

30-015-37678

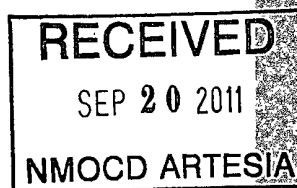
COG OPERATING

Gehring
Eddy County, NM
Gehring Federal #5H
VH - Job #32K1110899

Survey: Actual

SDI Standard Survey Report

28 November, 2010



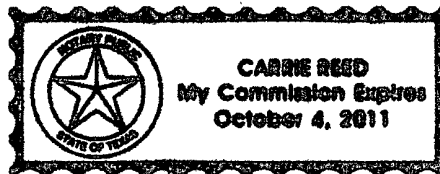
This survey is correct to the best of my knowledge and is supported by actual field data.

[Signature]

Notorized this date 8th of December, 2010.

[Signature]

Notary Signature
County of Midland
State of Texas



Scientific Drilling International, Inc.

SDI Standard Survey Report

Company:	COG OPERATING	Local Co-ordinate Reference:	Well Gehring Federal #5H
Project:	Gehring	TVD Reference:	WELL @ 0'0usft (Original Well Elev)
Site:	Eddy County, NM	MD Reference:	WELL @ 0'0usft (Original Well Elev)
Well:	Gehring Federal #5H	North Reference:	Grid
Wellbore:	VH - Job #32K1110899	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #32K1110899	Database:	EDM-Regulatory

Project:	Gehring		
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:	382,370 91 usft	Latitude:	32° 3' 2 747 N
From:	Lat/Long	Easting:	609,158 76 usft	Longitude:	103° 58' 51 632 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16"	Grid Convergence:	0 19 °

Well: Gehring Federal #5H, Directional (Pathfinder)						
Well Position	+N/-S	0 0 usft	Northing:	382,370.91 usft	Latitude:	32° 3' 2.747 N
	+E/-W	0.0 usft	Easting:	609,158.76 usft	Longitude:	103° 58' 51.632 W
Position Uncertainty		0 0 usft	Wellhead Elevation:	usft	Ground Level:	0 0 usft

Wellbore:	VH - Job #32K1110899
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Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2010	11/15/2010	7 89	59.97	48,581

Design:	VH - Job #32K1110899			
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 79

Survey Program		Date	11/28/2010		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100.0	6,828 0	Actual (VH - Job #32K1110899)	Keeper	Keeper Gyro	

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 14	315 73	100.0	0 1	-0 1	315 73	0 1
200.0	0 25	300 79	200 0	0 3	-0 4	308 69	0 5
300 0	0 24	336 75	300 0	0 6	-0 6	313.25	0 9
400.0	0 34	11.13	400 0	1 1	-0 7	328.69	1 3
500 0	0 44	29.48	500 0	1 7	-0 4	346.53	1 7
600.0	0 63	21 93	600.0	2 5	0 0	359 71	2 5
700.0	0 74	12 40	700 0	3 7	0 3	5 13	3 7
800 0	0 76	13.08	800 0	5 0	0 6	7 12	5 0
900 0	0 68	33.56	900 0	6 1	1 1	10.20	6 2
1,000 0	0 65	46 37	1,000 0	7 0	1 8	14 73	7 2
1,100 0	0 38	73.57	1,100 0	7.5	2 6	18.95	7 9

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Site:	Eddy County, NM	MD Reference:	WELL @ 0.0usft (Original Well Elev)
Well:	Gehring Federal #5H	North Reference:	Grid
Wellbore:	VH - Job #32K1110899	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #32K1110899	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	0.38	92.20	1,200.0	7.6	3.2	23.05	8.2
1,300.0	0.44	89.08	1,300.0	7.5	3.9	27.51	8.5
1,400.0	0.87	79.55	1,399.9	7.7	5.1	33.34	9.2
1,500.0	1.28	74.72	1,499.9	8.1	6.9	40.28	10.6
1,600.0	2.18	77.42	1,599.9	8.8	9.8	48.03	13.2
1,700.0	2.90	72.27	1,699.8	10.0	14.1	54.58	17.3
1,800.0	3.73	69.81	1,799.6	11.9	19.5	58.65	22.9
1,900.0	3.73	67.92	1,899.4	14.3	25.6	60.90	29.3
2,000.0	3.63	64.93	1,999.2	16.8	31.5	61.90	35.7
2,100.0	2.89	69.72	2,099.0	19.0	36.7	62.60	41.4
2,200.0	2.27	68.86	2,198.9	20.6	40.9	63.26	45.8
2,300.0	2.04	72.68	2,298.9	21.9	44.5	63.82	49.6
2,400.0	2.12	78.43	2,398.8	22.8	48.0	64.62	53.1
2,500.0	1.93	79.61	2,498.7	23.4	51.5	65.51	56.6
2,600.0	1.76	77.33	2,598.7	24.1	54.6	66.21	59.7
2,700.0	1.56	87.90	2,698.6	24.5	57.5	66.94	62.5
2,800.0	1.51	89.00	2,798.6	24.5	60.2	67.81	65.0
2,900.0	1.41	90.45	2,898.6	24.6	62.7	68.61	67.3
3,000.0	1.00	96.02	2,998.5	24.5	64.8	69.33	69.3
3,100.0	0.88	92.33	3,098.5	24.3	66.4	69.89	70.8
3,200.0	0.90	94.63	3,198.5	24.2	68.0	70.38	72.2
3,300.0	0.92	90.05	3,298.5	24.2	69.6	70.84	73.7
3,400.0	0.82	83.19	3,398.5	24.3	71.1	71.16	75.1
3,500.0	0.76	85.52	3,498.5	24.4	72.5	71.39	76.5
3,600.0	0.74	81.44	3,598.5	24.5	73.8	71.60	77.7
3,700.0	0.66	90.66	3,698.5	24.6	75.0	71.81	78.9
3,800.0	0.50	70.55	3,798.5	24.8	76.0	71.94	79.9
3,900.0	0.50	66.35	3,898.5	25.1	76.8	71.90	80.8
4,000.0	0.49	35.61	3,998.5	25.6	77.4	71.69	81.5
4,100.0	0.48	40.43	4,098.5	26.3	77.9	71.37	82.3
4,200.0	0.51	30.36	4,198.5	27.0	78.4	71.02	82.9
4,300.0	0.57	17.68	4,298.4	27.8	78.8	70.54	83.6
4,400.0	0.71	0.59	4,398.4	28.9	79.0	69.88	84.1
4,500.0	0.77	0.54	4,498.4	30.2	79.0	69.06	84.6
4,600.0	0.64	353.41	4,598.4	31.5	78.9	68.27	85.0
4,700.0	0.44	342.87	4,698.4	32.4	78.7	67.65	85.1
4,800.0	0.46	335.95	4,798.4	33.1	78.5	67.13	85.2
4,900.0	0.29	349.31	4,898.4	33.7	78.3	66.69	85.2
5,000.0	0.18	4.05	4,998.4	34.1	78.2	66.43	85.3
5,100.0	0.15	351.16	5,098.4	34.4	78.2	66.25	85.5
5,200.0	0.05	5.10	5,198.4	34.6	78.2	66.14	85.5
5,300.0	0.13	174.77	5,298.4	34.5	78.2	66.19	85.5
5,400.0	0.10	184.91	5,398.4	34.3	78.2	66.31	85.4
5,500.0	0.36	178.47	5,498.4	33.9	78.2	66.56	85.3

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Project:	Gehring	TVD Reference:	WELL @ 0.0usft (Original Well Elev)
Site:	Eddy County, NM	MD Reference:	WELL @ 0.0usft (Original Well Elev)
Well:	Gehring Federal #5H	North Reference:	Grid
Wellbore:	VH - Job #32K1110899	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #32K1110899	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	0.32	201.56	5,598.4	33.3	78.1	66.89	84.9
5,700.0	0.36	208.39	5,698.4	32.8	77.9	67.16	84.5
5,800.0	0.39	222.88	5,798.4	32.3	77.5	67.38	83.9
5,900.0	0.25	167.40	5,898.4	31.8	77.3	67.63	83.6
6,000.0	0.37	145.44	5,998.4	31.3	77.5	67.99	83.6
6,100.0	0.24	135.52	6,098.4	30.9	77.9	68.34	83.8
6,200.0	0.39	146.25	6,198.4	30.5	78.2	68.70	83.9
6,300.0	0.35	166.84	6,298.4	29.9	78.5	69.13	84.0
6,400.0	0.30	179.87	6,398.4	29.4	78.5	69.51	83.8
6,500.0	0.42	187.38	6,498.4	28.7	78.5	69.90	83.6
6,600.0	0.61	189.49	6,598.4	27.8	78.3	70.44	83.1
6,700.0	0.74	199.29	6,698.4	26.7	78.0	71.11	82.5
6,800.0	1.15	180.54	6,798.4	25.1	77.8	72.13	81.8
6,828.0	0.90	193.29	6,826.4	24.6	77.8	72.45	81.6



Project: Gehring
Eddy County, NM
Well: Gehring Federal #5H
Wellbore: VH - Job #32K1110899
Design: VH - Job #32K1110899

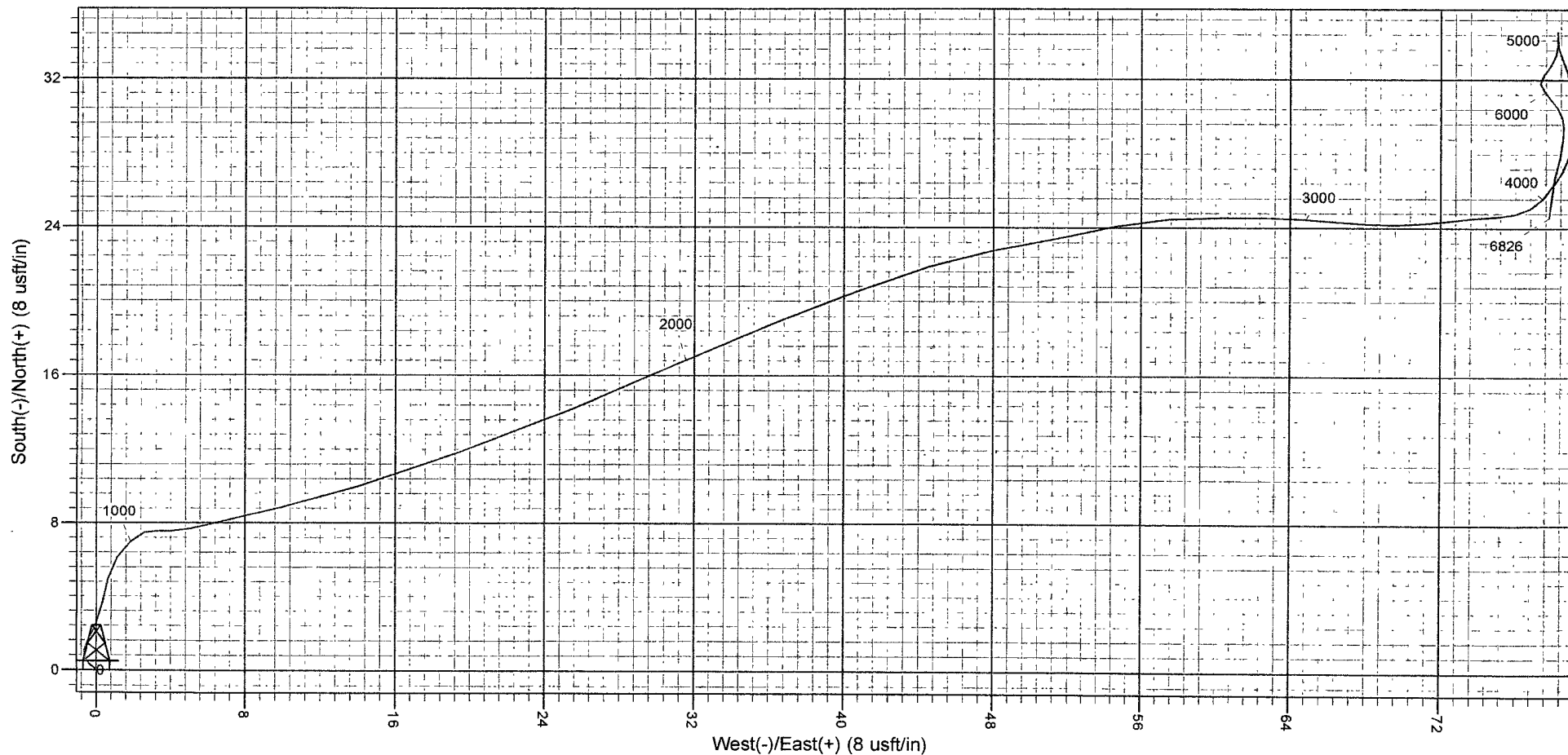


Azimuths to Grid North
True North: -0 19°
Magnetic North: 7 70°

Magnetic Field
Strength 48580.9snT
Dip Angle: 59.97°
Date: 11/15/2010
Model: BGGM2010

WELL DETAILS: Gehring Federal #5H
WELL @ 0.0usft (Original Well Elev)

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	382370.91	609158.76	32° 3' 2.747 N	103° 58' 51.632 W	



PROJECT DETAILS: Gehring
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° 3' 2.747 N
Longitude: 103° 58' 51.632 W
Positional Uncertainty: 0.0
Convergence: 0.19
Local North: Grid