State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

David Martin
Cabinet Secretary

Brett F. Woods, Ph.D.
Deputy Cabinet Secretary

David R. Catanach, Division Director
Oil Conservation Division

New Mexico Oil Conservation Division approval and conditions listed below are made in accordance with OCD Rule 19.15.7.11 and are in addition to the actions approved by BLM on the following 3160-4 or 3160-5 form.

Operator Signature Date: 5/7/2015
Well information:

frmWellFilterSub																	
API WELL #	Well Name	Well #	Operator Name	Type	Stat	County	Surf_Owner	UL	Sec	Twp	N/S	Rng	W/E	Feet	NS	Ft	EW
30-045-35239-00-00	RICHARDSON NAVAJO 27 13 02	004H	ENERGEN RESOURCES CORPORATION	G	N	San Juan	F	P	3	27	N	13	W	509	S	694	E

Drilling/Casing Change

Conditions of Approval:
(See the below checked and additional conditions)

✓ Notify Aztec OCD 24hrs prior to casing & cement.

✓ Hold C-104 for directional survey & "As Drilled" Plat

✓ Hold C-104 for ✓ NSL, ☐ NSP, ☐ DHC

☐ Spacing rule violation. Operator must follow up with change of status notification on other well to be shut in or abandoned

☐ Ensure compliance with 19.15.17

☐ Once the well is spud, to prevent ground water contamination through whole or partial conduits from the surface, the operator shall drill without interruption through the fresh water zone or zones and shall immediately set in cement the water protection string

✓ Regarding Hydraulic Fracturing, review EPA Underground Injection Control Guidance 84

✓ Oil base muds are not to be used until fresh water zones are cased and cemented providing isolation from the oil or diesel. This includes synthetic oils. Oil based mud, drilling fluids and solids must be contained in a steel closed loop system.

✓ Well-bore communication is regulated under 19.15.29 NMAC. This requires well-bore Communication to be reported in accordance with 19.15.29.8.

Additional requirements

Kathleen Allen

NMOCD Approved by Signature

6/4/15
Date

Form 3160-5
(August 2007)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

OIL CONS. DIV DIST. 3
JUN 01 2015

RECEIVED

FORM APPROVED
OMB NO. 1004-0137
Expires July 31, 2010

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APD) for such proposals.

SUBMIT IN TRIPLICATE - *Other instructions on page 2*

Farmington Field Office
Bureau of Land Management

5. Lease Serial No.
NMSF077972

6. If Indian, Allottee or Tribe Name

7. If Unit or CA/Agreement, Name and/or No.

1. Type of Well
[x] Oil Well [ ] Gas Well [ ] Other

8. Well Name and No.
Richardson 200

2. Name of Operator
Energen Resources Corporation

9. API Well No.
30-045-35239

3a. Address
2010 Afton Place, Farmington, NM 87401

3b. Phone No. (*include area code*)
(505) 325-6800

10. Field and Pool, or Exploratory Area
Basin Fruitland Coal

4. Location of Well (*Footage, Sec., T., R., M., or Survey Description*)
509' FSL 694' FEL, Sec 3 T27N R13W (P) SE/SE
380' FSL 380' FEL, Sec 2 T27N R13W (P) SE/SE

11. County or Parish, State
San Juan NM

12. CHECK APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

KP

TYPE OF SUBMISSION	TYPE OF ACTION			
[x] Notice of Intent	[ ] Acidize	[ ] Deepen	[ ] Production (Start/Resume)	[ ] Water Shut-Off
[ ] Subsequent Report	[ ] Alter Casing	[ ] Fracture Treat	[ ] Reclamation	[ ] Well Integrity
[ ] Final Abandonment Notice	[ ] Casing Repair	[ ] New Construction	[ ] Recomplete	[ ] Other
	[x] Change Plans	[ ] Plug and Abandon	[ ] Temporarily Abandon	
	[ ] Convert to Injection	[ ] Plug Back	[ ] Water Disposal	

13. Describe Proposed or Completed Operation (clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports shall be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 shall be filed once testing has been completed. Final Abandonment Notices shall be filed only after all requirements, including reclamation, have been completed, and the operator has determined that the final site is ready for final inspection.)

Energen Resources would like to request the following changes to the Richardson #200.

* Change the name of the well from the Richardson #200 to the Richardson Navajo 27-13-2 #4H.
* Change the target formation from the Basin Fruitland Coal (71629) to the Basin Mancos (97232).
* Change the drilling plan from a vertical drill to a horizontal drill with the bottom hole at Sec 2 T27N R13W, 380' FSL 380' FEL (P) SE/SE as indicated on the attached C-102.

Change Surface csg: from 8-5/8", 24#, J-55, ST&C to 9-5/8", 36#, J-55, ST&C
Add Intermediate csg: 7", 26#, L-80, DQX
Change Production csg: from 5-1/2", 15.5#, J-55, LT&C to Production Liner 4-1/2", 11.6#, P-110, DQX

The new drilling plans depicting the casing changes along with the directional design is attached showing the revisions.

CONDITIONS OF APPROVAL
Adhere to previously issued stipulations.

BLM'S APPROVAL OR ACCEPTANCE OF THIS ACTION DOES NOT RELIEVE THE LESSEE AND OPERATOR FROM OBTAINING ANY OTHER AUTHORIZATION REQUIRED FOR OPERATIONS ON FEDERAL AND INDIAN LANDS

14. I hereby certify that the foregoing is true and correct
Name (*Printed/Typed*) Anna Stotts
Title Regulatory Analyst
Signature Anna Stotts
Date 05/07/15

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by Troy Salyers
Title PE
Date 5/27/2015
Office FFO

Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Title 18 U.S.C. Section 1001, and Title 43 U.S.C. Section 1212, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

NMOCD

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

WELL LOCATION AND ACREAGE DEDICATION PLAT

[1] API Number	[2] Pool Code	[3] Pool Name
30-045-35239	97232	Basin Mancos

[4] Property Code	[5] Property Name	[6] Well Number
315010	RICHARDSON NAVAJO 27-13-02	04H

[7] OGRID No.	[8] Operator Name	[9] Elevation
162928	ENERGEN RESOURCES CORPORATION	6043.8

[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
P	3	27-N	13-W		509'	SOUTH	694'	EAST	SAN JUAN

[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
P	2	27-N	13-W		380'	SOUTH	380	EAST	SAN JUAN

[12] Dedicated Acres	[13] Joint or Infill	[14] Consolidation Code	[15] Order No.
320 Acres S/2 SEC 2			

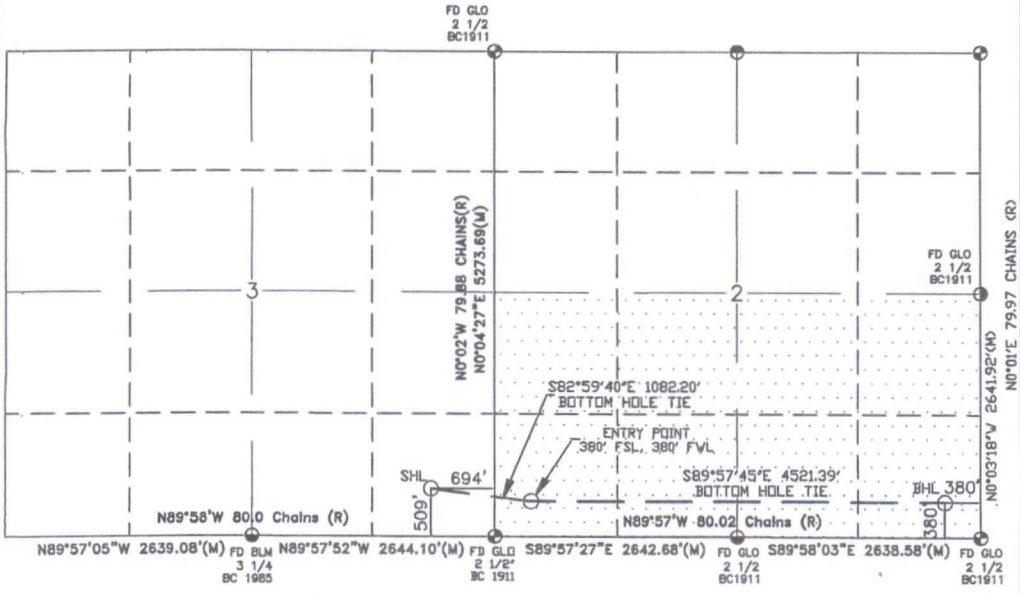
No allowable will be assigned to this completion until all interest have been consolidated or a non-standard unit has been approved by the division.

16

SURFACE HOLE LOCATION:
LAT: 36.598432°N-NAD 83
LONG: 108.199906°W-NAD 83
LAT: 36.59843°N-NAD 27
LONG: 108.19928°W-NAD 27

ENTRY POINT:
LAT: 36.598070°N-NAD 83
LONG: 108.196249°W-NAD 83
LAT: 36.59807°N-NAD 27
LONG: 108.19562°W-NAD 27

BOTTOM HOLE:
LAT: 36.598060°N-NAD 83
LONG: 108.180851°W-NAD 83
LAT: 36.59806°N-NAD 27
LONG: 108.18022°W-NAD 27



[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.

Anna Stotts 5/7/15
Signature Date

Anna Stotts
Printed Name

astotts@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.

NOV 25, 2008
Date of Survey

Signature and Seal of Professional Surveyor:

WILLIAM E. MAHNKE II
NEW MEXICO
8466
REGISTERED PROFESSIONAL LAND SURVEYOR

WILLIAM E. MAHNKE II
Certificate Number PLS 8466

Drilling Plan
Energen Resources Corporation

Richardson Navajo 27-13 02 #4H
Surface Location: 509 FSL, 694 FEL
Legal Description: Sec 03, T27N, R13W (36.598432° N, 108.199906° W – NAD83)
Bottom Hole Location: 380 FSL, 380 FEL
Legal Description: Sec 02, T27N, R13W (36.598060° N, 108.180851° W – NAD83)
San Juan County, NM

1. The elevation of the unprepared ground is 6,044 feet above sea level.
2. The geological name of the surface formation is the Nacimiento.
3. A rotary rig will be used to drill the well to a Proposed Total Depth of 5,419' TVD/10,701' MD.
4. Estimated top of important geological markers:

Formation	Depth (TVD)(ft)	Depth (MD)(ft)
Nacimiento	Surface	Surface
Ojo Alamo	269	269
Kirtland	NA	NA
Fruitland	1,109	1,109
Pictured Cliffs	1,549	1,549
Huerfantio Bentonite	1,979	1,979
Chacra	2,439	2,439
Cliff House	3,079	3,079
Menefee	3,099	3,099
Point Lookout	4,059	4,059
Mancos	4,339	4,339
Mancos/Niobrara "C"	5,559	6,180

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

Formation	Depth (TVD)(ft)	Water/HydroCarbon
Fruitland	1,109	Water/Gas
Pictured Cliffs	1,549	Gas
Cliffhouse	3,079	Gas
Point Lookout	4,059	Gas
Mancos	4,339	Water/Oil/Gas

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

Casing	Size	Depth		Grade	Weight	Connection	PSI		x1000 lbs
		MD	TVD				Burst	Collapse	Tension
Surface	9-5/8"	0-300'	0-300'	J-55	36.00	STC	3520	2020	394
Intermediate	7"	0-6,250'	0-5,559'	L-80	26.00	DQX TMK IPSCO	7240	5410	830
Production	4-1/2"	6,100'-10,701'	5,559-5,419'	P-110	11.60	DQX TMK IPSCO	10690	7560	367

7. Cementing Program:

   a. 12-1/4" hole x 9-5/8" casing at 300' will have cement circulated to surface with 160 sks (100% excess true hole) Class H Cement with 1.0 % $CaCl_2$, ½ #/sk Poly-E-Flake15.8 ppg, 1.17 ft^3/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

   b. 8-3/4" hole x 7" casing at 6,250'. Cement will be circulated to surface with 665 sks (50% excess true hole) of HLC with 1.0 % $CaCl_2$. ¼ #/sk Poly-E-Flake, 5 #/sk Kol-Seal (Gilsonite) – 12.3 ppg, 1.95 ft^3/sk followed by 115 sks (100% excess true hole) 50/50 Glass H/Poz with 0.15% Versaset, 0.30% HALAD-9, ¼ #/sk Poly-E-Flake, 5 #/sk Kol-Seal – 13.5 ppg, 1.31 ft^3/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.

   c. 6-1/4" hole x 4-1/2" liner at 10,701'. A fluid caliper will be run to determine base slurry cement to have TOC at 6,100'. Base slurry to consist of 368 sks 50/50 Class H/Poz with 0.10% Versaset, 1.5 gal/sk CHEM-FOAMER 760, 0.10% sa-1015, 0.20% HALAD-766 – 13.5 ppg, 1.27 ft^3/sk, Foamed density 10.5 ppg. 50 sks of base slurry to be used as tail cement less foaming agent. CENTRALIZERS TO BE USED AT DISCRETION IN LATERAL TO ACHIEVE 70% STAND OFF. CENTRALIZERS TO BE USED TO TIE BACK DEPTH OF 6325' TO ACHIEVE 70% STAND OFF. PACKOFF SEAL ASSEMBLY TO BE USED FOR LINER TOP ISOLATION.

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

9. Mud Program:

0' - 300'	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
300' – 6,264'	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
6,264' – 10,786'	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:

    m. Testing Program: No drillstem tests are anticipated
    n. Electric Logging Program: TBD
    o. LWD Program: TBD
    p. Coring Program: None.
    q. 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.

Energen Resources

Richardson Navajo 27-13 02 #4H
SE Basin
Richardson Navajo 27-13 02 #4H
Plan #1

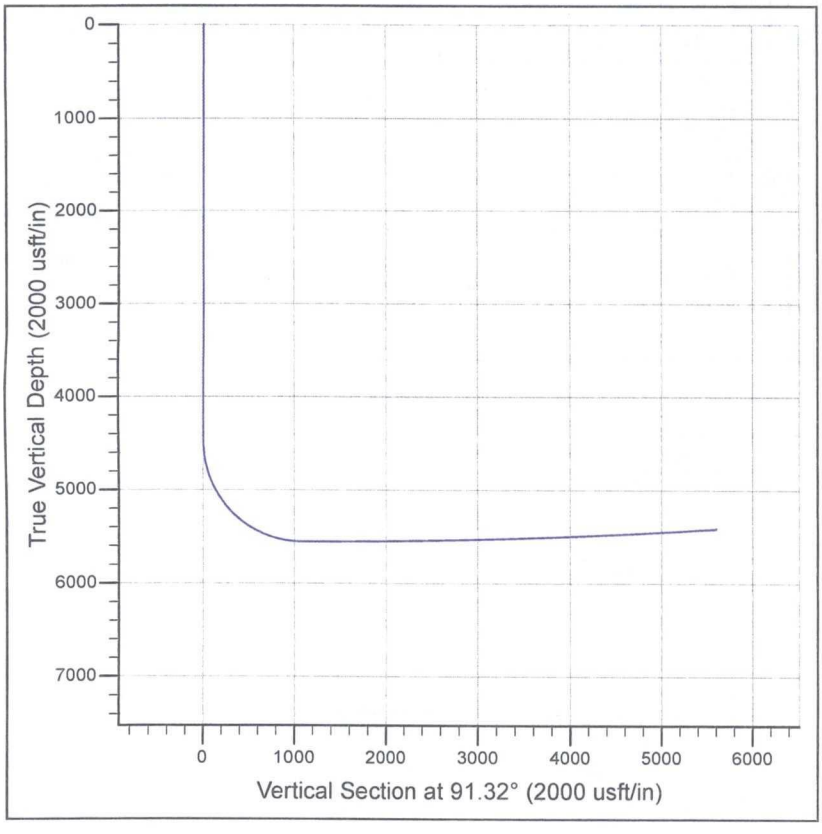
Plan: Preliminary Design

Preliminary Design

07 May, 2015

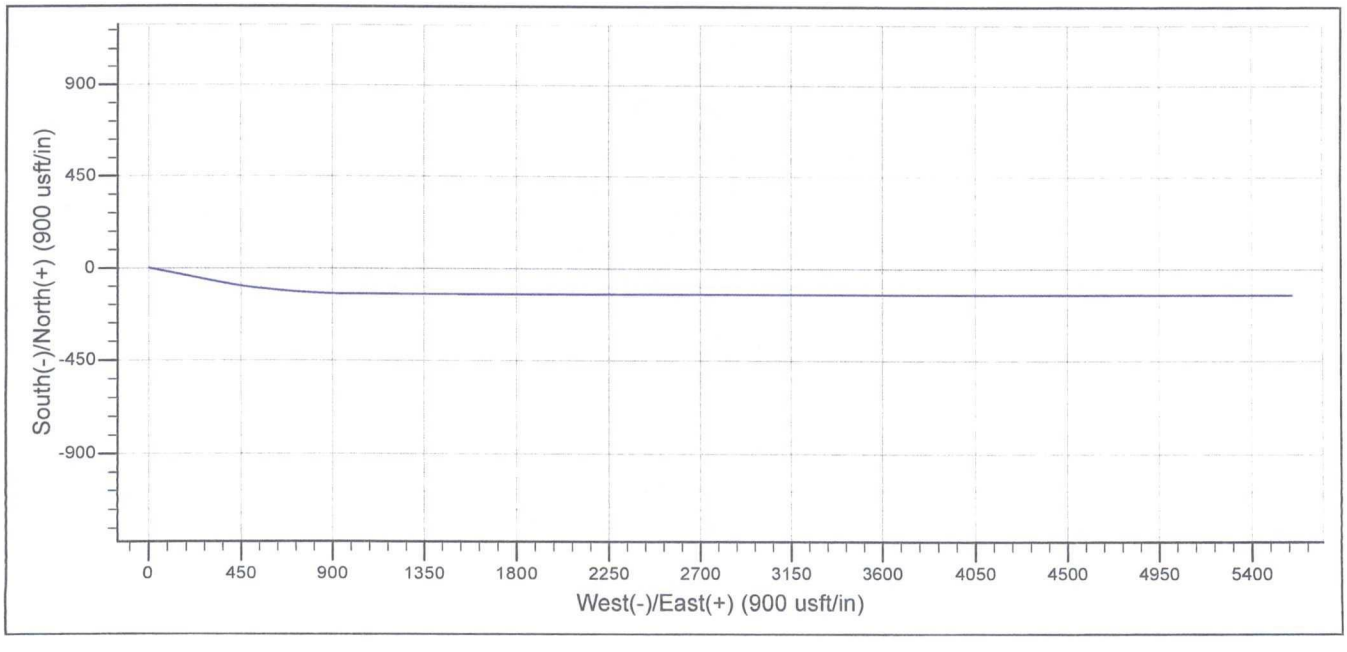
Company Name: Energen Resources

Project: Richardson Navajo 27-13 02 #4H
Site: SE Basin
Well: Richardson Navajo 27-13 02 #4H
Wellbore: Plan #1
Design: Preliminary Design



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	4485.0	0.00	0.00	4485.0	0.0	0.0	0.00	0.00	0.0
3	5332.5	45.59	101.64	5245.8	-64.5	313.2	5.38	101.64	314.6
4	6179.9	90.00	90.00	5559.0	-129.0	1074.0	5.38	-16.40	1076.7
5	10701.3	93.54	90.00	5419.4	-129.0	5592.5	0.08	0.00	5594.0



Energen
Preliminary Design

Company:	Energen Resources	**Local Co-ordinate Reference:**	Site SE Basin
Project:	Richardson Navajo 27-13 02 #4H	**TVD Reference:**	WELL @ 0.0usft (Original Well Elev)
Site:	SE Basin	**MD Reference:**	WELL @ 0.0usft (Original Well Elev)
Well:	Richardson Navajo 27-13 02 #4H	**North Reference:**	Grid
Wellbore:	Plan #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Preliminary Design	**Database:**	EDM 5000.1 Single User Db

Project Richardson Navajo 27-13 02 #4H

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

Site SE Basin

Site Position:		**Northing:**	2,037,344.66 usft	**Latitude:**	36° 35' 54.355 N
From:	Lat/Long	**Easting:**	2,615,488.98 usft	**Longitude:**	108° 11' 59.662 W
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16"	**Grid Convergence:**	-0.22 °

Well Richardson Navajo 27-13 02 #4H

Well Position	**+N/-S**	0.0 usft	**Northing:**	2,037,344.66 usft	**Latitude:**	36° 35' 54.355 N
	+E/-W	0.0 usft	**Easting:**	2,615,488.98 usft	**Longitude:**	108° 11' 59.662 W
Position Uncertainty		0.0 usft	**Wellhead Elevation:**	usft	**Ground Level:**	0.0 usft

Wellbore Plan #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	10/9/2014	9.65	63.21	50,369

Design Preliminary Design

Audit Notes:

Version:	**Phase:**	PROTOTYPE	**Tie On Depth:**	0.0

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	91.32

Survey Tool Program **Date**

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.0	10,701.3	Preliminary Design (Plan #1)	MWD	MWD - Standard

Planned Survey

TVD (usft)	MD (usft)	Inc (°)	Azi (azimuth) (°)	N/S (usft)	E/W (usft)	Build (°/100usft)	V. Sec (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
300.0	300.0	0.00	0.00	0.0	0.0	0.00	0.0
Surface Casing							
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

Energen
Preliminary Design

Company:	Energen Resources	**Local Co-ordinate Reference:**	Site SE Basin
Project:	Richardson Navajo 27-13 02 #4H	**TVD Reference:**	WELL @ 0.0usft (Original Well Elev)
Site:	SE Basin	**MD Reference:**	WELL @ 0.0usft (Original Well Elev)
Well:	Richardson Navajo 27-13 02 #4H	**North Reference:**	Grid
Wellbore:	Plan #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Preliminary Design	**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
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
3,600.0	3,600.0	0.00	0.00	0.0	0.0	0.00	0.0
3,700.0	3,700.0	0.00	0.00	0.0	0.0	0.00	0.0
3,800.0	3,800.0	0.00	0.00	0.0	0.0	0.00	0.0
3,900.0	3,900.0	0.00	0.00	0.0	0.0	0.00	0.0
4,000.0	4,000.0	0.00	0.00	0.0	0.0	0.00	0.0
4,100.0	4,100.0	0.00	0.00	0.0	0.0	0.00	0.0
4,200.0	4,200.0	0.00	0.00	0.0	0.0	0.00	0.0
4,300.0	4,300.0	0.00	0.00	0.0	0.0	0.00	0.0
4,400.0	4,400.0	0.00	0.00	0.0	0.0	0.00	0.0
4,485.0	4,485.0	0.00	0.00	0.0	0.0	0.00	0.0
4,500.0	4,500.0	0.81	101.64	0.0	0.1	5.38	0.1
4,599.8	4,600.0	6.19	101.64	-1.3	6.1	5.38	6.1
4,698.5	4,700.0	11.57	101.64	-4.4	21.2	5.38	21.3
4,795.4	4,800.0	16.95	101.64	-9.3	45.3	5.38	45.5
4,889.6	4,900.0	22.33	101.64	-16.1	78.2	5.38	78.6
4,980.2	5,000.0	27.71	101.64	-24.6	119.6	5.38	120.1
5,066.4	5,100.0	33.09	101.64	-34.8	169.2	5.38	169.9
5,147.5	5,200.0	38.47	101.64	-46.6	226.4	5.38	227.4
5,222.7	5,300.0	43.85	101.64	-59.9	290.8	5.38	292.1

Energen
Preliminary Design

Company:	Energen Resources	**Local Co-ordinate Reference:**	Site SE Basin
Project:	Richardson Navajo 27-13 02 #4H	**TVD Reference:**	WELL @ 0.0usft (Original Well Elev)
Site:	SE Basin	**MD Reference:**	WELL @ 0.0usft (Original Well Elev)
Well:	Richardson Navajo 27-13 02 #4H	**North Reference:**	Grid
Wellbore:	Plan #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Preliminary Design	**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)
5,245.8	5,332.5	45.59	101.64	-64.5	313.2	5.38	314.6
5,291.6	5,400.0	49.09	100.28	-73.9	362.0	5.17	363.6
5,353.5	5,500.0	54.29	98.51	-86.7	439.3	5.20	441.2
5,408.1	5,600.0	59.51	96.96	-97.9	522.3	5.22	524.4
5,454.9	5,700.0	64.75	95.57	-107.6	610.2	5.24	612.5
5,493.3	5,800.0	70.00	94.30	-115.5	702.1	5.25	704.6
5,523.2	5,900.0	75.26	93.11	-121.6	797.3	5.26	799.9
5,544.2	6,000.0	80.52	91.97	-125.9	894.9	5.26	897.6
5,556.1	6,100.0	85.79	90.87	-128.4	994.2	5.27	996.9
5,559.0	6,179.9	90.00	90.00	-129.0	1,074.0	5.27	1,076.7
5,559.0	6,200.0	90.02	90.00	-129.0	1,094.1	0.08	1,096.8
5,559.0	6,250.0	90.05	90.00	-129.0	1,144.1	0.08	1,146.8
Intermediate Casing							
5,558.9	6,300.0	90.09	90.00	-129.0	1,194.1	0.08	1,196.7
5,558.7	6,400.0	90.17	90.00	-129.0	1,294.1	0.08	1,296.7
5,558.3	6,500.0	90.25	90.00	-129.0	1,394.1	0.08	1,396.7
5,557.8	6,600.0	90.33	90.00	-129.0	1,494.1	0.08	1,496.7
5,557.2	6,700.0	90.41	90.00	-129.0	1,594.1	0.08	1,596.6
5,556.4	6,800.0	90.49	90.00	-129.0	1,694.1	0.08	1,696.6
5,555.5	6,900.0	90.56	90.00	-129.0	1,794.1	0.08	1,796.6
5,554.4	7,000.0	90.64	90.00	-129.0	1,894.1	0.08	1,896.5
5,553.2	7,100.0	90.72	90.00	-129.0	1,994.1	0.08	1,996.5
5,551.9	7,200.0	90.80	90.00	-129.0	2,094.1	0.08	2,096.5
5,550.4	7,300.0	90.88	90.00	-129.0	2,194.0	0.08	2,196.4
5,548.8	7,400.0	90.96	90.00	-129.0	2,294.0	0.08	2,296.4
5,547.1	7,500.0	91.03	90.00	-129.0	2,394.0	0.08	2,396.4
5,545.2	7,600.0	91.11	90.00	-129.0	2,494.0	0.08	2,496.3
5,543.2	7,700.0	91.19	90.00	-129.0	2,594.0	0.08	2,596.3
5,541.1	7,800.0	91.27	90.00	-129.0	2,694.0	0.08	2,696.2
5,538.8	7,900.0	91.35	90.00	-129.0	2,793.9	0.08	2,796.2
5,536.4	8,000.0	91.43	90.00	-129.0	2,893.9	0.08	2,896.1
5,533.8	8,100.0	91.50	90.00	-129.0	2,993.9	0.08	2,996.0
5,531.1	8,200.0	91.58	90.00	-129.0	3,093.8	0.08	3,096.0
5,528.3	8,300.0	91.66	90.00	-129.0	3,193.8	0.08	3,195.9
5,525.3	8,400.0	91.74	90.00	-129.0	3,293.7	0.08	3,295.8
5,522.2	8,500.0	91.82	90.00	-129.0	3,393.7	0.08	3,395.8
5,519.0	8,600.0	91.89	90.00	-129.0	3,493.6	0.08	3,495.7
5,515.6	8,700.0	91.97	90.00	-129.0	3,593.6	0.08	3,595.6
5,512.1	8,800.0	92.05	90.00	-129.0	3,693.5	0.08	3,695.5
5,508.5	8,900.0	92.13	90.00	-129.0	3,793.5	0.08	3,795.4
5,504.7	9,000.0	92.21	90.00	-129.0	3,893.4	0.08	3,895.3
5,500.7	9,100.0	92.29	90.00	-129.0	3,993.3	0.08	3,995.2
5,496.7	9,200.0	92.36	90.00	-129.0	4,093.2	0.08	4,095.1
5,492.5	9,300.0	92.44	90.00	-129.0	4,193.1	0.08	4,195.0
5,488.2	9,400.0	92.52	90.00	-129.0	4,293.0	0.08	4,294.9

Energen

Preliminary Design

Company:	Energen Resources	**Local Co-ordinate Reference:**	Site SE Basin
Project:	Richardson Navajo 27-13 02 #4H	**TVD Reference:**	WELL @ 0.0usft (Original Well Elev)
Site:	SE Basin	**MD Reference:**	WELL @ 0.0usft (Original Well Elev)
Well:	Richardson Navajo 27-13 02 #4H	**North Reference:**	Grid
Wellbore:	Plan #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Preliminary Design	**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)
5,483.7	9,500.0	92.60	90.00	-129.0	4,392.9	0.08	4,394.8
5,479.1	9,600.0	92.68	90.00	-129.0	4,492.8	0.08	4,494.6
5,474.4	9,700.0	92.76	90.00	-129.0	4,592.7	0.08	4,594.5
5,469.5	9,800.0	92.83	90.00	-129.0	4,692.6	0.08	4,694.3
5,464.5	9,900.0	92.91	90.00	-129.0	4,792.5	0.08	4,794.2
5,459.3	10,000.0	92.99	90.00	-129.0	4,892.4	0.08	4,894.0
5,454.0	10,100.0	93.07	90.00	-129.0	4,992.2	0.08	4,993.9
5,448.6	10,200.0	93.15	90.00	-129.0	5,092.1	0.08	5,093.7
5,443.0	10,300.0	93.23	90.00	-129.0	5,191.9	0.08	5,193.5
5,437.4	10,400.0	93.30	90.00	-129.0	5,291.8	0.08	5,293.3
5,431.5	10,500.0	93.38	90.00	-129.0	5,391.6	0.08	5,393.1
5,425.6	10,600.0	93.46	90.00	-129.0	5,491.4	0.08	5,492.9
5,419.4	10,701.0	93.54	90.00	-129.0	5,592.2	0.08	5,593.7
Production Liner							
5,419.4	10,701.3	93.54	90.00	-129.0	5,592.5	0.08	5,594.0

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
300.0	300.0	Surface Casing	9-5/8	12-1/4
6,250.0	5,559.0	Intermediate Casing	7	8-3/4
10,701.0	5,419.4	Production Liner	4-1/2	6-1/4

Checked By: _____ Approved By: _____ Date: _____