

COG OPERATING

Watlins

Eddy County, NM

Nervous Horz Com #4H

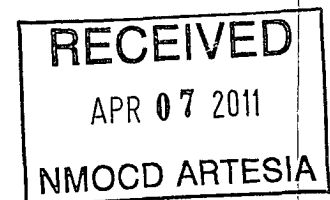
VH - Job #32K1210962

30-015-37146

Survey: Actual

SDI Standard Survey Report

16 December, 2010



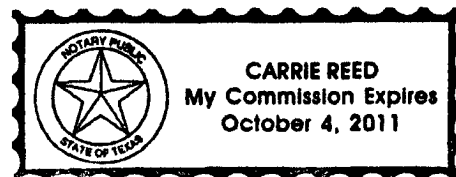
This survey is correct to the best of my knowledge and is supported by actual field data.

Robert

Notorized this date 31st of December, 2010.

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 Nervous Horz Com #4H
Project:	Watlins	TVD Reference:	WELL @ 0.0usft (Original Well Elev)
Site:	Eddy County, NM	MD Reference:	WELL @ 0.0usft (Original Well Elev)
Well:	Nervous Horz Com #4H	North Reference:	Grid
Wellbore:	VH - Job #32K1210962	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #32K1210962	Database:	EDM-Regulatory

Project	Watlins		
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:	622,376.46 usft
From:	Lat/Long	Easting:	654,817.23 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16"
		Latitude:	32° 42' 36.000 N
		Longitude:	103° 49' 48.000 W
		Grid Convergence:	0.27 °

Well	Nervous Horz Com #4H, Directional (Pathfinder)		
Well Position	+N/-S	0.0 usft	Northing: 622,376.46 usft
	+E/-W	0.0 usft	Easting: 654,817.23 usft
Position Uncertainty	0.0 usft	Wellhead Elevation:	usft
		Latitude:	32° 42' 36.000 N
		Longitude:	103° 49' 48.000 W
		Ground Level:	0.0 usft

Wellbore	VH - Job #32K1210962				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2010	12/9/2010	7.87	60.61	48,996

Design	VH - Job #32K1210962			
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	179.67

Survey Program	Date	12/16/2010		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.0	7,570.0	Actual (VH - Job #32K1210962)	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	0.20	204.63	100.0	-0.2	-0.1	204.63	0.2
200.0	0.11	268.98	200.0	-0.3	-0.2	217.12	0.4
300.0	0.21	259.51	300.0	-0.4	-0.5	235.63	0.6
400.0	0.40	254.16	400.0	-0.5	-1.0	244.97	1.1
500.0	0.83	281.09	500.0	-0.4	-2.1	258.09	2.1
600.0	1.18	284.03	600.0	0.0	-3.8	269.25	3.8
700.0	1.23	283.58	700.0	0.5	-5.8	274.43	5.8
800.0	1.18	286.15	799.9	1.0	-7.9	277.18	7.9
900.0	1.08	292.49	899.9	1.6	-9.7	279.56	9.9
1,000.0	0.79	300.61	999.9	2.3	-11.2	281.86	11.4
1,100.0	0.61	307.62	1,099.9	3.0	-12.2	283.92	12.6

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Well:	Nervous Horz Com #4H	North Reference:	Grid
Wellbore:	VH - Job #32K1210962	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #32K1210962	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	0.47	331.99	1,199.9	3.7	-12.8	286.15	13.3
1,300.0	0.46	22.70	1,299.9	4.4	-12.9	289.07	13.6
1,400.0	0.44	17.31	1,399.9	5.2	-12.6	292.37	13.6
1,500.0	0.40	31.75	1,499.9	5.8	-12.3	295.44	13.6
1,600.0	0.55	39.41	1,599.9	6.5	-11.8	298.89	13.5
1,700.0	0.66	45.44	1,699.9	7.3	-11.1	303.32	13.3
1,800.0	0.69	45.42	1,799.9	8.1	-10.2	308.38	13.1
1,900.0	0.84	38.31	1,899.9	9.1	-9.4	314.22	13.1
2,000.0	0.93	45.11	1,999.8	10.3	-8.3	320.92	13.2
2,100.0	1.43	54.42	2,099.8	11.6	-6.7	329.74	13.4
2,200.0	1.48	53.29	2,199.8	13.1	-4.7	340.23	13.9
2,300.0	1.18	41.70	2,299.8	14.6	-3.0	348.49	14.9
2,400.0	1.19	39.70	2,399.7	16.2	-1.6	354.26	16.2
2,500.0	1.36	29.33	2,499.7	18.0	-0.4	358.79	18.0
2,600.0	1.50	23.97	2,599.7	20.2	0.7	2.08	20.2
2,700.0	1.47	25.10	2,699.7	22.6	1.8	4.58	22.7
2,800.0	1.34	23.92	2,799.6	24.8	2.8	6.50	25.0
2,900.0	1.50	22.54	2,899.6	27.1	3.8	7.99	27.4
3,000.0	1.57	23.82	2,999.6	29.6	4.9	9.33	30.0
3,100.0	1.30	23.25	3,099.5	31.9	5.9	10.42	32.4
3,200.0	1.03	25.05	3,199.5	33.7	6.7	11.22	34.4
3,300.0	0.85	18.77	3,299.5	35.2	7.3	11.72	36.0
3,400.0	0.72	17.30	3,399.5	36.5	7.7	11.95	37.3
3,500.0	0.64	20.60	3,499.5	37.6	8.1	12.16	38.5
3,600.0	0.54	17.65	3,599.5	38.6	8.5	12.35	39.5
3,700.0	0.35	26.51	3,699.5	39.3	8.7	12.52	40.3
3,800.0	0.39	165.89	3,799.5	39.3	9.0	12.84	40.3
3,900.0	1.04	168.86	3,899.5	38.1	9.2	13.60	39.2
4,000.0	1.01	171.78	3,999.4	36.3	9.5	14.68	37.5
4,100.0	0.98	171.50	4,099.4	34.6	9.8	15.77	35.9
4,200.0	0.97	173.10	4,199.4	32.9	10.0	16.90	34.4
4,300.0	0.81	173.86	4,299.4	31.4	10.2	17.97	33.0
4,400.0	0.81	176.87	4,399.4	29.9	10.3	18.95	31.7
4,500.0	0.69	179.50	4,499.4	28.6	10.3	19.83	30.4
4,600.0	0.50	193.27	4,599.4	27.6	10.2	20.34	29.4
4,700.0	0.28	233.56	4,699.4	27.0	9.9	20.18	28.8
4,800.0	0.26	254.31	4,799.4	26.8	9.5	19.54	28.5
4,900.0	0.38	274.03	4,899.4	26.8	9.0	18.51	28.3
5,000.0	0.33	285.82	4,999.4	26.9	8.4	17.27	28.2
5,100.0	0.42	300.88	5,099.4	27.2	7.8	15.97	28.3
5,200.0	0.41	302.74	5,199.4	27.5	7.2	14.56	28.5
5,300.0	0.42	317.33	5,299.4	28.0	6.6	13.27	28.8
5,400.0	0.38	313.85	5,399.4	28.5	6.1	12.12	29.2
5,500.0	0.37	329.82	5,499.4	29.0	5.7	11.15	29.6

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Well:	Nervous Horz Com #4H	North Reference:	Grid
Wellbore:	VH - Job #32K1210962	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #32K1210962	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	0.42	320.28	5,599.4	29.6	5.3	10.20	30.1
5,700.0	0.31	316.41	5,699.3	30.1	4.9	9.26	30.5
5,800.0	0.38	348.96	5,799.3	30.6	4.7	8.65	30.9
5,900.0	0.52	348.30	5,899.3	31.4	4.5	8.16	31.7
6,000.0	0.50	350.39	5,999.3	32.2	4.3	7.66	32.5
6,100.0	0.62	20.87	6,099.3	33.2	4.5	7.65	33.5
6,200.0	0.58	13.83	6,199.3	34.2	4.8	7.94	34.5
6,300.0	0.62	19.46	6,299.3	35.2	5.1	8.20	35.5
6,400.0	0.71	20.62	6,399.3	36.2	5.5	8.57	36.7
6,500.0	0.66	3.05	6,499.3	37.4	5.7	8.69	37.8
6,600.0	0.83	289.12	6,599.3	38.2	5.1	7.54	38.6
6,700.0	1.06	284.79	6,699.3	38.7	3.5	5.14	38.8
6,800.0	1.29	271.87	6,799.3	39.0	1.5	2.15	39.0
6,900.0	1.47	270.04	6,899.2	39.0	-0.9	358.61	39.0
7,000.0	1.73	265.96	6,999.2	38.9	-3.7	354.52	39.1
7,100.0	2.16	258.37	7,099.1	38.4	-7.1	349.55	39.1
7,200.0	2.15	255.56	7,199.1	37.6	-10.7	344.03	39.1
7,300.0	1.94	257.48	7,299.0	36.7	-14.2	338.84	39.4
7,400.0	1.94	264.94	7,399.0	36.2	-17.6	334.14	40.2
7,500.0	1.89	276.29	7,498.9	36.2	-20.9	330.05	41.8
7,570.0	1.67	283.92	7,568.9	36.6	-23.0	327.84	43.2



Scientific Drilling
Directional Drilling Operations

Project: Watlins
Eddy County, NM
Well: Nervous Horz Com #4H
Wellbore: VH - Job #32K1210962
Design: VH - Job #32K1210962

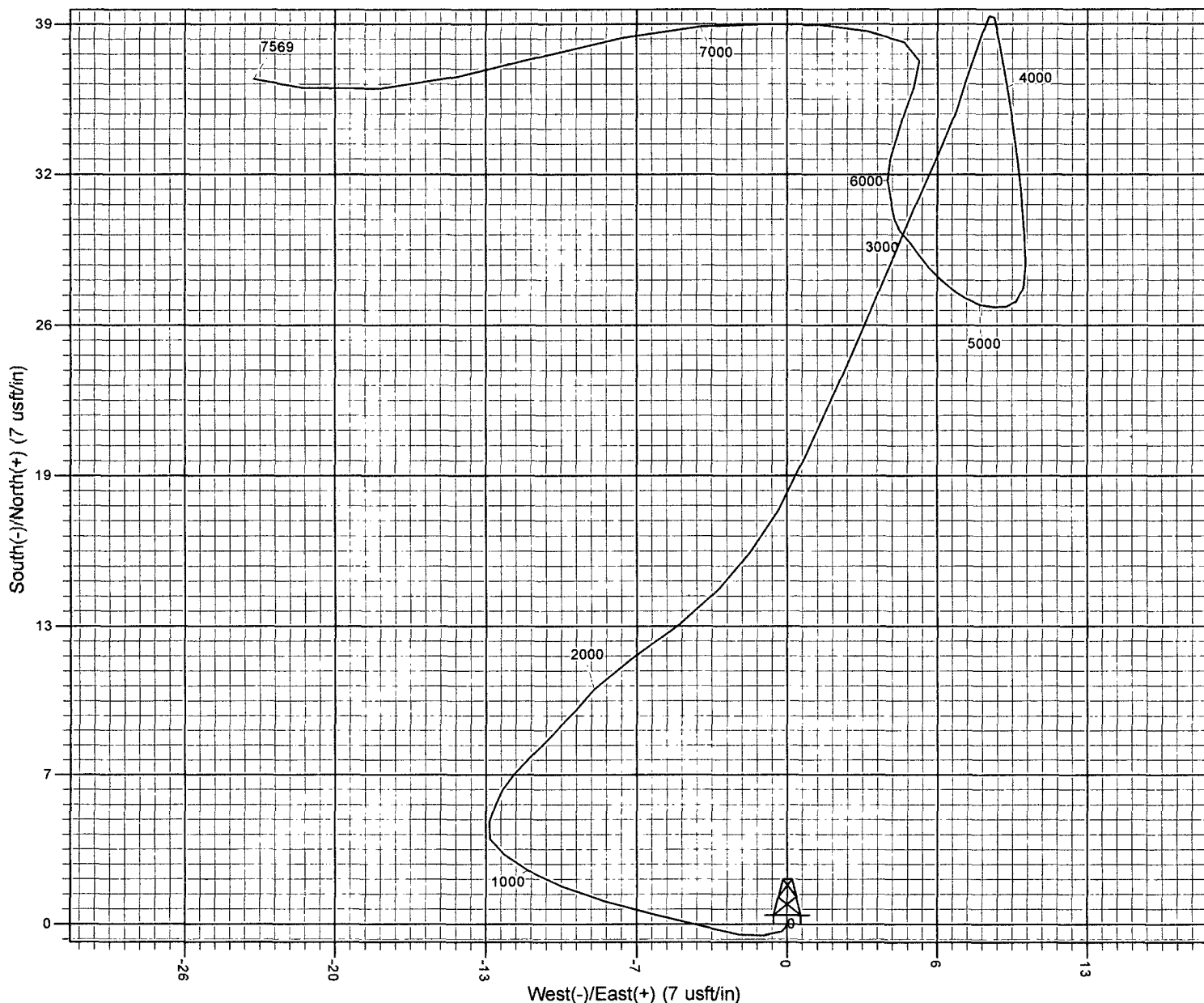


Azimuths to Grid North
True North: -0.27°
Magnetic North: 7.59°

Magnetic Field
Strength: 48995.5snT
Dip Angle: 60.61°
Date: 12/9/2010
Model: BGGM2010

WELL DETAILS: Nervous Horz Com #4H
WELL @ 0.0usft (Original Well Elev)
Ground Level: 0.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	622376.46	654817.23	32° 42' 36.000 N	103° 49' 48.000 W	



PROJECT DETAILS: Watlins
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° 42' 36.000 N
Longitude: 103° 49' 48.000 W
Positional Uncertainty: 0.0
Convergence: 0.27
Local North: Grid