

Submit 3 Copies To Appropriate District
Office
District I
1625 N. French Dr., Hobbs, NM 87240
District II
1301 W. Grand Ave., 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 and Natural Resources

Form C-103
June 19, 2008

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

WELL API NO. 30-039-31309
5. Indicate Type of Lease STATE ☐ FEE ☒
6. State Oil & Gas Lease No.
7. Lease Name or Unit Agreement Name: Many Canyons 24-03 8
8. Well Number #4H
9. OGRID Number 162928
10. Pool name or Wildcat West Lindrith Gallup-Dakota

SUNDRY NOTICES AND REPORTS ON WELLS
(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A
DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH
PROPOSALS.)

1. Type of Well: Oil Well ☒ Gas Well ☐ Other
2. Name of Operator Energen Resources Corporation
3. Address of Operator 2010 Afton Place, Farmington, NM 87401
4. Well Location Unit Letter <u>P</u> : <u>1230</u> feet from the <u>South</u> line and <u>716</u> feet from the <u>East</u> line Section <u>8</u> Township <u>24N</u> Range <u>03W</u> NMPM County <u>Rio Arriba</u>
11. Elevation (Show whether DR, RKB, RT, GR, etc.) 6878' GL

12. Check Appropriate Box to Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:

PERFORM REMEDIAL WORK ☐ PLUG AND ABANDON ☐
TEMPORARILY ABANDON ☐ CHANGE PLANS ☒
PULL OR ALTER CASING ☐ MULTIPLE COMPL ☐
DOWNHOLE COMMINGLE ☐

OTHER: ☐

SUBSEQUENT REPORT OF:

REMEDIAL WORK ☐ ALTERING CASING ☐
COMMENCE DRILLING OPNS. ☐ P AND A ☐
CASING/CEMENT JOB ☐

OTHER: ☐

13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 1103. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.

Energen Resources would like to request the following casing changes to the Drilling Plans. Please see the attached.

19.15.7.16.C
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TIGHT HOLE
The 13 3/8 casing string will not be considered conductor pipe
and will be required to be pressure tested in accordance with 19.15.16.10.I
All open hole plugs are required to be worked & tagged
Adjust plugs accordingly to cover tops once open hole logs are completed
OIL CONS. DIV DIST. 3
JUN 22 2015

Spud Date:

Rig Release Date:

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE Anna Stotts TITLE Regulatory Analyst DATE 06/19/15

astotts@energen.com

Type or print name Anna Stotts E-mail address: astotts@energen.com PHONE 324-4154

For State Use Only

APPROVED BY Charles Lee SUPERVISOR DISTRICT #3 DATE JUL 02 2015

Conditions of Approval (if any):

AV

Energen Resources
Many Canyons 24-03 8 #4H
30-039-31309
Change of Plans

Energen Resources requests to change the casing program as proposed in the APD from:

Casing	Size	Depth		Grade	Weight	Connection	PSI x1000/lbs		
		MD	TVD				Burst	Collapse	Tension
Surface	9-5/8"	0-500'	0-500'	J-55	36.00	STC	3520	2020	394
Intermediate	7"	0-7,100'	0-6,440'	L-80	26.00	DQX TMK IPSCO	7240	5410	830
Production	4-1/2"	6,950'-11,664'	6,440'-6,300'	P-110	11.60	DQX TMK IPSCO	10690	7560	367

To the new proposed casing program as follows:

Casing	Size	Depth		Grade	Weight	Connection	PSI x1000/lbs		
		MD	TVD				Burst	Collapse	Tension
Conductor	13-3/8"	0-200'	0-200'	H-40	48.0	STC	1730	770	322
Surface	9-5/8"	0-2500'	0-2500'	J-55	36.00	LTC	3520	2020	394
Intermediate	7"	0-7,225'	0-6,440'	L-80	26.00	DQX TMK IPSCO	7240	5410	830
Production	4-1/2"	7,100'-11,833'	6,440'-6,258'	P-110	11.60	DQX TMK IPSCO	10690	7560	367

Please see the attached Drilling Plan reflecting the change.

Energen would also like to propose a drill through to 7415' TVD to log and core the Mancos. The plug back procedure will consist of 5 plugs as shown below:

Plug #1 7415'-7123'; 105 sks

Plug #2 5682'-5482'; 75 sks

Plug #3 4811'-4611'; 75 sks

Plug #4 4036'-3836'; 75 sks

Plug #5 (KOP) 3700'-3500'; 75 sks

Plug slurry to consist of Class "G" cement with 2.0% CaCl₂ mixed at 15.6 ppg (1.17 ft³/sk).

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TIGHT HOLE

Drilling Plan

Energen Resources Corporation

Many Canyon 24-03 8 #4H

Surface Location: 1230 FSL, 716 FEL

Legal Description: Sec 8, T24N, R3W (36.321030° N, 107.173370° W – NAD83)

Bottom Hole Location: 330 FSL, 330 FWL

Legal Description: Sec 8, T24N, R3W (36.318500° N, 107.187762° W – NAD83)

Rio Arriba County, NM

1. The elevation of the unprepared ground is 6,878 feet above sea level.
2. The geological name of the surface formation is the Nacimientos.
3. A rotary rig will be used to drill the well to a Proposed Total Depth of 6,440' TVD/11,833' MD.
4. Estimated top of important geological markers:

<u>Formation</u>	<u>Depth (TVD)(ft)</u>	<u>Depth (MD)(ft)</u>
Nacimientos	Surface	Surface
Ojo Alamo	2,572	2,572
Kirtland	2,762	2,762
Pictured Cliffs	3,445	3,445
Huerfanito Bentonite	3,852	3,857
Chacra	3,936	3,943
Cliff House	4,711	4,849
Menefee	4,733	4,875
Point Lookout	5,228	5,478
Mancos	5,582	5,908
Mancos/Niobrara "B"	6,400	6,957

5. Estimated depth at which anticipated water, oil, gas or other mineral bearing formations are expected to be encountered:

<u>Formation</u>	<u>Depth (TVD)(ft)</u>	<u>Water/HydroCarbon</u>
Pictured Cliffs	3,852	Gas
Cliffhouse	4,711	Gas
Point Lookout	5,228	Gas
Mancos	5,582	Oil/Gas

6. All proposed casing is new and the program is as follows:

Casing	Size	Depth		Grade	Weight	Connection	PSI		
		MD	TVD				Burst	Collapse	x1000 lbs Tension
Conductor	13-3/8"	0-200'	0-200'	H-40	48.0	STC	1730	770	322
Surface	9-5/8"	0-2500'	0-2500'	J-55	36.00	LTC	3520	2020	394
Intermediate	7"	0-7,225'	0-6,440'	L-80	26.00	DQX TMK IPSCO	7240	5410	830
Production	4-1/2"	7,100'-11,833'	6,440'-6,258'	P-110	11.60	DQX TMK IPSCO	10690	7560	367

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7. Cementing Program:

- a. 17-1/2" hole x 13-3/8" casing at 200' will have cement circulated to surface with 240 sks (100% excess true hole) Class H Cement with 1.0 % CaCl₂, 1/2 #/sk Poly-E-Flake 15.8 ppg, 1.17 ft³/sk. Note: CEMENT MUST BE CIRCULATED TO SURFACE. STANDARD BOW SPRING CENTRALIZERS SHALL BE PLACED ON THE FIRST 3 (BOTTOM 3) JOINTS OF CASING (1 PER JOINT) AND 1 EVERY 3RD JOINT TO SURFACE. 20 BBLS OF WATER AHEAD OF CEMENT AS SPACER
- b. 12-1/4" hole x 9-5/8" casing at 2500' will have cement circulated to surface with 477 sks (50% excess true hole) of VERSACEM™ SYSTEM with 3 % HR-5. 1/4 #/sk Poly-E-Flake, 5 #/sk Kol-Seal (Gilsonite) – 12.3 ppg, 1.97 ft³/sk followed 200 sks (50% excess true hole) Class H Cement with 1.0 % CaCl₂, 1/2 #/sk Poly-E-Flake 15.8 ppg, 1.17 ft³/sk. Note: CEMENT MUST BE CIRCULATED TO SURFACE. STANDARD BOW SPRING CENTRALIZERS SHALL BE PLACED ON THE FIRST 3 (BOTTOM 3) JOINTS OF CASING (1 PER JOINT) AND 1 EVERY 3RD JOINT TO SURFACE. 20 BBLS OF WATER FOLLOWED BY 20 BBLS OF MUDFLUSH AHEAD OF CEMENT AS SPACER
- c. 8-3/4" hole x 7" casing at 7,225'. Cement will be circulated to surface with 770 sks (50% excess true hole) of VERSACEM™ SYSTEM with 3 % HR-5. 1/4 #/sk Poly-E-Flake, 5 #/sk Kol-Seal (Gilsonite) – 12.3 ppg, 1.97 ft³/sk followed by 175 sks (100% excess true hole) VARICEM™ CEMENT with 0.20% Versaset, 0.30% HALAD-567 – 13.5 ppg, 1.28 ft³/sk. ONE CENTRALIZER PER JOINT FOR THE FIRST 3 JOINTS, THEN EVERY 3RD JOINT TO SURFACE. 10 BBLS OF WATER FOLLOWED BY 30 BBLS OF MUDFLUSH AHEAD OF CEMENT AS SPACER. Test Intermediate Casing to 1500 psi. Cement Additives Subject to Change Based on Wellbore Conditions and Cement Design Criteria
- d. 6-1/4" hole x 4-1/2" liner at 11,833'. A fluid caliper will be run to determine base slurry cement to have TOC at 7,100'. Base slurry to consist of 545 sks VARICEM™ CEMENT with 2.5 lb/sk Kol-Seal, 0.20 % Halad-9, 0.05 % SA-1015, 0.70 % Halad-567 – 13.3 ppg, 1.33 ft³/sk (50% excess). CENTRALIZERS TO BE USED AT DISCRETION IN LATERAL TO ACHIEVE 70% STAND OFF. PACKOFF SEAL ASSEMBLY TO BE USED FOR LINER TOP ISOLATION. Cement Additives Subject to Change Based on Wellbore Conditions and Cement Design Criteria. Liner to be Pressure Tested During Completion Operations.

8. Pressure Control Equipment

- a. BOPE to be installed prior to Surface Casing drillout.
- b. Pressure control equipment will be used to meet 2,000 (2M) psi specifications.
- c. BOPE working pressure of 3,000 psi.
- d. Function test and visual inspection to be done at each casing size change prior to drill out.
- e. BOP annular to be tested to 85% of working pressure.
- f. All BOP and related equipment will be tested in accordance with the requirements outlined in Onshore Order No. 2 and Notice to Operators dated May 27, 2005.
- g. BOP remote controls to be located on rig floor and readily accessible, master control on ground at accumulator will be able to function all preventors.
- h. Kill line will be 2 in min and have two kill line valves, one being a check valve.
- i. Choke line will be 2 in min and have two choke line valves, choke manifold with have two adjustable chokes, one manual and one remote. All choke lines will be as straight as possible. Any turns will be properly targeted using block and/or running tees. Choke line and manifold to be pressure tested to 1,500 psi.
- j. Float sub and TIW valve will be on the rig floor at all times.
- k. If high pressure co-flex hoses are used, they will be run as straight as possible and anchored to prevent whip.
- l. The main discharge line (panic line) will be at least 100' from the choke manifold and discharged into an appropriately sized discharge facility.

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9. Mud Program:

0' - 2500'	Fresh water/Spud Mud. Paper for losses and seepage. 8.5 to 9.0 ppg, 32 to 75 vis, PV 3 to 5, YP 5 to 7, WL NC
2500' – 7,225'	Fresh water/LSND. As needed LCM for losses and seepage. 8.5 to 9.5 ppg, pH 10, 28 to 60 vis, PV 1, YP 1, WL 8-15
7,225' – 11,833'	WBM with shale and clay stabilizers. As needed LCM for losses and seepage. 8.3 to 9.3 ppg, 15 to 35 vis, PV 4-6, YP 4-6, WL < 20

****During drilling operations, all necessary products will be sufficiently stored on location for abnormal situations. The characteristics, use, testing of drilling mud and the implementation of related drilling procedures shall be designed to prevent the loss of well control. Sufficient quantities of mud materials shall be maintained or readily accessible for the purpose of assuring well control.**

****A pH of 10 or above in the fresh water base mud system shall be maintained to control the effects corrosion has on metallurgy of equipment used.**

Operating and Maintenance

Energen Resources Corporation will be using all above ground steel pits for fluid and cuttings while drilling. If any tank develops a leak we will have immediate visual discovery, we would then transfer the fluid to another tank then remove any contaminated soil and dispose of it in the cuttings bins for transportation. Any leaks, spills or other undesirable events will be reported in accordance with BLM NTL 3A. Rig crews will monitor the tanks at all times. A trip/surge tank will be used to monitor returns for any “kicks” of formation fluids.

Equipment:

2-Mongoose Shale Shakers

2-3400 High Speed Centrifuges with stands and pumps

2-Roll off bins with Tracks

2-200 bbl Open top Frac tanks

1-Mud/Gas Separator and Degasser

1-Trip/Surge Tank

Electronic or Visual monitoring system to indicate lost returns

10. Testing, Logging and Coring Program:

- a. Testing Program: No drillstem tests are anticipated
- b. Electric Logging Program: Triple Combo, FMI, Sonic Scanner
- c. LWD Program: TBD
- d. Coring Program: Sidewall Cores through Mancos Formation
- e. CBL's and/or Temperature Surveys Will Be Performed as Needed or Required.

11. Bottom Hole Pressure expected to be 2,500 +/- psi

12. Bottom Hole Temperature expected to be 160 deg F.

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TIGHT HOLE**

Energen Resources

Many Canyons Sec 8, T24N, R3W

Many Canyons 24-03 8 #004H

Preliminary Desgin

Design #1

Plan: APD Plan - Revised

Preliminary Design

19 June, 2015

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TIGHT HOLE

Company Name: Energen Resources

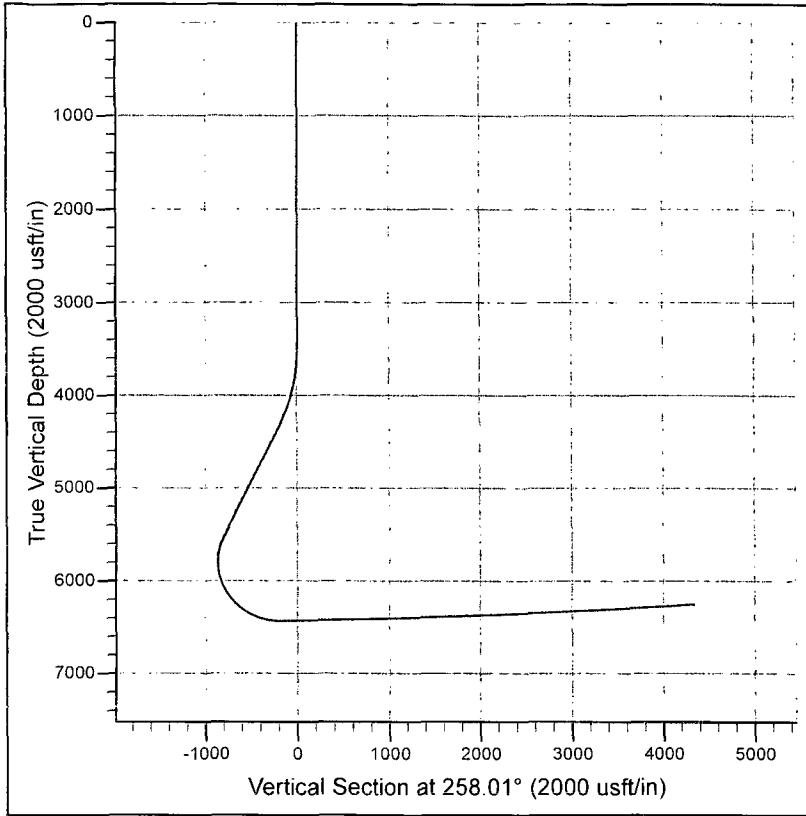
Project: Many Canyons Sec 8, T24N, R3W

Site: Many Canyons 24-03 8 #004H

Well: Preliminary Design

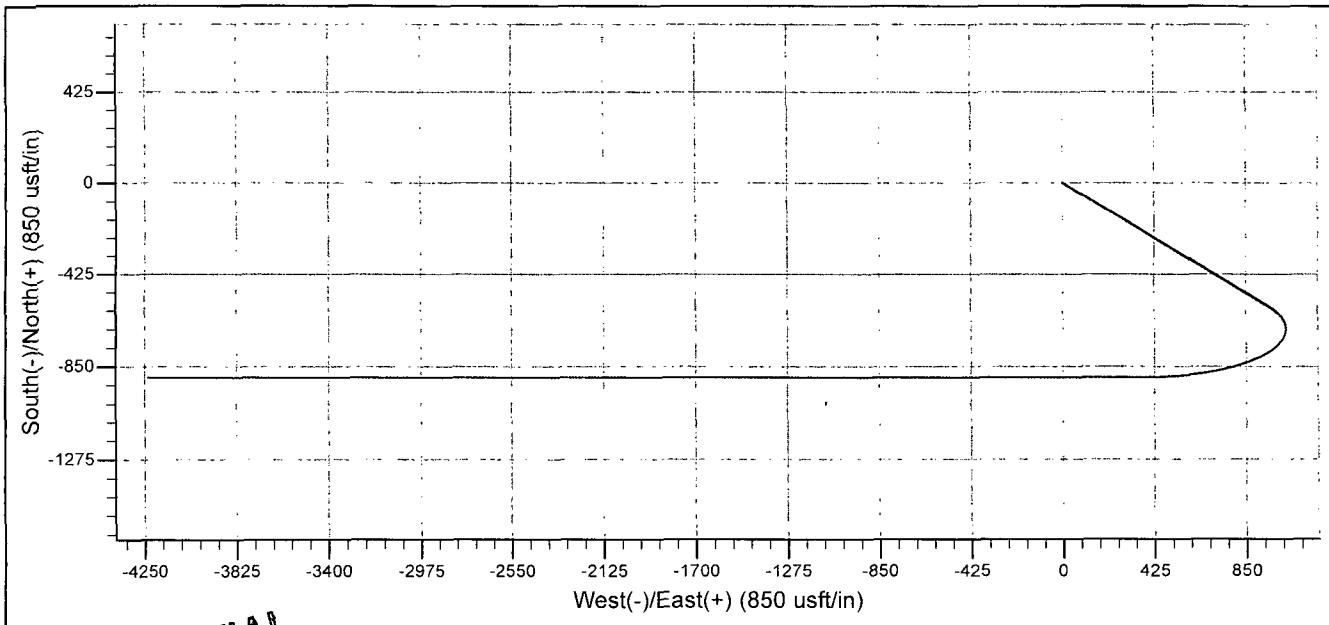
Wellbore: Design #1

Design: APD Plan - Revised



SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0
2	3500.0	0.00	0.00	3500.0	0.0	0.0	0.00	0.00	0.0
3	4369.0	34.76	121.10	4316.7	-132.0	218.9	4.00	121.10	-186.7
4	5870.7	34.76	121.10	5550.4	-574.2	952.0	0.00	0.00	-812.0
5	7205.9	91.00	270.00	6440.0	-900.0	386.0	9.00	143.32	-190.6
6	11833.9	93.50	270.00	6258.3	-900.0	-4238.1	0.05	0.00	4332.6



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TIGHT HOLE

Energen

Preliminary Design

Company:	Energen Resources	Local Co-ordinate Reference:	Site Many Canyons 24-03 8 #004H
Project:	Many Canyons Sec 8, T24N, R3W	TVD Reference:	WELL @ 0.0usft (Original Well Elev)
Site:	Many Canyons 24-03 8 #004H	MD Reference:	WELL @ 0.0usft (Original Well Elev)
Well:	Preliminary Design	North Reference:	Grid
Wellbore:	Design #1	Survey Calculation Method:	Minimum Curvature
Design:	APD Plan - Revised	Database:	EDM 5000.1 Single User Db

Project:	Many Canyons Sec 8, T24N, R3W, Rio Arriba County, NM, Single Lateral		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site:	Many Canyons 24-03 8 #004H		
Site Position:		Northing:	1,948,429.33 usft
From:	Lat/Long	Easting:	-295,388.39 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16"
		Latitude:	36° 19' 15.708 N
		Longitude:	107° 10' 24.132 W
		Grid Convergence:	-1.68 °

Well:	Preliminary Design		
Well Position	+N/-S	0.0 usft	Northing: 1,948,429.33 usft
	+E/-W	0.0 usft	Easting: -295,388.39 usft
Position Uncertainty	0.0 usft	Wellhead Elevation:	usft
		Latitude:	36° 19' 15.708 N
		Longitude:	107° 10' 24.132 W
		Ground Level:	0.0 usft

Wellbore:	Design #1		
Magnetics	Model Name	Sample Date	Declination
	User Defined	2/26/2015	(°) 0.00
			Dip Angle (°) 0.00
			Field Strength (nT) 0

Design:	APD Plan - Revised		
Audit Notes:			
Version:	Phase:	PROTOTYPE	Tie On Depth: 0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0.0	0.0	0.0
			Direction (°) 258.01

Survey Tool Program	Date 6/19/2015		
From	To	Survey (Wellbore)	Tool Name
(usft)	(usft)		
0.0	11,833.9	APD Plan - Revised (Design #1)	MWD
			Description
			MWD - Standard

Planned Survey									
TVD	MD	Inc	Azi (azimuth)	N/S	E/W	Build	V. Sec		
(usft)	(usft)	(°)	(°)	(usft)	(usft)	(°/100usft)	(usft)		
0.0	0.0	0.00	0.00	0.0	0.0	0.00	0.0		
100.0	100.0	0.00	0.00	0.0	0.0	0.00	0.0		
200.0	200.0	0.00	0.00	0.0	0.0	0.00	0.0		
13 3/8"									
300.0	300.0	0.00	0.00	0.0	0.0	0.00	0.0		
400.0	400.0	0.00	0.00	0.0	0.0	0.00	0.0		
500.0	500.0	0.00	0.00	0.0	0.0	0.00	0.0		
600.0	600.0	0.00	0.00	0.0	0.0	0.00	0.0		
700.0	700.0	0.00	0.00	0.0	0.0	0.00	0.0		
800.0	800.0	0.00	0.00	0.0	0.0	0.00	0.0		
900.0	900.0	0.00	0.00	0.0	0.0	0.00	0.0		
1,000.0	1,000.0	0.00	0.00	0.0	0.0	0.00	0.0		

6/19/2015 7:44:23 AM
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TIGHT HOLE

Energen

Preliminary Design

Company:	Energen Resources	Local Co-ordinate Reference:	Site Many Canyons 24-03 8 #004H
Project:	Many Canyons Sec 8, T24N, R3W	TVD Reference:	WELL @ 0.0usft (Original Well Elev)
Site:	Many Canyons 24-03 8 #004H	MD Reference:	WELL @ 0.0usft (Original Well Elev)
Well:	Preliminary Design	North Reference:	Grid
Wellbore:	Design #1	Survey Calculation Method:	Minimum Curvature
Design:	APD Plan - Revised	Database:	EDM 5000.1 Single User Db

Planned Survey							
TVD (usft)	MD (usft)	Inc (°)	Azi (azimuth) (°)	N/S (usft)	E/W (usft)	Build (°/100usft)	V. Sec (usft)
1,100.0	1,100.0	0.00	0.00	0.0	0.0	0.00	0.0
1,200.0	1,200.0	0.00	0.00	0.0	0.0	0.00	0.0
1,300.0	1,300.0	0.00	0.00	0.0	0.0	0.00	0.0
1,400.0	1,400.0	0.00	0.00	0.0	0.0	0.00	0.0
1,500.0	1,500.0	0.00	0.00	0.0	0.0	0.00	0.0
1,600.0	1,600.0	0.00	0.00	0.0	0.0	0.00	0.0
1,700.0	1,700.0	0.00	0.00	0.0	0.0	0.00	0.0
1,800.0	1,800.0	0.00	0.00	0.0	0.0	0.00	0.0
1,900.0	1,900.0	0.00	0.00	0.0	0.0	0.00	0.0
2,000.0	2,000.0	0.00	0.00	0.0	0.0	0.00	0.0
2,100.0	2,100.0	0.00	0.00	0.0	0.0	0.00	0.0
2,200.0	2,200.0	0.00	0.00	0.0	0.0	0.00	0.0
2,300.0	2,300.0	0.00	0.00	0.0	0.0	0.00	0.0
2,400.0	2,400.0	0.00	0.00	0.0	0.0	0.00	0.0
2,500.0	2,500.0	0.00	0.00	0.0	0.0	0.00	0.0
9 5/8"							
2,600.0	2,600.0	0.00	0.00	0.0	0.0	0.00	0.0
2,700.0	2,700.0	0.00	0.00	0.0	0.0	0.00	0.0
2,800.0	2,800.0	0.00	0.00	0.0	0.0	0.00	0.0
2,900.0	2,900.0	0.00	0.00	0.0	0.0	0.00	0.0
3,000.0	3,000.0	0.00	0.00	0.0	0.0	0.00	0.0
3,100.0	3,100.0	0.00	0.00	0.0	0.0	0.00	0.0
3,200.0	3,200.0	0.00	0.00	0.0	0.0	0.00	0.0
3,300.0	3,300.0	0.00	0.00	0.0	0.0	0.00	0.0
3,400.0	3,400.0	0.00	0.00	0.0	0.0	0.00	0.0
3,500.0	3,500.0	0.00	0.00	0.0	0.0	0.00	0.0
3,599.9	3,600.0	4.00	121.10	-1.8	3.0	4.00	-2.5
3,699.4	3,700.0	8.00	121.10	-7.2	11.9	4.00	-10.2
3,797.8	3,800.0	12.00	121.10	-16.2	26.8	4.00	-22.9
3,894.8	3,900.0	16.00	121.10	-28.7	47.5	4.00	-40.5
3,989.9	4,000.0	20.00	121.10	-44.6	74.0	4.00	-63.1
4,082.6	4,100.0	24.00	121.10	-64.0	106.0	4.00	-90.4
4,172.5	4,200.0	28.00	121.10	-86.6	143.6	4.00	-122.5
4,259.1	4,300.0	32.00	121.10	-112.4	186.4	4.00	-159.0
4,316.7	4,369.0	34.76	121.10	-132.0	218.9	4.00	-186.7
4,342.1	4,400.0	34.76	121.10	-141.2	234.0	0.00	-199.6
4,424.3	4,500.0	34.76	121.10	-170.6	282.8	0.00	-241.2
4,506.4	4,600.0	34.76	121.10	-200.0	331.7	0.00	-282.9
4,588.6	4,700.0	34.76	121.10	-229.5	380.5	0.00	-324.5
4,670.8	4,800.0	34.76	121.10	-258.9	429.3	0.00	-366.1
4,752.9	4,900.0	34.76	121.10	-288.4	478.1	0.00	-407.8
4,835.1	5,000.0	34.76	121.10	-317.8	526.9	0.00	-449.4
4,917.2	5,100.0	34.76	121.10	-347.3	575.8	0.00	-491.1
4,999.4	5,200.0	34.76	121.10	-376.7	624.6	0.00	-532.7
5,081.5	5,300.0	34.76	121.10	-406.2	673.4	0.00	-574.3

Energen

Preliminary Design

Company:	Energen Resources	Local Co-ordinate Reference:	Site Many Canyons 24-03 8 #004H
Project:	Many Canyons Sec 8, T24N, R3W	TVD Reference:	WELL @ 0.0usft (Original Well Elev)
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Well:	Preliminary Design	North Reference:	Grid
Wellbore:	Design #1	Survey Calculation Method:	Minimum Curvature
Design:	APD Plan - Revised	Database:	EDM 5000.1 Single User Db

Planned Survey

TVD (usft)	MD (usft)	Inc (°)	Azi (azimuth) (°)	N/S (usft)	E/W (usft)	Build (°/100usft)	V. Sec (usft)
5,163.7	5,400.0	34.76	121.10	-435.6	722.2	0.00	-616.0
5,245.8	5,500.0	34.76	121.10	-465.1	771.0	0.00	-657.6
5,328.0	5,600.0	34.76	121.10	-494.5	819.9	0.00	-699.2
5,410.2	5,700.0	34.76	121.10	-524.0	868.7	0.00	-740.9
5,492.3	5,800.0	34.76	121.10	-553.4	917.5	0.00	-782.5
5,550.4	5,870.7	34.76	121.10	-574.2	952.0	0.00	-812.0
5,574.8	5,900.0	32.68	124.01	-583.0	965.7	-7.11	-823.6
5,617.6	5,950.0	29.31	129.81	-598.4	986.3	-6.74	-840.5
5,661.9	6,000.0	26.25	136.90	-614.3	1,003.3	-6.12	-853.8
5,707.2	6,050.0	23.61	145.57	-630.6	1,016.5	-5.27	-863.3
5,753.4	6,100.0	21.57	156.03	-647.3	1,025.9	-4.10	-869.1
5,800.1	6,150.0	20.28	168.13	-664.2	1,031.4	-2.56	-871.0
5,847.1	6,200.0	19.92	181.20	-681.2	1,033.0	-0.74	-869.0
5,894.0	6,250.0	20.51	194.14	-698.2	1,030.7	1.19	-863.2
5,940.7	6,300.0	21.99	205.89	-715.1	1,024.5	2.96	-853.6
5,986.7	6,350.0	24.19	215.92	-731.8	1,014.4	4.41	-840.2
6,031.8	6,400.0	26.94	224.19	-748.3	1,000.5	5.50	-823.2
6,075.7	6,450.0	30.09	230.95	-764.3	982.8	6.29	-802.6
6,118.2	6,500.0	33.51	236.48	-779.8	961.6	6.86	-778.6
6,159.0	6,550.0	37.15	241.08	-794.8	936.8	7.27	-751.3
6,197.9	6,600.0	40.93	244.95	-809.0	908.8	7.57	-720.9
6,234.5	6,650.0	44.83	248.27	-822.5	877.6	7.79	-687.6
6,268.7	6,700.0	48.80	251.16	-835.1	843.4	7.96	-651.5
6,300.3	6,750.0	52.85	253.71	-846.7	806.4	8.08	-612.9
6,329.0	6,800.0	56.94	256.00	-857.4	766.9	8.18	-572.1
6,354.8	6,850.0	61.07	258.09	-867.0	725.2	8.26	-529.3
6,377.4	6,900.0	65.23	260.02	-875.4	681.4	8.32	-484.7
6,396.6	6,950.0	69.41	261.82	-882.7	635.8	8.36	-438.6
6,412.5	7,000.0	73.61	263.52	-888.8	588.8	8.40	-391.4
6,424.8	7,050.0	77.82	265.15	-893.5	540.6	8.43	-343.2
6,433.6	7,100.0	82.04	266.74	-897.0	491.5	8.44	-294.5
6,438.7	7,150.0	86.27	268.29	-899.2	441.8	8.46	-245.4
6,440.1	7,200.0	90.50	269.82	-900.0	391.9	8.46	-196.4
6,440.0	7,205.9	91.00	270.00	-900.0	386.0	8.46	-190.6
6,439.7	7,225.0	91.01	270.00	-900.0	366.9	0.05	-171.9
7"							
6,438.3	7,300.0	91.05	270.00	-900.0	291.9	0.05	-98.6
6,436.4	7,400.0	91.10	270.00	-900.0	191.9	0.05	-0.8
6,434.5	7,500.0	91.16	270.00	-900.0	91.9	0.05	97.0
6,432.4	7,600.0	91.21	270.00	-900.0	-8.0	0.05	194.8
6,430.2	7,700.0	91.27	270.00	-900.0	-108.0	0.05	292.6
6,428.0	7,800.0	91.32	270.00	-900.0	-208.0	0.05	390.4
6,425.6	7,900.0	91.37	270.00	-900.0	-308.0	0.05	488.2
6,423.2	8,000.0	91.43	270.00	-900.0	-407.9	0.05	586.0

Energen

Preliminary Design

Company:	Energen Resources	Local Co-ordinate Reference:	Site Many Canyons 24-03 8 #004H
Project:	Many Canyons Sec 8, T24N, R3W	TVD Reference:	WELL @ 0.0usft (Original Well Elev)
Site:	Many Canyons 24-03 8 #004H	MD Reference:	WELL @ 0.0usft (Original Well Elev)
Well:	Preliminary Design	North Reference:	Grid
Wellbore:	Design #1	Survey Calculation Method:	Minimum Curvature
Design:	APD Plan - Revised	Database:	EDM 5000.1 Single User Db

Planned Survey

TVD (usft)	MD (usft)	Inc (°)	Azi (azimuth) (°)	N/S (usft)	E/W (usft)	Build (°/100usft)	V. Sec (usft)
6,420.6	8,100.0	91.48	270.00	-900.0	-507.9	0.05	683.8
6,418.0	8,200.0	91.54	270.00	-900.0	-607.9	0.05	781.6
6,415.3	8,300.0	91.59	270.00	-900.0	-707.8	0.05	879.3
6,412.4	8,400.0	91.65	270.00	-900.0	-807.8	0.05	977.1
6,409.5	8,500.0	91.70	270.00	-900.0	-907.7	0.05	1,074.9
6,406.5	8,600.0	91.75	270.00	-900.0	-1,007.7	0.05	1,172.7
6,403.4	8,700.0	91.81	270.00	-900.0	-1,107.6	0.05	1,270.4
6,400.2	8,800.0	91.86	270.00	-900.0	-1,207.6	0.05	1,368.2
6,396.9	8,900.0	91.92	270.00	-900.0	-1,307.5	0.05	1,466.0
6,393.5	9,000.0	91.97	270.00	-900.0	-1,407.5	0.05	1,563.7
6,390.0	9,100.0	92.02	270.00	-900.0	-1,507.4	0.05	1,661.5
6,386.5	9,200.0	92.08	270.00	-900.0	-1,607.4	0.05	1,759.3
6,382.8	9,300.0	92.13	270.00	-900.0	-1,707.3	0.05	1,857.0
6,379.0	9,400.0	92.19	270.00	-900.0	-1,807.2	0.05	1,954.8
6,375.2	9,500.0	92.24	270.00	-900.0	-1,907.1	0.05	2,052.5
6,371.2	9,600.0	92.29	270.00	-900.0	-2,007.1	0.05	2,150.2
6,367.2	9,700.0	92.35	270.00	-900.0	-2,107.0	0.05	2,248.0
6,363.0	9,800.0	92.40	270.00	-900.0	-2,206.9	0.05	2,345.7
6,358.8	9,900.0	92.46	270.00	-900.0	-2,306.8	0.05	2,443.4
6,354.4	10,000.0	92.51	270.00	-900.0	-2,406.7	0.05	2,541.2
6,350.0	10,100.0	92.56	270.00	-900.0	-2,506.6	0.05	2,638.9
6,345.5	10,200.0	92.62	270.00	-900.0	-2,606.5	0.05	2,736.6
6,340.9	10,300.0	92.67	270.00	-900.0	-2,706.4	0.05	2,834.3
6,336.2	10,400.0	92.73	270.00	-900.0	-2,806.3	0.05	2,932.0
6,331.4	10,500.0	92.78	270.00	-900.0	-2,906.2	0.05	3,029.7
6,326.5	10,600.0	92.83	270.00	-900.0	-3,006.1	0.05	3,127.4
6,321.5	10,700.0	92.89	270.00	-900.0	-3,105.9	0.05	3,225.1
6,316.4	10,800.0	92.94	270.00	-900.0	-3,205.8	0.05	3,322.8
6,311.2	10,900.0	93.00	270.00	-900.0	-3,305.7	0.05	3,420.5
6,306.0	11,000.0	93.05	270.00	-900.0	-3,405.5	0.05	3,518.2
6,300.6	11,100.0	93.10	270.00	-900.0	-3,505.4	0.05	3,615.9
6,295.1	11,200.0	93.16	270.00	-900.0	-3,605.2	0.05	3,713.6
6,289.6	11,300.0	93.21	270.00	-900.0	-3,705.1	0.05	3,811.2
6,283.9	11,400.0	93.27	270.00	-900.0	-3,804.9	0.05	3,908.9
6,278.2	11,500.0	93.32	270.00	-900.0	-3,904.8	0.05	4,006.5
6,272.3	11,600.0	93.37	270.00	-900.0	-4,004.6	0.05	4,104.2
6,266.4	11,700.0	93.43	270.00	-900.0	-4,104.4	0.05	4,201.8
6,260.4	11,800.0	93.48	270.00	-900.0	-4,204.2	0.05	4,299.5
6,258.4	11,833.0	93.50	270.00	-900.0	-4,237.2	0.05	4,331.7
4 1/2"							
6,258.3	11,833.9	93.50	270.00	-900.0	-4,238.1	0.05	4,332.6

Energen

Preliminary Design

Company: Energen Resources	Local Co-ordinate Reference: Site Many Canyons 24-03 8 #004H
Project: Many Canyons Sec 8, T24N, R3W	TVD Reference: WELL @ 0.0usft (Original Well Elev)
Site: Many Canyons 24-03 8 #004H	MD Reference: WELL @ 0.0usft (Original Well Elev)
Well: Preliminary Desgin	North Reference: Grid
Wellbore: Design #1	Survey Calculation Method: Minimum Curvature
Design: APD Plan - Revised	Database: EDM 5000.1 Single User Db

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
7,225.0	6,439.7	7"	7	8-3/4	
2,500.0	2,500.0	9 5/8"	9-5/8	12-1/4	
200.0	200.0	13 3/8"	13-3/8	17-1/2	
11,833.0	6,258.4	4 1/2"	4-1/2	6-1/4	

Checked By: _____	Approved By: _____	Date: _____
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