

District I
1625 N French Dr, Hobbs, NM 88240
Phone (575) 393-6161 Fax (575) 393-0720
District II
811 S First St., Artesia, NM 88210
Phone (575) 748-1283 Fax (575) 748-9720
District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone (505) 334-6178 Fax (505) 334-6170
District IV
1220 S St Francis Dr, Santa Fe, NM 87505
Phone (505) 476-3460 Fax (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-102
Revised August 1, 2011
Submit one copy to appropriate
District Office

☒ AMENDED REPORT
"AS DRILLED"

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-039-30842		² Pool Code 71629		³ Pool Name Basin Fruitland Coal	
⁴ Property Code 35653		⁵ Property Name Carracas 14A			⁶ Well Number 16H
⁷ OGRID No. 162928		⁸ Operator Name Energen Resources Corporation			⁹ Elevation 7408' GL

¹⁰ Surface Location

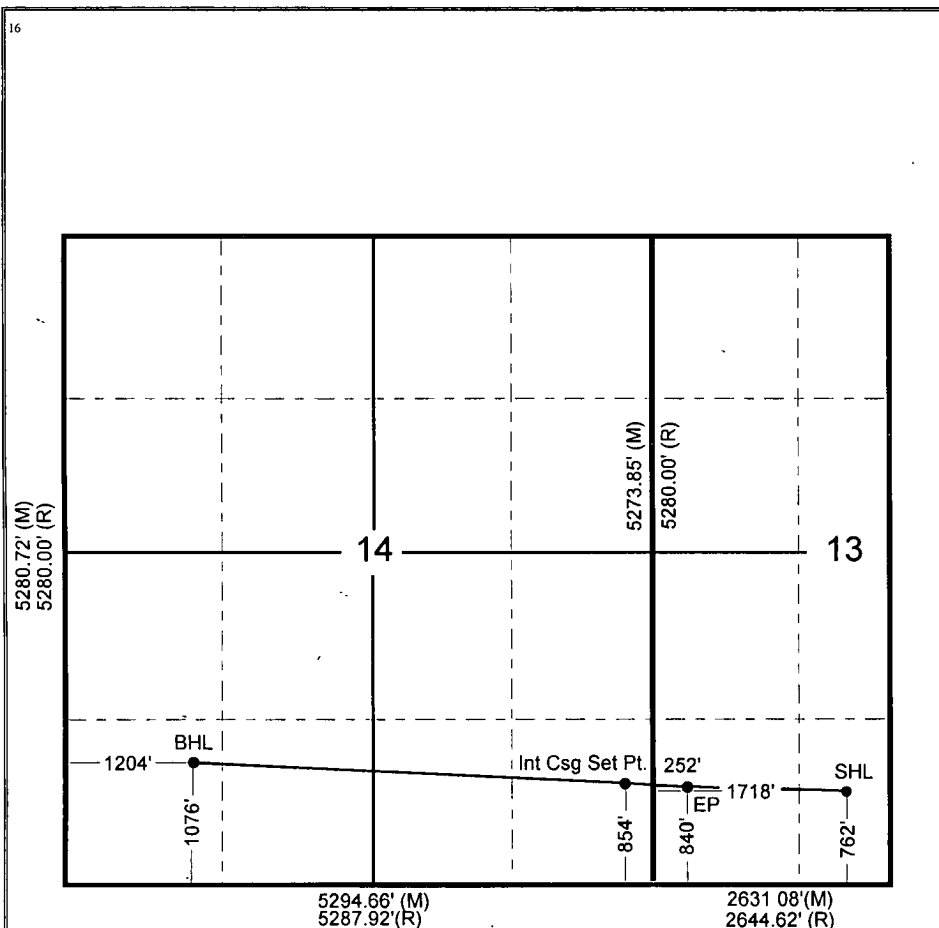
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
N	13	32N	5W		762	South	1718	West	Rio Arriba

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
M	14	32N	5W		1076	South	1204	West	Rio Arriba

¹² Dedicated Acres S/2 320 (S14)	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.



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.

Nathan Smith 11/2/2011
Signature Date

Nathan Smith
Printed Name

nsmith@energen.com
E-mail Address

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

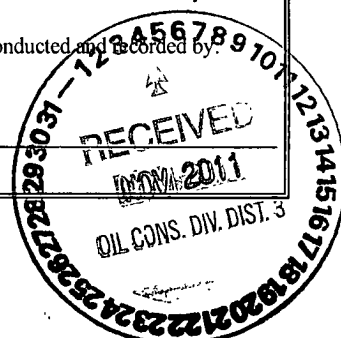
June 11, 2009

Date of Survey

Signature and Seal of Professional Surveyor:

Original survey conducted and recorded by:
David R. Russell

10201
Certificate Number



A

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

ORIGINAL

DATE: 09/20/11

TO: ENERGEN RESOURCES CORPORATION
2010 AFTON PLACE
FARMINGTON, NM 87401

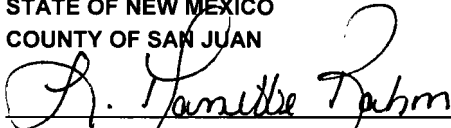
ATTN: MR. DOUG THOMAS

THIS LETTER IS TO CERTIFY THAT D & J DRILLING, DID RUN DEVIATION SURVEYS AT
THE LISTED DEPTH ON YOUR CARRACAS 14A #16, IN SEC13-T32N-R05W, IN RIO ARRIBA COUNTY,
NEW MEXICO. API WELL NUMBER - 30-039-30842

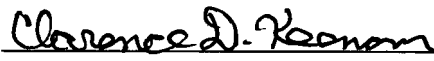
DEPTH	DEGREE DEVIATION
96 '	3/4

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

STATE OF NEW MEXICO
COUNTY OF SAN JUAN


NOTARY PUBLIC, L. NANETTE RAHM

SINCERELY,


OWNER/PARTNER- CLARENCE D. KEENOM



A✓

Energen Resources

Rio Arriba County

Sec13 T32N-R5W - 14A

Carracas 14A #16

Wellbore #1

Design: Wellbore #1

Standard Survey Report

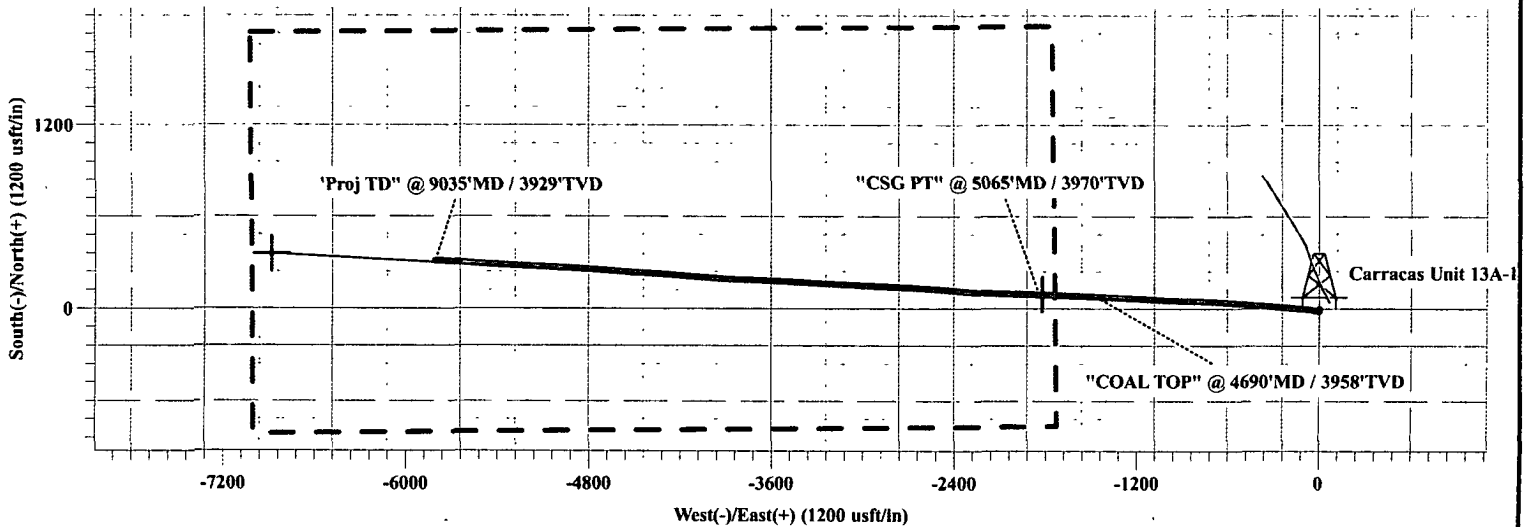
14 September, 2011



Carracas 14A #16
Sec13 T32N-R5W - 14A
Rio Arriba Co. NM
GE: 7408' / KB: 15'

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

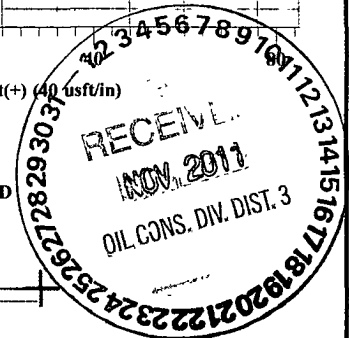
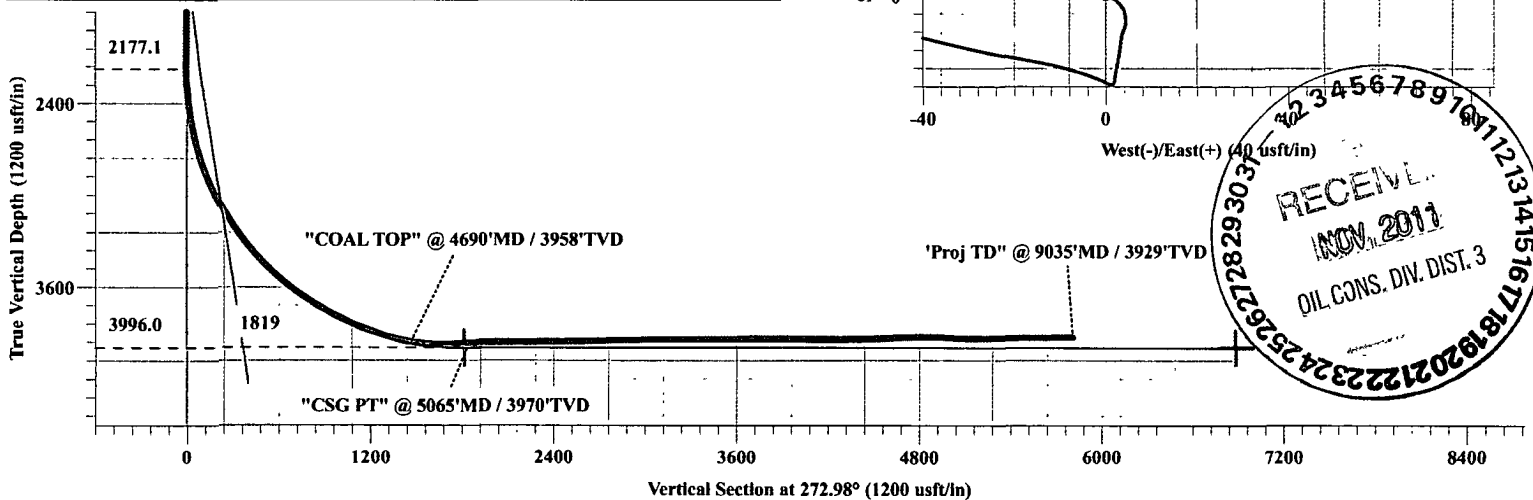
Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
LAND-14A	3996.0	94.5	-1816.5	2176069.28	1326988.37	Point
TD-14A	3996.0	357.7	-6876.7	2176389.10	1321931.44	Point



EOW
No Hardline Crossed

WELL DETAILS: Carracas 14A #16

Northing	Easting	7408.0	Latitude	Longitude
2175954.44	1328803.69	36° 58' 30.144 N	107° 19' 0.444 W	



Plan: Design #3 (Carracas 14A #16/Wellbore #1)

Survey Report

Company:	Energen Resources	Local Co-ordinate Reference:	Site Sec13 T32N-R5W - 14A
Project:	Rio Arriba County	TVD Reference:	WELL @ 7423.0usft (Original Well Elev)
Site:	Sec13 T32N-R5W - 14A	MD Reference:	WELL @ 7423.0usft (Original Well Elev)
Well:	Carracas 14A #16	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
Geo Datum:	North American Datum 1983
Map Zone:	New Mexico Central Zone
System Datum:	Mean Sea Level

Site	Sec13 T32N-R5W - 14A
Site Position:	
From:	Lat/Long
Position Uncertainty:	0.0 usft
Northing:	2,175,954.44 usft
Easting:	1,328,803.69 usft
Slot Radius:	13-3/16 "
Latitude:	36° 58' 30.144 N
Longitude:	107° 19' 0.444 W
Grid Convergence:	-0.64 °

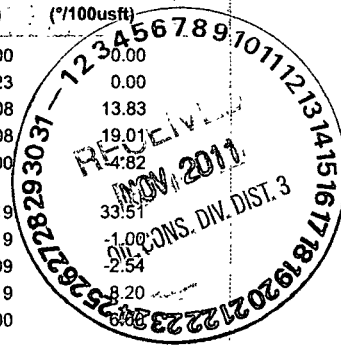
Well	Carracas 14A #16
Well Position	+N/-S 0.0 usft
Well Position	+E/-W 0.0 usft
Position Uncertainty	0.0 usft
Northing:	2,175,954.44 usft
Easting:	1,328,803.69 usft
Wellhead Elevation:	usft
Latitude:	36° 58' 30.144 N
Longitude:	107° 19' 0.444 W
Ground Level:	7,408.0 usft

Wellbore	Wellbore #1
Magnetics	
Model Name	IGRF2010
Sample Date	07/28/11
Declination	9.72
Dip Angle	63.74
Field Strength	50,909

Design	Wellbore #1
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 0.0 272.98

Survey Program	Date 09/14/11
From (usft)	To (usft)
265.0	9,035.0 Survey #1 (Wellbore #1)
Tool Name	MWD
Description	MWD - Standard

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)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
265.0	0.62	112.10	265.0	-0.5	1.3	-1.4	0.23	0.23	0.00
360.0	0.70	125.24	360.0	-1.1	2.3	-2.3	0.18	0.08	13.83
456.0	0.62	143.49	456.0	-1.8	3.1	-3.2	0.23	-0.08	19.01
551.0	0.62	138.91	551.0	-2.6	3.7	-3.8	0.05	0.00	4.82
644.0	0.44	170.07	644.0	-3.4	4.1	-4.3	0.36	-0.19	33.51
739.0	0.26	169.12	739.0	-3.9	4.2	-4.4	0.19	-0.19	1.00
834.0	0.35	166.71	834.0	-4.4	4.3	-4.5	0.10	0.09	2.54
929.0	0.53	174.50	929.0	-5.1	4.4	-4.7	0.20	0.19	8.20
1,025.0	0.53	180.26	1,025.0	-6.0	4.5	-4.8	0.06	0.00	0.00



Survey Report



Company: Energen Resources
 Project: Rio Arriba County
 Site: Sec13 T32N-R5W - 14A
 Well: Carracas 14A #16
 Wellbore: Wellbore #1
 Design: Wellbore #1

Local Co-ordinate Reference: Site Sec13 T32N-R5W - 14A
 TVD Reference: WELL @ 7423.0usft (Original Well Elev)
 MD Reference: WELL @ 7423.0usft (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)
1,120.0	0.53	197.96	1,120.0	-6.9	4.3	-4.7	0.17	0.00	18.63
1,215.0	0.53	207.67	1,215.0	-7.7	4.0	-4.4	0.09	0.00	10.22
1,310.0	0.62	194.24	1,310.0	-8.6	3.7	-4.1	0.17	0.09	-14.14
1,406.0	0.79	185.84	1,405.9	-9.7	3.5	-4.0	0.21	0.18	-8.75
1,501.0	0.79	189.03	1,500.9	-11.0	3.3	-3.9	0.05	0.00	3.36
1,596.0	0.79	191.25	1,595.9	-12.3	3.1	-3.7	0.03	0.00	2.34
1,691.0	0.79	186.61	1,690.9	-13.6	2.9	-3.6	0.07	0.00	-4.88
1,786.0	0.70	191.67	1,785.9	-14.8	2.7	-3.4	0.12	-0.09	5.33
1,881.0	0.70	191.98	1,880.9	-16.0	2.4	-3.3	0.00	0.00	0.33
1,977.0	0.70	190.05	1,976.9	-17.1	2.2	-3.1	0.02	0.00	-2.01
2,072.0	0.62	182.38	2,071.9	-18.2	2.1	-3.0	0.13	-0.08	-8.07
2,104.0	0.62	191.23	2,103.9	-18.6	2.0	-3.0	0.30	0.00	27.66
2,136.0	0.62	190.75	2,135.9	-18.9	2.0	-3.0	0.02	0.00	-1.50
2,167.0	0.70	193.10	2,166.9	-19.2	1.9	-2.9	0.27	0.26	7.58
2,199.0	0.70	213.58	2,198.9	-19.6	1.7	-2.8	0.78	0.00	64.00
2,231.0	0.97	271.68	2,230.9	-19.8	1.4	-2.4	2.64	0.84	181.56
2,263.0	1.85	294.65	2,262.9	-19.5	0.6	-1.6	3.22	2.75	71.78
2,295.0	2.81	299.09	2,294.8	-18.9	-0.5	-0.5	3.05	3.00	13.88
2,327.0	3.69	290.80	2,326.8	-18.2	-2.2	1.2	3.11	2.75	-25.91
2,358.0	4.92	289.69	2,357.7	-17.4	-4.4	3.5	3.98	3.97	-3.58
2,390.0	6.07	286.34	2,389.6	-16.4	-7.3	6.4	3.73	3.59	-10.47
2,422.0	7.21	282.23	2,421.3	-15.5	-10.9	10.0	3.86	3.56	-12.84
2,454.0	8.18	281.13	2,453.0	-14.7	-15.1	14.3	3.07	3.03	-3.44
2,486.0	9.06	280.00	2,484.7	-13.8	-19.8	19.0	2.80	2.75	-3.53
2,517.0	9.94	281.26	2,515.3	-12.9	-24.8	24.1	2.92	2.84	4.06
2,549.0	10.82	283.26	2,546.7	-11.6	-30.4	29.8	2.97	2.75	6.25
2,581.0	11.70	283.45	2,578.1	-10.2	-36.5	35.9	2.75	2.75	0.59
2,613.0	12.57	283.33	2,609.4	-8.6	-43.1	42.6	2.72	2.72	-0.38
2,644.0	13.81	282.69	2,639.6	-7.0	-49.9	49.5	4.03	4.00	-2.06
2,676.0	14.77	280.70	2,670.6	-5.4	-57.7	57.3	3.37	3.00	-6.22
2,708.0	16.00	279.01	2,701.5	-4.0	-66.0	65.8	4.09	3.84	-5.28
2,740.0	17.06	276.62	2,732.1	-2.8	-75.1	74.8	3.93	3.31	-7.47
2,772.0	18.20	275.23	2,762.6	-1.8	-84.7	84.5	3.80	3.56	-4.34
2,803.0	19.35	273.49	2,792.0	-1.0	-94.7	94.5	4.13	3.71	-5.61
2,835.0	20.31	273.02	2,822.1	-0.4	-105.5	105.3	3.04	3.00	-1.47
2,866.0	21.63	272.58	2,851.0	0.1	-116.6	116.4	4.29	4.26	-1.42
2,897.0	22.77	272.72	2,879.7	0.7	-128.3	128.1	3.68	3.68	0.45
2,927.0	23.57	272.99	2,907.3	1.3	-140.1	139.9	2.69	2.67	0.90
2,958.0	24.09	273.77	2,935.7	2.0	-152.6	152.5	1.96	1.68	2.52
2,988.0	24.97	274.19	2,963.0	2.9	-165.0	164.9	2.99	2.93	1.40
3,018.0	26.12	274.82	2,990.0	3.9	-177.9	177.8	3.94	3.83	2.10
3,049.0	27.52	274.86	3,017.7	5.1	-191.8	191.8	4.52	4.52	0.13
3,080.0	29.11	274.80	3,045.0	6.3	-206.5	206.5	5.13	5.13	-0.19
3,109.0	30.25	274.78	3,070.2	7.5	-220.8	220.9	3.93	3.93	-0.07

Survey Report



Company: Energen Resources
 Project: Rio Arriba County
 Site: Sec13 T32N-R5W - 14A
 Well: Carracas 14A #16
 Wellbore: Wellbore #1
 Design: Wellbore #1

Local Co-ordinate Reference: Site Sec13.T32N-R5W - 14A
 TVD Reference: WELL @ 7423.0usft (Original Well Elev)
 MD Reference: WELL @ 7423.0usft (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)
3,139.0	30.95	275.86	3,096.0	8.9	-236.0	236.1	2.97	2.33	3.60
3,171.0	31.57	276.30	3,123.3	10.7	-252.5	252.7	2.06	1.94	1.38
3,201.0	32.36	275.54	3,148.8	12.3	-268.3	268.6	2.96	2.63	-2.53
3,231.0	33.24	274.89	3,174.0	13.8	-284.5	284.8	3.16	2.93	-2.17
3,261.0	33.94	274.06	3,199.0	15.1	-301.0	301.4	2.79	2.33	-2.77
3,292.0	35.00	273.55	3,224.6	16.3	-318.5	318.9	3.54	3.42	-1.65
3,322.0	35.88	273.40	3,249.0	17.3	-335.9	336.3	2.95	2.93	-0.50
3,351.0	36.84	273.45	3,272.4	18.3	-353.1	353.5	3.31	3.31	0.17
3,380.0	37.55	273.61	3,295.5	19.4	-370.6	371.1	2.47	2.45	0.55
3,411.0	38.43	273.83	3,319.9	20.7	-389.6	390.1	2.87	2.84	0.71
3,441.0	39.75	274.00	3,343.2	22.0	-408.5	409.1	4.41	4.40	0.57
3,471.0	40.36	274.11	3,366.1	23.3	-427.7	428.4	2.05	2.03	0.37
3,499.0	41.33	274.49	3,387.3	24.7	-446.0	446.7	3.58	3.46	1.36
3,531.0	42.30	274.85	3,411.2	26.4	-467.2	468.0	3.12	3.03	1.13
3,561.0	43.62	275.39	3,433.1	28.3	-487.6	488.4	4.57	4.40	1.80
3,590.0	45.02	275.83	3,453.9	30.2	-507.8	508.7	4.94	4.83	1.52
3,621.0	46.17	275.91	3,475.6	32.5	-529.8	530.8	3.71	3.71	0.26
3,650.0	47.31	275.26	3,495.4	34.6	-550.8	551.9	4.26	3.93	-2.24
3,681.0	48.45	273.73	3,516.2	36.4	-573.7	574.9	5.19	3.68	-4.94
3,711.0	49.42	274.32	3,535.9	37.9	-596.3	597.5	3.56	3.23	1.97
3,741.0	50.12	274.26	3,555.3	39.7	-619.1	620.4	2.34	2.33	-0.20
3,771.0	51.09	273.91	3,574.3	41.3	-642.3	643.6	3.36	3.23	-1.17
3,801.0	51.79	273.22	3,593.0	42.8	-665.7	667.0	2.95	2.33	-2.30
3,833.0	52.85	273.02	3,612.6	44.1	-691.0	692.3	3.35	3.31	-0.63
3,863.0	53.82	272.90	3,630.5	45.4	-715.0	716.4	3.25	3.23	-0.40
3,894.0	54.78	272.43	3,648.6	46.6	-740.2	741.6	3.33	3.10	-1.52
3,924.0	55.57	272.19	3,665.7	47.6	-764.8	766.2	2.71	2.63	-0.80
3,954.0	56.54	271.88	3,682.5	48.4	-789.6	791.1	3.35	3.23	-1.03
3,983.0	57.42	271.37	3,698.3	49.1	-813.9	815.4	3.37	3.03	-1.76
4,014.0	58.48	270.97	3,714.7	49.7	-840.2	841.7	3.59	3.42	-1.29
4,043.0	59.44	270.84	3,729.7	50.1	-865.0	866.5	3.33	3.31	-0.45
4,073.0	60.59	270.96	3,744.7	50.5	-891.0	892.4	3.85	3.83	0.40
4,103.0	61.73	271.47	3,759.2	51.0	-917.3	918.7	4.08	3.80	1.70
4,132.0	62.43	271.97	3,772.7	51.8	-942.9	944.3	2.85	2.41	1.72
4,163.0	63.05	272.60	3,786.9	52.9	-970.5	971.9	2.70	2.00	2.03
4,193.0	64.02	272.90	3,800.3	54.2	-997.3	998.7	3.35	3.23	1.00
4,223.0	65.16	273.09	3,813.2	55.6	-1,024.3	1,025.8	3.84	3.80	0.63
4,252.0	66.13	273.13	3,825.1	57.0	-1,050.7	1,052.3	3.35	3.34	0.14
4,282.0	66.92	273.13	3,837.1	58.5	-1,078.2	1,079.8	2.63	2.63	0.00
4,311.0	67.88	273.21	3,848.2	60.0	-1,104.9	1,106.5	3.32	3.31	0.28
4,342.0	68.15	273.07	3,859.8	61.6	-1,133.6	1,135.3	0.97	0.87	-0.45
4,372.0	69.03	272.91	3,870.8	63.0	-1,161.5	1,163.2	2.98	2.93	-0.53
4,402.0	69.73	272.53	3,881.4	64.4	-1,189.6	1,191.3	2.62	2.33	-1.27

Survey Report



Company: Energen Resources
 Project: Rio Arriba County
 Site: Sec13 T32N-R5W - 14A
 Well: Carracas 14A #16
 Wellbore: Wellbore #1
 Design: Wellbore #1

Local Co-ordinate Reference: Site Sec13 T32N-R5W - 14A
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 Survey Calculation Method: Minimum Curvature
 Database: EDM 5000.1 Single User Db

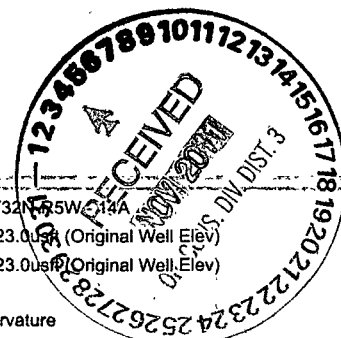
Survey

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)
4,431.0	70.61	272.33	3,891.2	65.5	-1,216.8	1,218.6	3.10	3.03	-0.69
4,462.0	71.40	272.46	3,901.3	66.8	-1,246.1	1,247.9	2.58	2.55	0.42
4,491.0	72.55	272.66	3,910.3	68.0	-1,273.7	1,275.5	4.02	3.97	0.69
4,522.0	73.42	272.82	3,919.3	69.4	-1,303.3	1,305.1	2.85	2.81	0.52
4,553.0	74.57	272.83	3,927.9	70.9	-1,333.0	1,334.9	3.71	3.71	0.03
4,582.0	75.62	272.91	3,935.3	72.3	-1,361.0	1,362.9	3.63	3.62	0.28
4,612.0	76.68	273.02	3,942.5	73.8	-1,390.1	1,392.1	3.55	3.53	0.37
4,642.0	77.82	272.93	3,949.1	75.3	-1,419.3	1,421.3	3.81	3.80	-0.30
4,674.0	78.96	272.72	3,955.6	76.8	-1,450.6	1,452.7	3.62	3.56	-0.66
4,690.0	79.75	272.57	3,958.5	77.6	-1,466.3	1,468.4	5.05	4.97	-0.94
"COAL TOP" @ 4690' MD / 3958' TVD									
4,706.0	80.55	272.42	3,961.3	78.3	-1,482.1	1,484.1	5.05	4.97	-0.94
4,738.0	82.31	272.47	3,966.0	79.6	-1,513.7	1,515.8	5.50	5.50	0.16
4,769.0	84.06	272.38	3,969.7	80.9	-1,544.5	1,546.6	5.65	5.65	-0.29
4,801.0	85.56	272.20	3,972.6	82.2	-1,576.3	1,578.4	4.72	4.69	-0.56
4,833.0	87.14	272.23	3,974.7	83.4	-1,608.2	1,610.4	4.94	4.94	0.09
4,864.0	88.46	272.89	3,975.8	84.8	-1,639.1	1,641.3	4.76	4.26	2.13
4,896.0	89.25	272.69	3,976.5	86.4	-1,671.1	1,673.3	2.55	2.47	-0.63
4,928.0	90.31	272.49	3,976.6	87.8	-1,703.1	1,705.3	3.37	3.31	-0.63
4,960.0	91.36	271.87	3,976.1	89.0	-1,735.0	1,737.3	3.81	3.28	-1.94
4,986.0	92.24	271.43	3,975.3	89.8	-1,761.0	1,763.3	3.78	3.38	-1.69
5,065.0	95.06	272.27	3,970.3	92.3	-1,839.8	1,842.1	3.73	3.57	1.06
"CSG PT" @ 5065' MD / 3970' TVD									
5,087.0	95.85	272.50	3,968.2	93.2	-1,861.7	1,864.0	3.73	3.57	1.06
5,150.0	93.65	271.36	3,963.0	95.3	-1,924.4	1,926.8	3.93	-3.49	-1.81
5,214.0	90.31	271.10	3,960.8	96.7	-1,988.4	1,990.7	5.23	-5.22	-0.41
5,277.0	90.40	270.57	3,960.4	97.6	-2,051.4	2,053.7	0.85	0.14	-0.84
5,341.0	89.69	273.03	3,960.3	99.6	-2,115.3	2,117.6	4.00	-1.11	3.84
5,404.0	90.04	272.77	3,960.5	102.8	-2,178.2	2,180.6	0.69	0.56	-0.41
5,468.0	90.22	272.59	3,960.3	105.8	-2,242.2	2,244.6	0.40	0.28	-0.28
5,531.0	90.48	274.61	3,959.9	109.8	-2,305.0	2,307.6	3.23	0.41	3.21
5,595.0	91.63	274.61	3,958.8	114.9	-2,368.8	2,371.6	1.80	1.80	0.00
5,658.0	90.84	274.17	3,957.4	119.7	-2,431.6	2,434.6	1.44	-1.25	-0.70
5,722.0	90.66	274.08	3,956.6	124.3	-2,495.5	2,498.5	0.31	-0.28	-0.14
5,786.0	90.75	274.00	3,955.8	128.8	-2,559.3	2,562.5	0.19	0.14	-0.13
5,849.0	90.75	273.65	3,955.0	133.0	-2,622.1	2,625.5	0.56	0.00	-0.56
5,913.0	92.33	273.82	3,953.2	137.2	-2,686.0	2,689.5	2.48	2.47	0.27
5,976.0	91.63	272.94	3,951.1	140.9	-2,748.8	2,752.4	1.78	-1.11	-1.40
6,040.0	91.45	272.42	3,949.3	143.9	-2,812.7	2,816.4	0.86	-0.28	-0.81
6,103.0	91.10	272.06	3,947.9	146.4	-2,875.7	2,879.4	0.80	-0.56	-0.57
6,167.0	90.84	272.50	3,946.9	148.9	-2,939.6	2,943.4	0.80	-0.41	0.69
6,231.0	91.45	272.50	3,945.6	151.7	-3,003.5	3,007.4	0.95	0.95	0.00
6,294.0	91.36	272.59	3,944.0	154.5	-3,066.5	3,070.4	0.20	-0.14	0.14
6,357.0	89.78	272.59	3,943.4	157.4	-3,129.4	3,133.3	2.51	-2.51	0.00

Survey Report

Company: Energen Resources
 Project: Rio Arriba County
 Site: Sec13 T32N-R5W - 14A
 Well: Carracas 14A #16
 Wellbore: Wellbore #1
 Design: Wellbore #1

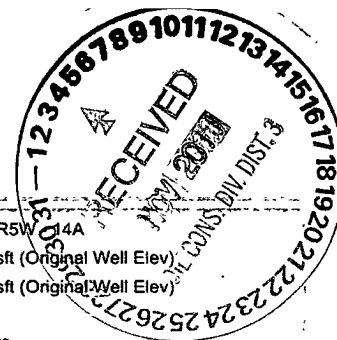
Local Co-ordinate Reference: Site Sec13 T32N-R5W-14A
 TVD Reference: WELL @ 7423.0usft (Original Well Elev)
 MD Reference: WELL @ 7423.0usft (Original Well Elev)
 North Reference: True
 Survey Calculation Method: Minimum Curvature
 Database: EDM 5000.1 Single User Db



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)
6,421.0	90.22	273.03	3,943.4	160.5	-3,193.3	3,197.3	0.97	0.69	0.69
6,485.0	89.43	272.85	3,943.6	163.8	-3,257.2	3,261.3	1.27	-1.23	-0.28
6,548.0	89.60	273.21	3,944.1	167.1	-3,320.1	3,324.3	0.63	0.27	0.57
6,612.0	90.31	273.47	3,944.2	170.8	-3,384.0	3,388.3	1.18	1.11	0.41
6,676.0	90.22	273.21	3,943.9	174.6	-3,447.9	3,452.3	0.43	-0.14	-0.41
6,739.0	90.84	273.03	3,943.3	178.0	-3,510.8	3,515.3	1.02	0.98	-0.29
6,803.0	91.19	272.59	3,942.2	181.1	-3,574.7	3,579.3	0.88	0.55	-0.69
6,867.0	90.57	272.33	3,941.2	183.9	-3,638.7	3,643.3	1.05	-0.97	-0.41
6,930.0	90.22	272.50	3,940.8	186.5	-3,701.6	3,706.3	0.62	-0.56	0.27
6,994.0	90.13	272.33	3,940.6	189.2	-3,765.6	3,770.3	0.30	-0.14	-0.27
7,058.0	90.48	271.98	3,940.2	191.6	-3,829.5	3,834.3	0.77	0.55	-0.55
7,121.0	89.96	273.12	3,940.0	194.4	-3,892.4	3,897.3	1.99	-0.83	1.81
7,185.0	89.43	274.52	3,940.3	198.7	-3,956.3	3,961.3	2.34	-0.83	2.19
7,249.0	90.04	274.00	3,940.6	203.5	-4,020.1	4,025.3	1.25	0.95	-0.81
7,310.0	89.69	274.17	3,940.8	207.8	-4,081.0	4,086.3	0.64	-0.57	0.28
7,372.0	89.69	274.52	3,941.1	212.5	-4,142.8	4,148.2	0.56	0.00	0.56
7,433.0	89.87	274.35	3,941.3	217.2	-4,203.6	4,209.2	0.41	0.30	-0.28
7,494.0	90.57	274.61	3,941.1	222.0	-4,264.4	4,270.2	1.22	1.15	0.43
7,556.0	90.92	273.73	3,940.3	226.5	-4,326.3	4,332.2	1.53	0.56	-1.42
7,617.0	91.45	272.77	3,939.0	229.9	-4,387.1	4,393.2	1.80	0.87	-1.57
7,678.0	91.71	272.77	3,937.3	232.9	-4,448.0	4,454.1	0.43	0.43	0.00
7,739.0	92.24	273.12	3,935.2	236.0	-4,508.9	4,515.1	1.04	0.87	0.57
7,800.0	92.42	275.07	3,932.8	240.4	-4,569.7	4,576.0	3.21	0.30	3.20
7,861.0	92.95	274.21	3,929.9	245.3	-4,630.5	4,636.9	1.65	0.87	-1.41
7,922.0	91.45	273.75	3,927.6	249.5	-4,691.3	4,697.9	2.57	-2.46	-0.75
7,983.0	91.89	273.54	3,925.8	253.4	-4,752.1	4,758.9	0.80	0.72	-0.34
8,045.0	90.92	273.98	3,924.3	257.5	-4,814.0	4,820.8	1.72	-1.56	0.71
8,106.0	88.99	273.41	3,924.3	261.4	-4,874.8	4,881.8	3.30	-3.16	-0.93
8,167.0	88.11	273.33	3,925.9	265.0	-4,935.7	4,942.8	1.45	-1.44	-0.13
8,229.0	84.86	272.98	3,929.7	268.4	-4,997.5	5,004.7	5.27	-5.24	-0.56
8,290.0	87.49	272.57	3,933.7	271.3	-5,058.3	5,065.5	4.36	4.31	-0.67
8,351.0	90.22	272.70	3,934.9	274.2	-5,119.2	5,126.5	4.48	4.48	0.21
8,412.0	90.31	272.06	3,934.7	276.7	-5,180.1	5,187.5	1.06	0.15	-1.05
8,474.0	90.40	271.94	3,934.3	278.8	-5,242.1	5,249.5	0.24	0.15	-0.19
8,536.0	90.48	272.20	3,933.8	281.1	-5,304.0	5,311.5	0.44	0.13	0.42
8,597.0	90.57	272.40	3,933.2	283.5	-5,365.0	5,372.5	0.36	0.15	0.33
8,659.0	91.19	273.68	3,932.3	286.8	-5,426.9	5,434.5	2.29	1.00	2.06
8,720.0	89.69	274.14	3,931.8	291.0	-5,487.8	5,495.5	2.57	-2.46	0.75
8,781.0	90.40	274.60	3,931.8	295.6	-5,548.6	5,556.4	1.39	1.16	0.75
8,843.0	91.63	273.95	3,930.7	300.3	-5,610.4	5,618.4	2.24	1.98	-1.05
8,904.0	90.31	273.72	3,929.6	304.3	-5,671.2	5,679.4	2.20	-2.16	-0.38
8,935.0	90.22	274.11	3,929.5	306.4	-5,702.2	5,710.4	1.29	-0.29	1.26
9,035.0	90.22	274.11	3,929.1	313.6	-5,801.9	5,810.4	0.00	0.00	0.00

Survey Report



Company: Energen Resources
Project: Rio Arriba County
Site: Sec13 T32N-R5W - 14A
Well: Carracas 14A #16
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Site Sec13 T32N-R5W - 14A
TVD Reference: WELL @ 7423.0usft (Original Well Elev)
MD Reference: WELL @ 7423.0usft (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)
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'Proj TD' @ 9035'MD / 3929'TVD

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
4,690.0	3,958.5	77.6	-1,466.3	"COAL TOP" @ 4690'MD / 3958'TVD
5,065.0	3,970.3	92.3	-1,839.8	"CSG PT" @ 5065'MD / 3970'TVD
9,035.0	3,929.1	313.6	-5,801.9	'Proj TD' @ 9035'MD / 3929'TVD

Checked By: _____ Approved By: _____ Date: _____