

30039-29922

RCVD FEB 16 '11

OIL CONS. DIV.

DIST. 3

ENERVEST OPERATING

Blanco Mesaverde
Rio Arriba County, NM
Jacarilla B #4M
VH - Job #33K1010160

Survey: Actual

SDI Standard Survey Report

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

Richardson

Notorized this date 2nd of December, 2010.

Carrie Reed

Notary Signature
County of Midland
State of Texas



Scientific Drilling International, Inc.
SDI Standard Survey Report

Company:	ENERVEST OPERATING	Local Co-ordinate Reference:	Well Jacarilla B #4M
Project:	Blanco Mesaverde	TVD Reference:	WELL @ 0.0usft (Original Well Elev)
Site:	Rio Arriba County, NM	MD Reference:	WELL @ 0.0usft (Original Well Elev)
Well:	Jacarilla B #4M	North Reference:	True
Wellbore:	VH - Job #33K1010160	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #33K1010160	Database:	EDM-Regulatory

Project	Blanco Mesaverde		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Western Zone		

Site	Rio Arriba County, NM				
Site Position:		Northing:	1,992,045.32 usft	Latitude:	36° 28' 25.100 N
From:	Lat/Long	Easting:	2,861,006.64 usft	Longitude:	107° 21' 51.300 W
Position Uncertainty:	0.0 usft	Slot Radius:	0"	Grid Convergence:	0.28 °

Well	Jacarilla B #4M, Vertical				
Well Position	+N/-S	0.0 usft	Northing:	1,992,045.32 usft	Latitude: 36° 28' 25.100 N
	+E/-W	0.0 usft	Easting:	2,861,006.64 usft	Longitude: 107° 21' 51.300 W
Position Uncertainty	0.0 usft		Wellhead Elevation:	usft	Ground Level: 0.0 usft

Wellbore	VH - Job #33K1010160				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2010	10/7/2010	9.77	63.36	50,757

Design	VH - Job #33K1010160			
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	172.86

Survey Program	Date	11/30/2010			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100.0	5,700.0	Actual (VH - Job #33K1010160)	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	0.80	108.17	100.0	-0.2	0.7	108.17	0.7	
200.0	1.16	127.02	200.0	-1.0	2.1	116.08	2.4	
300.0	1.85	137.86	299.9	-2.9	4.0	125.31	4.9	
400.0	1.93	138.35	399.9	-5.3	6.2	130.43	8.2	
500.0	1.83	132.82	499.8	-7.6	8.5	131.93	11.4	
600.0	1.54	137.09	599.8	-9.7	10.6	132.51	14.4	
700.0	1.68	139.09	699.8	-11.8	12.5	133.43	17.2	
800.0	1.50	143.13	799.7	-14.0	14.2	134.48	19.9	
900.0	1.58	150.64	899.7	-16.2	15.7	135.95	22.6	
1,000.0	1.74	146.12	999.6	-18.7	17.2	137.34	25.4	
1,100.0	1.42	147.66	1,099.6	-21.0	18.7	138.27	28.1	

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Wellbore:	VH - Job #33K1010160	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #33K1010160	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	1.45	147.95	1,199.6	-23.1	20.1	139.05	30.6	
1,300.0	1.38	147.45	1,299.5	-25.2	21.4	139.69	33.0	
1,400.0	1.31	154.42	1,399.5	-27.2	22.5	140.43	35.3	
1,500.0	1.27	152.90	1,499.5	-29.3	23.5	141.21	37.5	
1,600.0	1.44	152.24	1,599.5	-31.4	24.6	141.88	39.9	
1,700.0	1.42	160.65	1,699.4	-33.6	25.6	142.73	42.3	
1,800.0	1.46	161.36	1,799.4	-36.0	26.4	143.74	44.7	
1,900.0	1.66	164.21	1,899.4	-38.6	27.2	144.82	47.2	
2,000.0	1.50	163.13	1,999.3	-41.3	28.0	145.85	49.9	
2,100.0	1.55	158.51	2,099.3	-43.8	28.9	146.60	52.4	
2,200.0	1.58	159.84	2,199.2	-46.3	29.8	147.21	55.1	
2,300.0	1.67	164.34	2,299.2	-49.0	30.7	147.94	57.8	
2,400.0	1.92	168.94	2,399.2	-52.1	31.4	148.89	60.8	
2,500.0	1.74	173.73	2,499.1	-55.2	31.9	149.98	63.8	
2,600.0	1.56	170.62	2,599.1	-58.1	32.3	150.92	66.4	
2,700.0	1.30	177.40	2,699.0	-60.5	32.6	151.73	68.7	
2,800.0	1.49	184.45	2,799.0	-63.0	32.5	152.69	70.9	
2,900.0	1.41	185.95	2,899.0	-65.5	32.3	153.76	73.0	
3,000.0	1.32	184.14	2,998.9	-67.9	32.1	154.70	75.1	
3,100.0	1.21	193.11	3,098.9	-70.0	31.8	155.61	76.9	
3,200.0	1.12	190.98	3,198.9	-72.0	31.3	156.49	78.6	
3,300.0	1.25	182.17	3,298.9	-74.1	31.1	157.23	80.3	
3,400.0	1.22	177.73	3,398.9	-76.2	31.1	157.81	82.3	
3,500.0	1.36	179.40	3,498.8	-78.5	31.2	158.35	84.4	
3,600.0	1.22	185.86	3,598.8	-80.7	31.1	158.96	86.5	
3,700.0	1.02	192.95	3,698.8	-82.7	30.8	159.59	88.2	
3,800.0	0.78	199.97	3,798.8	-84.2	30.3	160.19	89.5	
3,900.0	0.67	206.00	3,898.8	-85.3	29.8	160.73	90.4	
4,000.0	0.83	200.46	3,998.8	-86.5	29.3	161.28	91.4	
4,100.0	0.62	198.74	4,098.7	-87.7	28.9	161.77	92.4	
4,200.0	0.64	200.14	4,198.7	-88.8	28.5	162.18	93.2	
4,300.0	0.68	206.76	4,298.7	-89.8	28.1	162.64	94.1	
4,400.0	0.66	206.58	4,398.7	-90.9	27.5	163.13	94.9	
4,500.0	0.70	210.58	4,498.7	-91.9	27.0	163.64	95.8	
4,600.0	0.92	209.25	4,598.7	-93.1	26.3	164.24	96.8	
4,700.0	1.14	193.14	4,698.7	-94.8	25.7	164.86	98.2	
4,800.0	1.36	201.11	4,798.7	-96.9	25.0	165.53	100.0	
4,900.0	1.39	200.84	4,898.6	-99.1	24.1	166.31	102.0	
5,000.0	1.49	210.17	4,998.6	-101.4	23.1	167.19	104.0	
5,100.0	1.21	213.66	5,098.6	-103.4	21.8	168.08	105.7	
5,200.0	1.14	250.98	5,198.6	-104.6	20.3	169.02	106.5	
5,300.0	1.06	254.92	5,298.5	-105.1	18.5	170.04	106.8	
5,400.0	0.75	259.68	5,398.5	-105.5	16.9	170.89	106.9	
5,500.0	0.86	254.67	5,498.5	-105.8	15.6	171.64	107.0	

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Wellbore:	VH - Job #33K1010160	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #33K1010160	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	0.63	248.45	5,598.5	-106.2	14.3	172.32	107.2
5,700.0	0.67	228.16	5,698.5	-106.8	13.4	172.86	107.6



Project: Blanco Mesaverde
Rio Arriba County, NM
Well: Jacarilla B #4M
Wellbore: VH - Job #33K1010160
Design: VH - Job #33K1010160

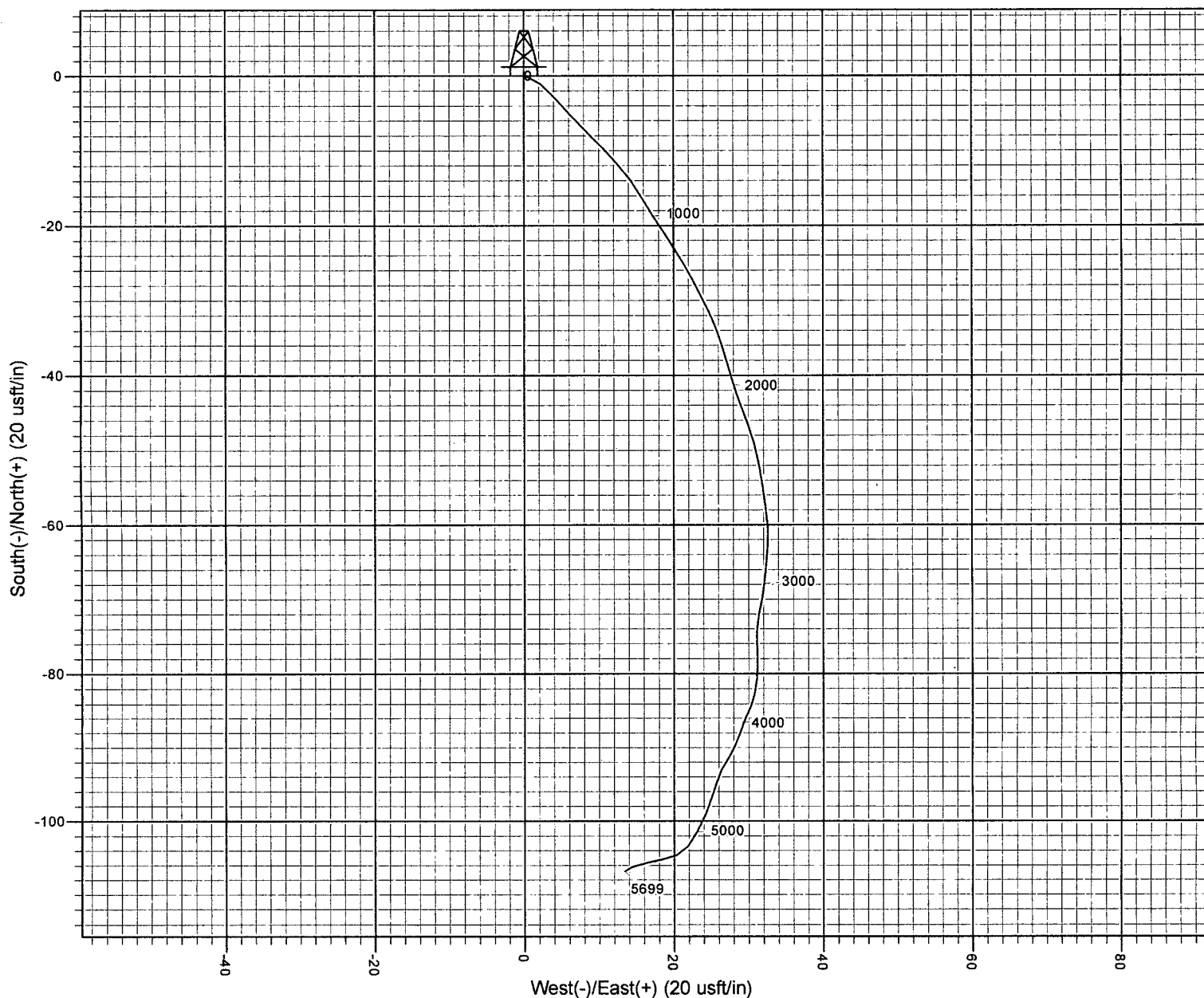


Azimuths to True North
Magnetic North: 9.77°

Magnetic Field
Strength: 50756.7snT
Dip Angle: 63.36°
Date: 10/7/2010
Model: BGGM2010

WELL DETAILS: Jacarilla B #4M
WELL @ 0.0usft (Original Well Elev)
Ground Level: 0.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1992045.32	2861006.64	36° 28' 25.100 N	107° 21' 51.300 W	



PROJECT DETAILS: Blanco Mesaverde
Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: New Mexico Western Zone
System Datum: Mean Sea Level

SITE DETAILS: Rio Arriba County, NM
Site Centre Latitude: 36° 28' 25.100 N
Longitude: 107° 21' 51.300 W
Positional Uncertainty: 0.0
Convergence: 0.28
Local North: True