

"As Drilled"

District I

1625 N. French Dr., Hobbs, NM 88240

District II

1301 W. Grand Avenue, Artesia, NM 88210

District III

1000 Rio Brazos Rd., Aztec, NM 87410

District IV

1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico

Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION

1220 South St. Francis Dr.

Santa Fe, NM 87505

Farmington Field Office
Bureau of Land Management

Form C-102

Revised July 16, 2010

Submit one copy to appropriate

District Office

☒ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-039-30844		² Pool Code 71629		³ Pool Name Basin Fruitland Coal	
⁴ Property Code 32932		⁵ Property Name Carracas Unit FR			⁶ Well Number 119
⁷ OGRID No. 162928		⁸ Operator Name Energen Resources Corporation			⁹ Elevation 7533'

¹⁰ Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A	15	32N	5W		1045	North	480	East	Rio Arriba

¹¹ Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A	14	32N	5W		341	North	1403	East	Rio Arriba

¹² Dedicated Acres 320 N/2 (Sec.14)	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No. R-13119
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No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.

16 Producing Interval: From the 7" casing shoe @ 907' FNL, 105' FWL (Sec.14), to the BHL @ 341' FNL, 1403' FEL				17 OPERATOR CERTIFICATION I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division. <i>Stephen Byers</i> 08/11/2011 Signature Date Stephen Byers Printed Name sbyers@energen.com E-mail Address	
15				14	
18 SURVEYOR CERTIFICATION I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief. June 23, 2008 Date of Survey _____ Signature and Seal of Professional Surveyor David R. Russell Certificate Number 10201					

NMOCD A

D & J DRILLING L.L.C.
P. O. BOX 49
FARMINGTON, NM 87499

ORIGINAL

DATE: 08/10/11 RIG # 1

ENERGEN RESOURCES CORPORATION
2010 AFTON PLACE
FARMINGTON, N.M. 87401

ATTN: Mr. DOUG THOMAS

THIS LETTER IS TO CERTIFY THAT D & J DRILLING, DID RUN DEVIATION SURVEYS AT THE LISTED DEPTH ON YOUR CARRACAS #119H WELL, IN SECTION 15 T32N R05W IN RIO ARRIBA, COUNTY, NEW MEXICO. **API WELL NUMBER, 30-039-30844**

DEPTH	DEGREE DEVIATION	DEPTH	DEGREE DEVIATION
81	1	909	1/2
140	1	1099	1/2
343	1-1/4	1290	3/4
394	2	1481	1/4
501	1/2	1671	3/4
718	1	1861	3/4

TO THE BEST OF MY KNOWLEDGE, I SWEAR THIS INFORMATION TO BE TRUE.

State of New Mexico
County of San Juan

L. Nanette Rahm

Notary Public, L. Nanette Rahm

SINCERELY,

John K. Richardson

John K. Richardson
Owner/Partner



AV

Energen Resources

Rio Arriba County

Sec15 T32N-R5W - 119H

Carracas Unit #119H

Wellbore #1

Design: Wellbore #1

Standard Survey Report

08 August, 2011



Survey Report

Company:	Energen Resources	Local Co-ordinate Reference:	Well Carracas Unit #119H
Project:	Rio Arriba County	TVD Reference:	WELL @ 7546.0usft (Original Well Elev)
Site:	Sec15 T32N-R5W - 119H	MD Reference:	WELL @ 7546.0usft (Original Well Elev)
Well:	Carracas Unit #119H	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1 Single User Db

Project	Rio Arriba County		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Central Zone		

Site	Sec15 T32N-R5W - 119H		
Site Position:		Northing:	2,179,545.19 usft
From:	Lat/Long	Easting:	1,321,374.57 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	36° 59' 4.812 N
		Longitude:	107° 20' 32.496 W
		Grid Convergence:	-0.66 °

Well	Carracas Unit #119H		
Well Position	+N/-S	0.0 usft	Northing: 2,179,545.19 usft
	+E/-W	0.0 usft	Easting: 1,321,374.57 usft
Position Uncertainty	0.0 usft	Wellhead Elevation:	usft
		Latitude:	36° 59' 4.812 N
		Longitude:	107° 20' 32.496 W
		Ground Level:	7,533.0 usft

Wellbore	Wellbore #1		
Magnetics	Model Name	Sample Date	Declination
	IGRF2010	07/05/11	9.74
			Dip Angle
			63.75
			Field Strength
			50,917

Design	Wellbore #1		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0.0	0.0	0.0
			Direction
			(°)
			81.78

Survey Program	Date	08/08/11		
From	To	Survey (Wellbore)	Tool Name	Description
(usft)	(usft)			
264.0	8,346.0	Survey #1 (Wellbore #1)	MWD	MWD - Standard

Survey	Measured Depth	Inclination	Azimuth	Vertical Depth	+N/-S	+E/-W	Vertical Section	Dogleg Rate	Build Rate	Turn Rate
	(usft)	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(°/100usft)	(°/100usft)	(°/100usft)
	0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
	264.0	0.44	211.06	264.0	-0.9	-0.5	-0.6	0.17	0.17	0.00
	486.0	0.53	190.26	486.0	-2.6	-1.1	-1.5	0.09	0.04	-9.37
	517.0	0.62	178.34	517.0	-2.9	-1.2	-1.6	0.48	0.29	-38.45
	549.0	0.35	174.14	549.0	-3.2	-1.2	-1.6	0.85	-0.84	-13.13
	581.0	0.35	205.42	581.0	-3.4	-1.2	-1.7	0.59	0.00	97.75
	676.0	0.44	183.92	676.0	-4.0	-1.3	-1.9	0.18	0.09	-22.63
	772.0	0.53	203.84	772.0	-4.8	-1.5	-2.2	0.20	0.09	20.75
	867.0	0.62	202.07	867.0	-5.7	-1.9	-2.7	0.10	0.09	-1.86
	963.0	0.62	201.31	963.0	-6.6	-2.3	-3.2	0.01	0.00	-0.79

Survey Report

Company: Energen Resources
Project: Rio Arriba County
Site: Sec15 T32N-R5W - 119H
Well: Carracas Unit #119H
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well Carracas Unit #119H
TVD Reference: WELL @ 7546.0usft (Original Well Elev)
MD Reference: WELL @ 7546.0usft (Original Well Elev)
North Reference: True
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User Db

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
1,058.0	0.62	216.02	1,058.0	-7.5	-2.8	-3.8	0.17	0.00	15.48
1,153.0	0.88	203.11	1,153.0	-8.6	-3.4	-4.6	0.32	0.27	-13.59
1,248.0	0.70	202.72	1,247.9	-9.8	-3.9	-5.2	0.19	-0.19	-0.41
1,343.0	0.62	202.22	1,342.9	-10.8	-4.3	-5.8	0.08	-0.08	-0.53
1,439.0	0.53	190.62	1,438.9	-11.7	-4.6	-6.2	0.15	-0.09	-12.08
1,534.0	0.62	207.76	1,533.9	-12.6	-4.9	-6.7	0.20	0.09	18.04
1,629.0	0.53	196.26	1,628.9	-13.5	-5.3	-7.1	0.15	-0.09	-12.11
1,724.0	0.62	220.40	1,723.9	-14.3	-5.7	-7.7	0.27	0.09	25.41
1,819.0	0.70	211.15	1,818.9	-15.2	-6.3	-8.5	0.14	0.08	-9.74
1,914.0	0.97	222.95	1,913.9	-16.3	-7.2	-9.5	0.34	0.28	12.42
1,983.0	0.44	213.38	1,982.9	-16.9	-7.7	-10.1	0.78	-0.77	-13.87
2,074.0	0.53	139.18	2,073.9	-17.5	-7.7	-10.1	0.65	0.10	-81.54
2,166.0	0.53	115.95	2,165.9	-18.0	-7.0	-9.5	0.23	0.00	-25.25
2,255.0	0.62	106.09	2,254.9	-18.4	-6.2	-8.7	0.15	0.10	-11.08
2,345.0	0.53	200.25	2,344.9	-18.9	-5.8	-8.5	0.94	-0.10	104.62
2,375.0	1.85	245.73	2,374.9	-19.2	-6.3	-9.0	5.09	4.40	151.60
2,405.0	3.17	249.62	2,404.8	-19.7	-7.5	-10.3	4.43	4.40	12.97
2,435.0	4.48	251.85	2,434.8	-20.4	-9.4	-12.3	4.39	4.37	7.43
2,465.0	5.01	253.37	2,464.7	-21.1	-11.8	-14.7	1.82	1.77	5.07
2,496.0	5.28	252.04	2,495.6	-21.9	-14.5	-17.4	0.95	0.87	-4.29
2,525.0	5.72	252.77	2,524.4	-22.8	-17.1	-20.2	1.54	1.52	2.52
2,556.0	6.68	252.09	2,555.2	-23.8	-20.3	-23.5	3.11	3.10	-2.19
2,586.0	7.83	252.63	2,585.0	-24.9	-23.9	-27.2	3.84	3.83	1.80
2,617.0	8.79	251.90	2,615.7	-26.3	-28.2	-31.7	3.12	3.10	-2.35
2,647.0	9.50	252.14	2,645.3	-27.8	-32.7	-36.3	2.37	2.37	0.80
2,677.0	10.20	252.11	2,674.8	-29.3	-37.6	-41.4	2.33	2.33	-0.10
2,706.0	10.82	253.03	2,703.4	-30.9	-42.6	-46.6	2.21	2.14	3.17
2,737.0	11.61	254.57	2,733.8	-32.6	-48.4	-52.6	2.73	2.55	4.97
2,767.0	12.66	256.50	2,763.1	-34.2	-54.5	-58.9	3.75	3.50	6.43
2,797.0	13.72	258.03	2,792.3	-35.7	-61.2	-65.7	3.72	3.53	5.10
2,827.0	14.86	256.87	2,821.4	-37.3	-68.4	-73.1	3.92	3.80	-3.87
2,857.0	15.74	254.51	2,850.3	-39.2	-76.1	-80.9	3.59	2.93	-7.87
2,886.0	16.53	253.33	2,878.2	-41.5	-83.9	-88.9	2.95	2.72	-4.07
2,916.0	18.11	252.68	2,906.8	-44.1	-92.4	-97.8	5.31	5.27	-2.17
2,946.0	18.38	252.39	2,935.3	-46.9	-101.4	-107.0	0.95	0.90	-0.97
2,976.0	18.55	252.32	2,963.8	-49.8	-110.4	-116.4	0.57	0.57	-0.23
3,006.0	18.29	251.61	2,992.2	-52.7	-119.4	-125.7	1.14	-0.87	-2.37
3,034.0	16.62	250.15	3,018.9	-55.5	-127.4	-134.0	6.17	-5.96	-5.21
3,064.0	14.07	248.76	3,047.9	-58.3	-134.8	-141.7	8.59	-8.50	-4.63
3,094.0	11.61	246.86	3,077.1	-60.8	-141.0	-148.2	8.32	-8.20	-6.33
3,124.0	9.32	245.05	3,106.6	-63.0	-146.0	-153.5	7.71	-7.63	-6.03
3,154.0	8.62	244.23	3,136.2	-65.0	-150.2	-157.9	2.37	-2.33	-2.73
3,185.0	7.21	240.55	3,166.9	-66.9	-154.0	-162.0	4.83	-4.55	-11.87
3,215.0	5.80	228.75	3,196.7	-68.9	-156.7	-165.0	6.45	-4.70	-39.33

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Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
3,246.0	4.04	213.30	3,227.6	-70.8	-158.5	-167.0	7.06	-5.68	-49.84
3,277.0	3.17	181.81	3,258.6	-72.6	-159.2	-167.9	6.86	-2.81	-101.58
3,308.0	3.69	151.56	3,289.5	-74.3	-158.7	-167.7	5.99	1.68	-97.58
3,340.0	4.66	125.44	3,321.4	-76.0	-157.2	-166.4	6.59	3.03	-81.63
3,369.0	5.89	106.94	3,350.3	-77.1	-154.8	-164.2	7.19	4.24	-63.79
3,400.0	7.56	96.21	3,381.1	-77.8	-151.2	-160.8	6.72	5.39	-34.61
3,430.0	9.23	88.78	3,410.8	-77.9	-146.9	-156.5	6.63	5.57	-24.77
3,460.0	10.99	84.32	3,440.3	-77.6	-141.6	-151.2	6.42	5.87	-14.87
3,490.0	13.10	80.81	3,469.7	-76.8	-135.4	-145.0	7.44	7.03	-11.70
3,520.0	15.30	79.38	3,498.7	-75.5	-128.2	-137.6	7.43	7.33	-4.77
3,550.0	17.50	78.20	3,527.5	-73.9	-119.8	-129.2	7.42	7.33	-3.93
3,581.0	19.87	75.73	3,556.9	-71.6	-110.2	-119.3	8.06	7.65	-7.97
3,610.0	22.07	72.74	3,584.0	-68.8	-100.2	-109.0	8.43	7.59	-10.31
3,640.0	24.62	70.65	3,611.5	-65.0	-88.9	-97.3	8.94	8.50	-6.97
3,672.0	27.26	69.29	3,640.3	-60.2	-75.8	-83.6	8.46	8.25	-4.25
3,702.0	29.81	69.18	3,666.6	-55.1	-62.4	-69.6	8.50	8.50	-0.37
3,733.0	32.36	69.29	3,693.2	-49.5	-47.4	-54.0	8.23	8.23	0.35
3,763.0	35.00	69.79	3,718.1	-43.7	-31.8	-37.7	8.85	8.80	1.67
3,793.0	37.11	70.81	3,742.4	-37.7	-15.2	-20.4	7.31	7.03	3.40
3,823.0	39.48	72.13	3,765.9	-31.8	2.4	-2.1	8.36	7.90	4.40
3,854.0	41.94	72.59	3,789.4	-25.7	21.7	17.8	7.99	7.94	1.48
3,884.0	44.58	73.05	3,811.3	-19.6	41.3	38.1	8.86	8.80	1.53
3,915.0	47.04	73.54	3,832.9	-13.2	62.6	60.1	8.02	7.94	1.58
3,946.0	49.59	74.23	3,853.5	-6.8	84.9	83.0	8.39	8.23	2.23
3,978.0	51.97	74.43	3,873.7	-0.1	108.7	107.6	7.45	7.44	0.63
4,010.0	54.43	74.38	3,892.9	6.8	133.4	133.0	7.69	7.69	-0.16
4,041.0	56.54	73.81	3,910.5	13.8	158.0	158.3	6.97	6.81	-1.84
4,073.0	58.39	73.36	3,927.7	21.4	183.9	185.0	5.90	5.78	-1.41
4,110.0	60.94	72.64	3,946.4	30.7	214.4	216.6	7.09	6.89	-1.95
4,139.0	63.31	72.57	3,959.9	38.4	238.9	241.9	8.18	8.17	-0.24
4,170.0	66.13	72.93	3,973.1	46.7	265.6	269.6	9.16	9.10	1.16
4,202.0	68.85	73.13	3,985.4	55.3	293.9	298.8	8.52	8.50	0.63
4,234.0	71.67	73.70	3,996.2	63.9	322.8	328.6	8.97	8.81	1.78
4,266.0	74.22	74.16	4,005.6	72.4	352.2	358.9	8.09	7.97	1.44
4,298.0	77.03	74.66	4,013.5	80.7	382.0	389.6	8.91	8.78	1.56
4,313.0	78.35	74.74	4,016.7	84.6	396.1	404.2	8.80	8.78	0.53
"Coal Entrance" 4313'MD / 4016'TVD									
4,330.0	79.84	74.83	4,019.9	89.0	412.2	420.7	8.80	8.78	0.53
4,361.0	82.31	75.40	4,024.8	96.8	441.8	451.2	8.17	7.97	1.84
4,393.0	84.59	75.33	4,028.4	104.9	472.6	482.7	7.13	7.13	-0.22
4,424.0	87.49	75.91	4,030.5	112.6	502.6	513.5	9.54	9.35	1.87
4,458.0	90.22	76.71	4,031.2	120.6	535.6	547.3	8.37	8.03	2.35
4,530.0	89.66	76.23	4,031.3	137.5	605.6	619.0	1.03	-0.78	-0.67

Survey Report

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 Wellbore: Wellbore #1
 Design: Wellbore #1

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Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
"Exit Casing" 4530'MD / 4031'TVD									
4,582.0	89.25	75.88	4,031.8	150.0	656.0	670.7	1.03	-0.78	-0.67
4,613.0	88.99	77.42	4,032.3	157.1	686.2	701.6	5.04	-0.84	4.97
4,645.0	88.20	77.86	4,033.1	164.0	717.5	733.5	2.83	-2.47	1.38
4,677.0	88.29	76.91	4,034.0	171.0	748.7	765.4	2.98	0.28	-2.97
4,709.0	88.37	76.35	4,035.0	178.4	779.8	797.3	1.77	0.25	-1.75
4,741.0	88.55	76.85	4,035.8	185.8	810.9	829.1	1.66	0.56	1.56
4,772.0	89.43	79.23	4,036.4	192.2	841.2	860.1	8.18	2.84	7.68
4,804.0	88.90	81.03	4,036.8	197.7	872.7	892.0	5.86	-1.66	5.63
4,836.0	88.81	81.97	4,037.5	202.4	904.4	924.0	2.95	-0.28	2.94
4,868.0	88.02	81.83	4,038.4	206.9	936.1	956.0	2.51	-2.47	-0.44
4,900.0	88.55	82.12	4,039.3	211.4	967.7	988.0	1.89	1.66	0.91
4,931.0	88.02	81.17	4,040.3	215.9	998.4	1,019.0	3.51	-1.71	-3.06
4,963.0	88.46	81.24	4,041.2	220.8	1,030.0	1,051.0	1.39	1.38	0.22
4,995.0	88.20	80.93	4,042.2	225.7	1,061.6	1,083.0	1.26	-0.81	-0.97
5,026.0	88.20	80.70	4,043.1	230.7	1,092.2	1,113.9	0.74	0.00	-0.74
5,055.0	87.85	81.28	4,044.1	235.2	1,120.8	1,142.9	2.33	-1.21	2.00
5,086.0	87.32	81.13	4,045.4	240.0	1,151.4	1,173.9	1.78	-1.71	-0.48
5,116.0	86.79	80.95	4,047.0	244.6	1,181.0	1,203.8	1.87	-1.77	-0.60
5,147.0	87.85	81.19	4,048.4	249.4	1,211.6	1,234.8	3.51	3.42	0.77
5,177.0	88.11	81.17	4,049.5	254.0	1,241.2	1,264.8	0.87	0.87	-0.07
5,208.0	88.64	81.23	4,050.4	258.8	1,271.8	1,295.8	1.72	1.71	0.19
5,238.0	88.64	81.08	4,051.1	263.4	1,301.5	1,325.8	0.50	0.00	-0.50
5,269.0	88.46	80.90	4,051.9	268.2	1,332.1	1,356.8	0.82	-0.58	-0.58
5,300.0	89.52	81.29	4,052.4	273.0	1,362.7	1,387.7	3.64	3.42	1.26
5,330.0	89.78	81.23	4,052.6	277.6	1,392.4	1,417.7	0.89	0.87	-0.20
5,361.0	89.69	81.96	4,052.7	282.1	1,423.0	1,448.7	2.37	-0.29	2.35
5,391.0	87.76	81.38	4,053.4	286.5	1,452.7	1,478.7	6.72	-6.43	-1.93
5,422.0	87.05	80.34	4,054.8	291.4	1,483.3	1,509.7	4.06	-2.29	-3.35
5,453.0	86.88	80.39	4,056.5	296.6	1,513.8	1,540.6	0.57	-0.55	0.16
5,484.0	87.93	80.54	4,057.9	301.7	1,544.3	1,571.6	3.42	3.39	0.48
5,514.0	88.11	79.60	4,058.9	306.9	1,573.9	1,601.6	3.19	0.60	-3.13
5,545.0	89.08	79.63	4,059.7	312.5	1,604.3	1,632.5	3.13	3.13	0.10
5,576.0	88.99	79.74	4,060.2	318.0	1,634.8	1,663.5	0.46	-0.29	0.35
5,607.0	88.90	80.88	4,060.8	323.2	1,665.4	1,694.5	3.69	-0.29	3.68
5,638.0	88.55	81.42	4,061.4	328.0	1,696.0	1,725.5	2.08	-1.13	1.74
5,668.0	88.37	82.68	4,062.2	332.1	1,725.7	1,755.5	4.24	-0.60	4.20
5,699.0	87.58	82.89	4,063.3	336.0	1,756.5	1,786.5	2.64	-2.55	0.68
5,730.0	87.67	83.20	4,064.6	339.8	1,787.2	1,817.4	1.04	0.29	1.00
5,760.0	87.76	83.07	4,065.8	343.4	1,817.0	1,847.4	0.53	0.30	-0.43
5,791.0	89.16	82.93	4,066.7	347.1	1,847.7	1,878.4	4.54	4.52	-0.45
5,822.0	90.13	83.56	4,066.8	350.8	1,878.5	1,909.4	3.73	3.13	2.03
5,853.0	89.78	83.41	4,066.9	354.3	1,909.3	1,940.3	1.23	-1.13	-0.48
5,884.0	89.52	83.58	4,067.1	357.8	1,940.1	1,971.3	1.00	-0.84	0.55

Survey Report

Company: Energen Resources
 Project: Rio Arriba County
 Site: Sec15 T32N-R5W - 119H
 Well: Carracas Unit #119H
 Wellbore: Wellbore #1
 Design: Wellbore #1

Local Co-ordinate Reference: Well Carracas Unit #119H
 TVD Reference: WELL @ 7546.0usft (Original Well Elev)
 MD Reference: WELL @ 7546.0usft (Original Well Elev)
 North Reference: True
 Survey Calculation Method: Minimum Curvature
 Database: EDM 5000.1 Single User Db

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,914.0	88.90	82.87	4,067.5	361.4	1,969.9	2,001.3	3.14	-2.07	-2.37
5,945.0	88.99	82.33	4,068.0	365.3	2,000.6	2,032.3	1.77	0.29	-1.74
5,976.0	88.64	82.23	4,068.7	369.5	2,031.3	2,063.3	1.17	-1.13	-0.32
6,006.0	88.11	80.80	4,069.5	373.9	2,061.0	2,093.3	5.08	-1.77	-4.77
6,037.0	87.85	79.03	4,070.6	379.4	2,091.5	2,124.2	5.77	-0.84	-5.71
6,068.0	88.46	78.86	4,071.6	385.3	2,121.9	2,155.2	2.04	1.97	-0.55
6,098.0	88.37	78.78	4,072.5	391.1	2,151.3	2,185.1	0.40	-0.30	-0.27
6,129.0	88.20	79.14	4,073.4	397.0	2,181.7	2,216.1	1.28	-0.55	1.16
6,160.0	86.00	79.70	4,075.0	402.7	2,212.2	2,247.0	7.32	-7.10	1.81
6,190.0	85.21	79.23	4,077.3	408.2	2,241.6	2,276.9	3.06	-2.63	-1.57
6,220.0	85.65	79.46	4,079.6	413.7	2,271.0	2,306.8	1.65	1.47	0.77
6,250.0	86.09	79.90	4,081.8	419.1	2,300.4	2,336.7	2.07	1.47	1.47
6,281.0	87.58	80.77	4,083.5	424.3	2,330.9	2,367.6	5.56	4.81	2.81
6,312.0	87.67	80.88	4,084.8	429.2	2,361.5	2,398.6	0.46	0.29	0.35
6,343.0	88.72	82.14	4,085.8	433.8	2,392.1	2,429.6	5.29	3.39	4.06
6,373.0	89.34	82.94	4,086.3	437.7	2,421.9	2,459.6	3.37	2.07	2.67
6,404.0	89.43	84.94	4,086.6	441.0	2,452.7	2,490.5	6.46	0.29	6.45
6,435.0	89.08	84.87	4,087.0	443.7	2,483.6	2,521.5	1.15	-1.13	-0.23
6,466.0	89.96	85.98	4,087.3	446.2	2,514.5	2,552.4	4.57	2.84	3.58
6,496.0	89.08	86.36	4,087.5	448.2	2,544.4	2,582.3	3.20	-2.93	1.27
6,527.0	89.78	85.92	4,087.8	450.3	2,575.3	2,613.3	2.67	2.26	-1.42
6,558.0	89.78	86.13	4,088.0	452.4	2,606.3	2,644.2	0.68	0.00	0.68
6,589.0	89.52	86.09	4,088.1	454.5	2,637.2	2,675.1	0.85	-0.84	-0.13
6,620.0	89.16	85.39	4,088.5	456.8	2,668.1	2,706.0	2.54	-1.16	-2.26
6,650.0	89.87	84.60	4,088.8	459.5	2,698.0	2,736.0	3.54	2.37	-2.63
6,681.0	89.25	83.85	4,089.0	462.6	2,728.8	2,766.9	3.14	-2.00	-2.42
6,711.0	89.69	84.31	4,089.3	465.7	2,758.7	2,796.9	2.12	1.47	1.53
6,742.0	89.34	84.28	4,089.5	468.7	2,789.5	2,827.9	1.13	-1.13	-0.10
6,773.0	89.69	84.20	4,089.8	471.9	2,820.3	2,858.8	1.16	1.13	-0.26
6,803.0	89.96	83.81	4,089.9	475.0	2,850.2	2,888.8	1.58	0.90	-1.30
6,834.0	89.60	83.26	4,090.0	478.5	2,881.0	2,919.8	2.12	-1.16	-1.77
6,865.0	90.57	83.33	4,090.0	482.1	2,911.8	2,950.8	3.14	3.13	0.23
6,896.0	89.96	83.23	4,089.8	485.7	2,942.6	2,981.8	1.99	-1.97	-0.32
6,926.0	89.96	82.63	4,089.8	489.4	2,972.3	3,011.8	2.00	0.00	-2.00
6,957.0	90.13	82.32	4,089.8	493.5	3,003.1	3,042.8	1.14	0.55	-1.00
6,987.0	89.96	82.15	4,089.8	497.5	3,032.8	3,072.8	0.80	-0.57	-0.57
7,018.0	89.87	81.99	4,089.8	501.8	3,063.5	3,103.8	0.59	-0.29	-0.52
7,049.0	89.16	81.16	4,090.1	506.4	3,094.2	3,134.8	3.52	-2.29	-2.68
7,080.0	88.29	80.37	4,090.8	511.3	3,124.7	3,165.8	3.79	-2.81	-2.55
7,110.0	87.93	80.02	4,091.8	516.4	3,154.3	3,195.7	1.67	-1.20	-1.17
7,141.0	87.58	80.15	4,093.0	521.8	3,184.8	3,226.7	1.20	-1.13	0.42
7,173.0	87.14	79.30	4,094.5	527.5	3,216.3	3,258.6	2.99	-1.38	-2.66
7,205.0	86.88	78.72	4,096.1	533.6	3,247.6	3,290.5	1.98	-0.81	-1.81

Survey Report

Company: Energen Resources
 Project: Rio Arriba County
 Site: Sec15 T32N-R5W - 119H
 Well: Carracas Unit #119H
 Wellbore: Wellbore #1
 Design: Wellbore #1

Local Co-ordinate Reference: Well Carracas Unit #119H
 TVD Reference: WELL @ 7546.0usft (Original Well Elev)
 MD Reference: WELL @ 7546.0usft (Original Well Elev)
 North Reference: True
 Survey Calculation Method: Minimum Curvature
 Database: EDM 5000.1 Single User Db

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
7,237.0	87.32	79.07	4,097.8	539.7	3,279.0	3,322.5	1.76	1.38	1.09
7,268.0	87.58	78.79	4,099.1	545.7	3,309.4	3,353.4	1.23	0.84	-0.90
7,300.0	88.64	79.31	4,100.2	551.7	3,340.8	3,385.3	3.69	3.31	1.63
7,332.0	88.64	78.29	4,101.0	557.9	3,372.2	3,417.3	3.19	0.00	-3.19
7,363.0	88.20	79.84	4,101.8	563.8	3,402.6	3,448.2	5.20	-1.42	5.00
7,395.0	87.93	79.94	4,102.9	569.4	3,434.1	3,480.2	0.90	-0.84	0.31
7,427.0	87.05	79.43	4,104.3	575.2	3,465.5	3,512.2	3.18	-2.75	-1.59
7,459.0	87.67	80.90	4,105.8	580.6	3,497.0	3,544.1	4.98	1.94	4.59
7,491.0	87.05	81.36	4,107.2	585.6	3,528.6	3,576.1	2.41	-1.94	1.44
7,522.0	86.79	81.30	4,108.9	590.2	3,559.2	3,607.0	0.86	-0.84	-0.19
7,554.0	87.41	82.37	4,110.5	594.8	3,590.8	3,639.0	3.86	1.94	3.34
7,586.0	87.67	82.46	4,111.9	599.0	3,622.5	3,671.0	0.86	0.81	0.28
7,618.0	88.20	81.93	4,113.0	603.3	3,654.2	3,702.9	2.34	1.66	-1.66
7,650.0	89.60	82.07	4,113.7	607.8	3,685.9	3,734.9	4.40	4.38	0.44
7,681.0	89.34	82.20	4,114.0	612.0	3,716.6	3,765.9	0.94	-0.84	0.42
7,713.0	89.60	82.49	4,114.2	616.3	3,748.3	3,797.9	1.22	0.81	0.91
7,745.0	90.57	83.06	4,114.2	620.3	3,780.1	3,829.9	3.52	3.03	1.78
7,777.0	90.22	83.68	4,114.0	624.0	3,811.8	3,861.9	2.22	-1.09	1.94
7,808.0	90.22	83.52	4,113.9	627.5	3,842.7	3,892.9	0.52	0.00	-0.52
7,840.0	89.87	83.33	4,113.8	631.1	3,874.4	3,924.9	1.24	-1.09	-0.59
7,872.0	90.48	83.70	4,113.7	634.7	3,906.2	3,956.9	2.23	1.91	1.16
7,904.0	90.57	83.40	4,113.4	638.3	3,938.0	3,988.8	0.98	0.28	-0.94
7,936.0	90.48	82.78	4,113.2	642.2	3,969.8	4,020.8	1.96	-0.28	-1.94
7,967.0	90.66	82.30	4,112.8	646.2	4,000.5	4,051.8	1.65	0.58	-1.55
7,999.0	89.87	82.25	4,112.7	650.5	4,032.2	4,083.8	2.47	-2.47	-0.16
8,031.0	89.08	82.28	4,113.0	654.8	4,064.0	4,115.8	2.47	-2.47	0.09
8,062.0	88.64	82.31	4,113.6	659.0	4,094.7	4,146.8	1.42	-1.42	0.10
8,094.0	87.76	82.44	4,114.6	663.2	4,126.4	4,178.8	2.78	-2.75	0.41
8,126.0	86.79	81.64	4,116.1	667.6	4,158.0	4,210.8	3.93	-3.03	-2.50
8,158.0	86.17	80.96	4,118.1	672.5	4,189.6	4,242.7	2.87	-1.94	-2.13
8,190.0	86.26	80.30	4,120.2	677.7	4,221.1	4,274.6	2.08	0.28	-2.06
8,222.0	86.61	80.28	4,122.2	683.1	4,252.6	4,306.5	1.10	1.09	-0.06
8,253.0	87.23	79.94	4,123.9	688.4	4,283.1	4,337.5	2.28	2.00	-1.10
8,289.0	86.70	80.37	4,125.8	694.5	4,318.5	4,373.4	1.89	-1.47	1.19
8,346.0	86.70	80.37	4,129.1	704.0	4,374.6	4,430.3	0.00	0.00	0.00

8346 MD Proj TD

Survey Report

Company: Energen Resources
Project: Rio Arriba County
Site: Sec15 T32N-R5W - 119H
Well: Carracas Unit #119H
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well Carracas Unit #119H
TVD Reference: WELL @ 7546.0usft (Original Well Elev)
MD Reference: WELL @ 7546.0usft (Original Well Elev)
North Reference: True
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User Db

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
4,313.0	4,016.7	84.6	396.1	"Coal Entrance" 4313'MD / 4016'TVD
4,530.0	4,031.3	137.5	605.6	"Exit Casing" 4530'MD / 4031'TVD
8,346.0	4,129.1	704.0	4,374.6	8346'MD Proj TD

Checked By: _____	Approved By: _____	Date: _____
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