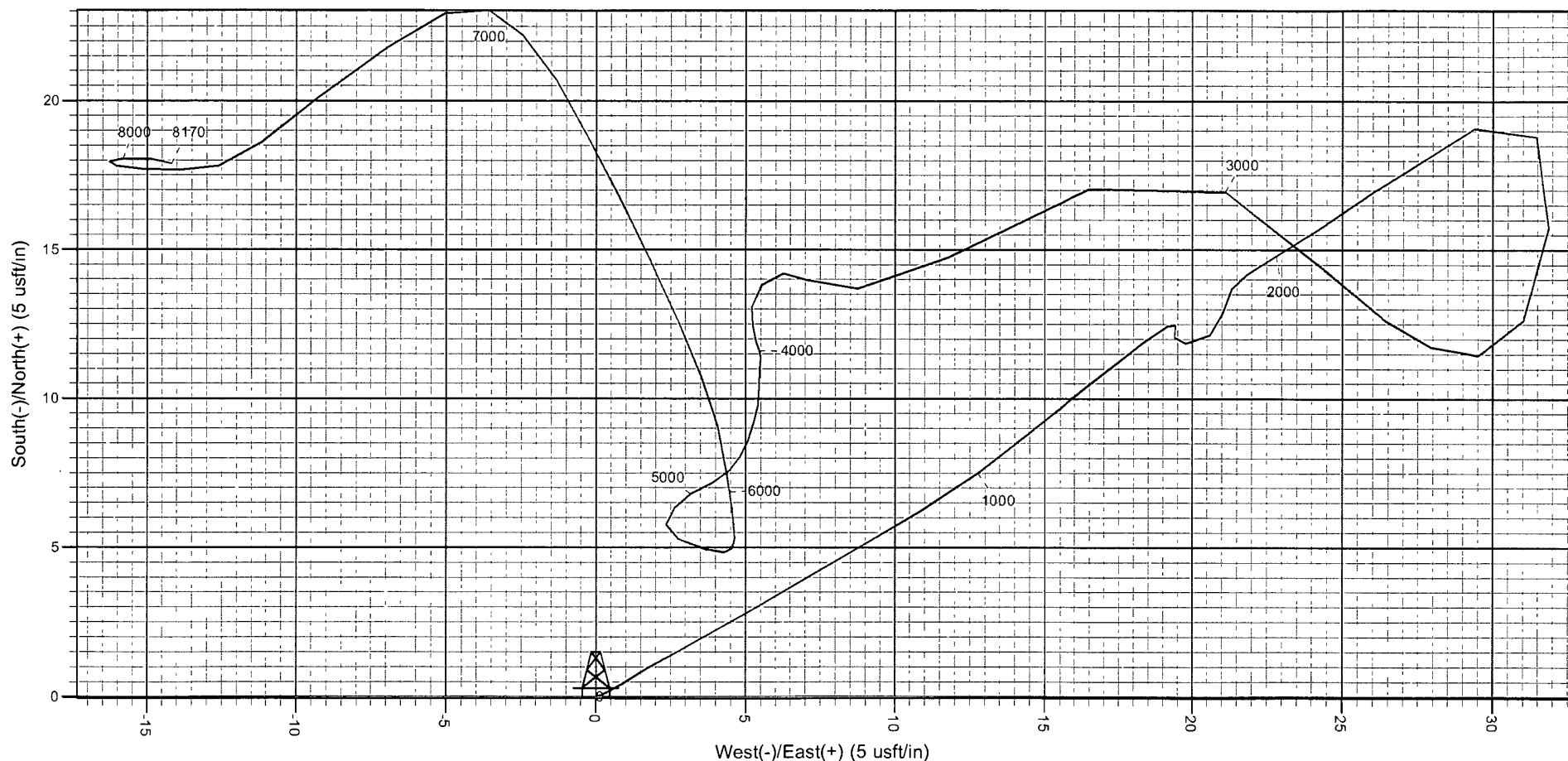


Azimuths to Grid North
True North -0° 24'
Magnetic North 7° 61'

Magnetic Field
Strength 48898 5snT
Dip Angle 60° 50'
Date 3/14/2011
Model BGM2010

WELL DETAILS: Birdseye 32 State #1H
WELL @ 0.0usft (Original Well Elev)
Ground Level: 0 0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	585914.14	636513.95	32° 36' 36.000 N	103° 53' 24.000 W	



PROJECT DETAILS: Hackberry
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 Eddy County, NM
Site Centre Latitude: 32° 36' 36.000 N
Longitude: 103° 53' 24.000 W
Positional Uncertainty: 0.0
Convergence: 0.24
Local North: Grid