

NM OIL CONSERVATION
ARTESIA DISTRICT

FEB 04 2015

RECEIVED

COG OPERATING

Cedar Lake
Eddy County, NM
Foran State #2
VH - Job #320413-KW-396

Survey: Gyro

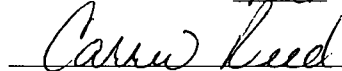
30-015-30725

SDI Standard Survey Report

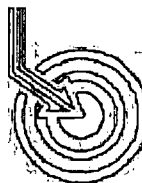
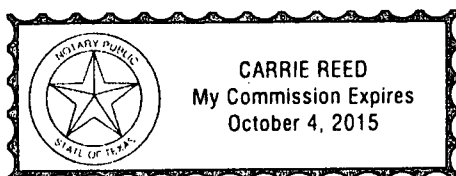
This survey is correct to the best of my knowledge and is supported by actual field data.



Notarized this date 11th of May, 2013.



Notary Signature
County of Midland
State of Texas



Scientific Drilling

Scientific Drilling International, Inc.
SDI Standard Survey Report



Company:	COG OPERATING	Local Co-ordinate Reference:	Well Foran State #2
Project:	Cedar Lake	TVD Reference:	WELL @ 0.00usft (Original Well Elev)
Site:	Eddy County, NM	MD Reference:	WELL @ 0.00usft (Original Well Elev)
Well:	Foran State #2	North Reference:	Grid
Wellbore:	VH - Job #320413-KW-396	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #320413-KW-396	Database:	EDM-Regulatory

Project	Cedar Lake		
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:	668,529.20 usft	Latitude:	32° 50' 13.200 N
From:	Lat/Long	Easting:	643,540.10 usft	Longitude:	103° 51' 57.600 W
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16"	Grid Convergence:	0.25 °

Well	Foran State #2, Vertical					
Well Position	+N-S	0.00 usft	Northing:	668,529.20 usft	Latitude:	32° 50' 13.200 N
	+E-W	0.00 usft	Easting:	643,540.10 usft	Longitude:	103° 51' 57.600 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	0.00 usft

Wellbore		VH - Job #320413-KW-396			
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	04/11/13	7.55	60.66	48,796

Design		VH - Job #320413-KW-396		
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	305.99

Survey Program		Date - 05/04/13		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.00	6,300.00	Gyro (VH - Job #320413-KW-396)	Keeper	Keeper Gyro

Survey								
Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.49	89.43	100.00	0.00	0.43	89.43	0.43	
200.00	0.42	78.90	200.00	0.08	1.21	86.28	1.22	
300.00	0.64	41.49	299.99	0.57	1.94	73.72	2.03	
400.00	1.28	39.90	399.98	1.84	3.03	58.69	3.55	
500.00	1.32	44.03	499.95	3.53	4.55	52.20	5.76	
600.00	0.98	58.35	599.93	4.81	6.08	51.66	7.75	
700.00	0.74	58.63	699.92	5.59	7.36	52.77	9.24	
800.00	0.67	49.16	799.91	6.31	8.35	52.93	10.46	
900.00	0.69	44.49	899.91	7.12	9.21	52.30	11.64	
1,000.00	0.81	33.57	999.90	8.14	10.03	50.93	12.91	
1,100.00	1.02	34.98	1,099.88	9.46	10.93	49.13	14.45	

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Wellbore:	VH - Job #320413-KW-396	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #320413-KW-396	Database:	EDM-Regulatory

Survey							
Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)
1,200.00	1.02	34.46	1,199.87	10.92	11.94	47.56	16.18
1,300.00	1.38	36.19	1,299.85	12.63	13.16	46.18	18.23
1,400.00	1.68	34.90	1,399.81	14.80	14.71	44.82	20.86
1,500.00	1.71	29.66	1,499.77	17.30	16.28	43.27	23.76
1,600.00	1.74	28.51	1,599.72	19.93	17.75	41.68	26.69
1,700.00	1.78	29.17	1,699.67	22.62	19.23	40.37	29.69
1,800.00	1.31	42.50	1,799.64	24.82	20.76	39.91	32.35
1,900.00	0.95	42.38	1,899.62	26.27	22.09	40.05	34.32
2,000.00	0.52	39.79	1,999.61	27.23	22.94	40.10	35.61
2,100.00	0.49	13.36	2,099.61	28.00	23.33	39.80	36.44
2,200.00	0.71	344.18	2,199.60	29.01	23.26	38.72	37.18
2,300.00	0.77	325.87	2,299.59	30.16	22.71	36.98	37.76
2,400.00	0.96	310.08	2,399.58	31.26	21.69	34.76	38.05
2,500.00	1.03	309.51	2,499.57	32.37	20.36	32.17	38.24
2,600.00	0.96	299.92	2,599.55	33.36	18.94	29.58	38.36
2,700.00	1.01	306.82	2,699.54	34.31	17.51	27.04	38.52
2,800.00	0.85	272.00	2,799.52	34.86	16.06	24.74	38.38
2,900.00	1.14	263.69	2,899.51	34.78	14.33	22.39	37.61
3,000.00	1.21	259.27	2,999.49	34.47	12.30	19.64	36.60
3,100.00	1.19	274.29	3,099.47	34.35	10.23	16.58	35.84
3,200.00	1.25	255.68	3,199.44	34.16	8.14	13.40	35.12
3,300.00	1.33	253.45	3,299.42	33.56	5.97	10.09	34.09
3,400.00	1.24	267.59	3,399.39	33.18	3.78	6.49	33.40
3,500.00	1.24	269.48	3,499.37	33.13	1.61	2.79	33.17
3,600.00	1.00	269.71	3,599.35	33.11	-0.34	359.41	33.12
3,700.00	0.76	254.26	3,699.34	32.93	-1.85	356.78	32.98
3,800.00	0.75	239.87	3,799.33	32.42	-3.06	354.61	32.57
3,900.00	0.96	239.60	3,899.32	31.67	-4.35	352.19	31.97
4,000.00	1.06	251.49	3,999.30	30.95	-5.95	349.13	31.52
4,100.00	0.86	265.26	4,099.29	30.60	-7.57	346.10	31.52
4,200.00	0.69	276.90	4,199.28	30.61	-8.92	343.76	31.88
4,300.00	0.81	242.96	4,299.27	30.36	-10.14	341.52	32.01
4,400.00	0.92	233.83	4,399.26	29.56	-11.42	338.88	31.69
4,500.00	1.16	232.52	4,499.24	28.47	-12.87	335.67	31.25
4,600.00	1.30	233.11	4,599.22	27.18	-14.58	331.78	30.84
4,700.00	1.15	236.77	4,699.20	25.94	-16.33	327.81	30.66
4,800.00	1.18	247.93	4,799.18	25.01	-18.12	324.07	30.88
4,900.00	1.36	262.77	4,899.15	24.47	-20.25	320.39	31.77
5,000.00	1.08	271.38	4,999.13	24.34	-22.37	317.42	33.06
5,100.00	0.68	272.87	5,099.12	24.40	-23.91	315.58	34.16
5,200.00	0.57	288.12	5,199.11	24.58	-24.97	314.55	35.04
5,300.00	0.65	268.51	5,299.11	24.72	-26.01	313.54	35.89
5,400.00	0.48	281.86	5,399.10	24.79	-26.99	312.57	36.65
5,500.00	0.28	285.50	5,499.10	24.94	-27.64	312.07	37.23

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Design:	VH - Job #320413-KW-396	Database:	EDM-Regulatory

Survey							
Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)
5,600.00	0.21	230.07	5,599.10	24.89	-28.01	311.62	37.47
5,700.00	0.15	199.28	5,699.10	24.65	-28.20	311.16	37.45
5,800.00	0.17	199.33	5,799.10	24.39	-28.29	310.76	37.35
5,900.00	0.56	250.08	5,899.10	24.08	-28.80	309.90	37.54
6,000.00	0.34	298.88	5,999.09	24.06	-29.52	309.18	38.08
6,100.00	0.43	236.59	6,099.09	23.99	-30.09	308.57	38.49
6,200.00	0.74	252.36	6,199.09	23.59	-31.02	307.26	38.97
6,300.00	0.44	243.57	6,299.08	23.23	-31.98	305.99	39.52

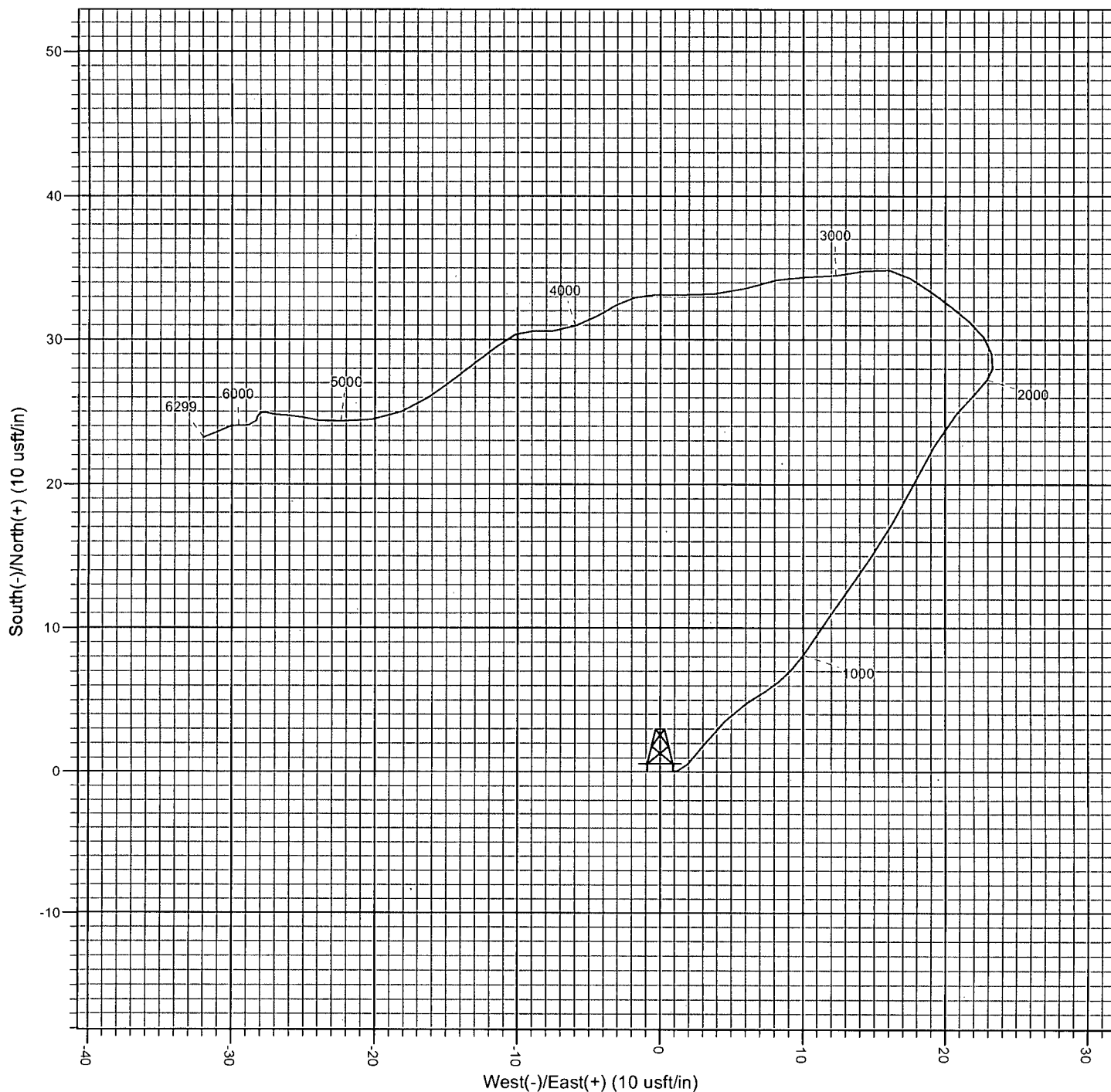


Scientific Drilling

Project: Cedar Lake
Eddy County, NM
Well: Foran State #2
Wellbore: VH - Job #320413-KW-396
Design: VH - Job #320413-KW-396

WELL DETAILS: Foran State #2
WELL @ 0.00usft (Original Well Elev)
Ground Level: 0.00

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	668529.20	643540.10	32° 50' 13.200 N	103° 51' 57.600 W	



PROJECT DETAILS: Cedar Lake	SITE DETAILS: Eddy County, NM
Geodetic System: US State Plane 1927 (Exact solution)	Site Centre Latitude: 32° 50' 13.200 N
Datum: NAD 1927 (NADCON CONUS)	Longitude: 103° 51' 57.600 W
Ellipsoid: Clarke 1866	Positional Uncertainty: 0.00
Zone: New Mexico East 3001	Convergence: 0.25
System Datum: Mean Sea Level	Local North: Grid