

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. 30-045-35642
5. Indicate Type of Lease STATE ☒ FEE ☐
6. State Oil & Gas Lease No.
7. Lease Name or Unit Agreement Name: Crow Mesa 24-08 2
8. Well Number 3H
9. OGRID Number 162928
10. Pool name or Wildcat Dufers Point-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 I : 1419 feet from the South line and 505 feet from the East line Section 2 Township 24N Range 8W NMPM County San Juan
11. Elevation (Show whether DR, RKB, RT, GR, etc.) 7318' 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 additional changes to the drilling plans as follows.

- Increase the cement volume for the 9-5/8" surface casing from 175 sks to 190 sks.
- Decrease the tail cement volume for the 7.0" intermediate casing from 115 sks to 95 sks., grade from J-55 to L-80.
- Change the 4-1/2" production liner set depth from 6750'MD; 6320'TVD - 11350'MD; 6203'TVD to 6700'MD; 6248'TVD - 11592'MD; 6123'TVD and increase the cement volume from 450 sks to 510 sks., L-80 grade to P-110. Change 6-1/4" hole diameter to 6-1/8"
- Change the BHL footages. See attached amended C-102 & directional plans depicting this change.

Spud Date:

8/13/15

Rig Release Date:

OIL CONS. DIV DIST. 3

SEP 23 2015

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 9/22/15

astotts@energen.com

Type or print name Anna Stotts

E-mail address:

PHONE 505-324-4154

For State Use Only

APPROVED BY

Chuck X Per

TITLE

SUPERVISOR DISTRICT #3

DATE

SEP 24 2015

Conditions of Approval (if any):

Hold C104

for Directional Survey
and "As Drilled" plat

HOLD C104 FOR VSL

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DISTRICT I

1625 N. French Dr., Hobbs, N.M. 88240
Phone: (575) 383-6161 Fax: (575) 393-0720

DISTRICT II

811 S. First St., Artesia, N.M. 88210
Phone: (575) 748-1283 Fax: (575) 748-9720

DISTRICT III

1000 Rio Brazos Rd., Aztec, N.M. 87410
Phone: (505) 334-6178 Fax: (505) 334-8170

DISTRICT IV

1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3480 Fax: (505) 476-3482

State of New Mexico
Energy, Minerals & Natural Resources Department

Form C-102
Revised August 1, 2011

Submit one copy to appropriate
District Office

OIL CONSERVATION DIVISION

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

☒ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-045-35642	² Pool Code 19859	³ Pool Name Duffers Point-Gallup Dakota
⁴ Property Code 314190	⁵ Property Name CROW MESA 24-08 2	⁶ Well Number 3H
⁷ OGRID No. 162928	⁸ Operator Name ENERGEN RESOURCES CORPORATION	⁹ Elevation 7318'

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
I	2	24N	8W		1419'	SOUTH	505'	EAST	SAN JUAN

¹¹ Bottom Hole Location If Different From Surface

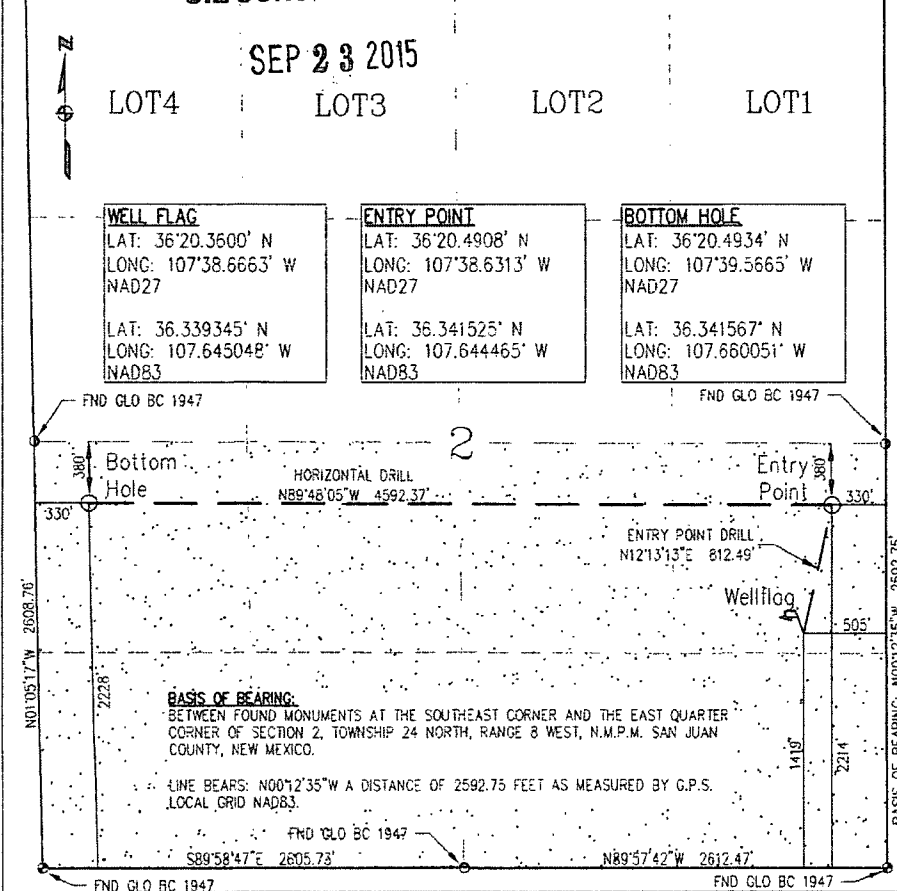
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
L	2	24N	8W		2228'	SOUTH	330'	WEST	SAN JUAN

¹² Dedicated Acres S/2 SEC 2 320 ACRES	PROJECT AREA	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.
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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

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OIL CONS. DIV DIST. 3

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 9/22/15
Signature Date

ANNA STOTTS
Printed Name

astotts@energen.com
E-mail Address

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.

September 8, 2015
Date of Survey

Glen W. Russell
Signature and Seal of Professional Surveyor



GLEN W. RUSSELL
Certificate Number 15703

ENERGEN

R E S O U R C E S

Casing, Casing Equipment & Cement Program:

String	Start Depth	End Depth	Wellbore	Size	Weight	Grade	Drift
Surface	0'	320'	12 1/4"	9 5/8"	36 #/ft	J-55 ST&C	8.765"
Intermediate	0'	6,900'	8 3/4"	7"	26 #/ft	L-80 DQX Ultra	6.151"
Production Liner	6,700'	11,592'	6 1/8"	4 1/2"	11.6 #/ft	P-110 DQX Ultra	3.875"

BE SURE TO RUN FIELD BLENDS ON ALL CEMENT SLURRIES WITH THE MIX WATER FROM THE WELLSITE PRIOR TO ALLOWING ANY CEMENT DELIVERY TO LOCATION. PERFORM CEMENT WATER TEST/ANALYSIS PRIOR TO MIXING AND PUMPING CEMENT!!!

Surface Hole: **Spacer:** 10 barrels of fresh water

Slurry: 190 sacks of VARICEM™ CEMENT SYSTEM - 100% excess of OH volume designed to circulate.

Cementing Properties:

Weight:

Yield:

Mix Water:

Tail Slurry:

15.8 ppg

1.17 ft³/ sk

5.13 gal/sk

9 5/8" Casing Running and Cementing Procedure:

- Visually inspect casing for proper drift (12.459") and thread condition. Thread Loc a 9-5/8" Texas Pattern Guide Shoe on the bottom of the first joint and an Insert Float Valve on the bottom of the second joint. Place one centralizer on the top of the first and second joints, then one centralizer at the bottom of the last two joints. Circulate bottoms up twice while rigging up cements.
- Pressure test cement lines to 2000 psi. Pump 20 bbls fresh water followed by 190 sks of the above referenced cement. Shut down and drop plug for displacement. Bump plug with 500 psi over displacement differential pressure. Shut down and monitor annulus for cement fall back. Perform top out down annulus if needed.
- WOC 12 hours and cut off casing landing joint 21" below GL. Weld on 9 5/8" casing head with casing valves orientated in an **E/W** direction.
- Space out as needed with mud cross and drilling spools and RU annular. Test BOP to 200 psi for 10 min and 70% of working pressure for 10 min. Pressure test casing to 1500 psi for 30 min.



R E S O U R C E S

8-3/4" Intermediate Hole: Spacer: 20 bbls MudFlush, 20 bbls Chem Wash

Slurry: Lead - 740 sks HALCEM™ SYSTEM
0.125 #/sk Poly-E-Flake,
12.3 ppg, 1.93 ft³/ sk, 9.92 gal/sk

Tail - 95 sks VARICEM™ CEMENT.
13.5 ppg, 1.28 ft³/ sk, 5.62 gal/sk

7" Casing Running and Cementing Procedure:

- At TD, perform clean up cycle by rotating drill pipe off bottom at 80 rpm and circulating 5 bottoms up.
- Visually inspect casing for proper drift (6.151") and thread condition. Thread Loc a 7" Self-Fill Guide Shoe on the bottom of the first joint and a Self-Fill Float Collar on the bottom of the second joint. Place one centralizer on the top of the first and second joints, then one every other joint for 6 joints then one every third joint. Place one centralizer at the bottom of the last two joints (through interval between the 9-5/8" and 7"). Circulate bottoms up twice while rigging up cementers.
- DQX thread to be torqued according to Torque Turn gauge and Thread Rep specifications.
- Pressure test cement lines to 3000 psi. Pump 20 bbls of MudFlush and 20 bbls of Chem Wash followed by 740 sks of lead and 95 sks of tail cement. Shut down and drop plug for displacement. Bump plug with 500 psi over displacement differential pressure. Shut down and monitor annulus for cement fall back. Perform top out down annulus if needed. Primary cement job to be changed to a 2 stage if warranted. If a 2 stage is needed, slurry volumes will be adjusted for a lead and tail on both stages.
- Total WOC 12 hrs before drillout of shoe track (12 hr timeframe begins once plug is landed on float collar).
- A mandrel will be used for landing the 7" casing in the 9 5/8" casing head. No further BOP test is required for the remainder of the well.



R E S O U R C E S

6-1/8" Production Hole:

Spacer: 40 bbls Tuned Spacer III
10.5 ppg

Slurry: 510 sks BONDCEM™ SYSTEM
13.3 ppg, 1.35 ft³/sk, 5.89 gal/sk

4 1/2" Casing Running Procedure:

- At TD, perform clean up cycle by rotating drill pipe off bottom at 80 rpm and circulating 5 bottoms up.
- Visually inspect casing for proper drift (3.875") and thread condition. Shoe track to consist of: Float Shoe, joint of casing, Float Collar, joint of casing, Plug Catcher, Rupture Disc (RSI). Thread Loc all 4 1/2" Shoe Joint Connections. Place one centralizer on the top of the first four joints, then one every third joint to the end of the 7" casing set depth. Place one centralizer per joint through the liner lap. Install VersaFlex Liner system and RSI according to Halliburton's spec and procedure. Circulate bottoms up 2 times while rigging up cementers.
- DQX thread to be torqued according to Torque Turn gauge and Thread Rep specifications.
- Pressure test cement lines to 3000 psi. Pump 40 bbls of Tuned Spacer (10.0 – 10.5 ppg) followed by 510 sks of cement. Shut down and drop plug for displacement. Displace with 20 bbls MMCR Displacement Fluid, 10 bbls Sugar Water, and the remaining with Clay-Web water (aka 2% KCL). Bump plug with 500 psi over displacement differential pressure. Sting out of liner hanger system and reverse out to clean cement out of annular space between drillpipe and the 7" casing with Clay-Web water.
- Production liner will be pressure tested during completion operations.

Recommended Practices:

ENERGEN

Energen Resources Corp.

San Juan County, NM (NAD83)

Crow Mesa

Crow Mesa 24-08 2 #3H

OH

Plan: Plan #2

Standard Planning Report

14 September, 2015



Scientific Drilling

www.scientificdrilling.com

ENERGEN

Company: Energen Resources Corp.
Project: San Juan County, NM (NAD83)
Site: Crow Mesa
Well: Crow Mesa 24-08 2 #3H
Wellbore: OH
Design: Plan #2

PROJECT DETAILS: San Juan County, NM (NAD83)

Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: New Mexico Western Zone
System Datum: Mean Sea Level
Local North: True



Azimuths to True North
Magnetic North: 9.08°

Magnetic Field
Strength: 49920.1snT
Dip Angle: 63.03°
Date: 9/3/2015
Model: HDGM

WELL DETAILS: Crow Mesa 24-08 2 #3H

GL 7318' & RKB 17' @ 7335.00ft (Key 881)

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.00	0.00	1942876.37	2778544.55	36.3393450	-107.6450480

Plan: Plan #2 (Crow Mesa 24-08 2 #3H/OH)

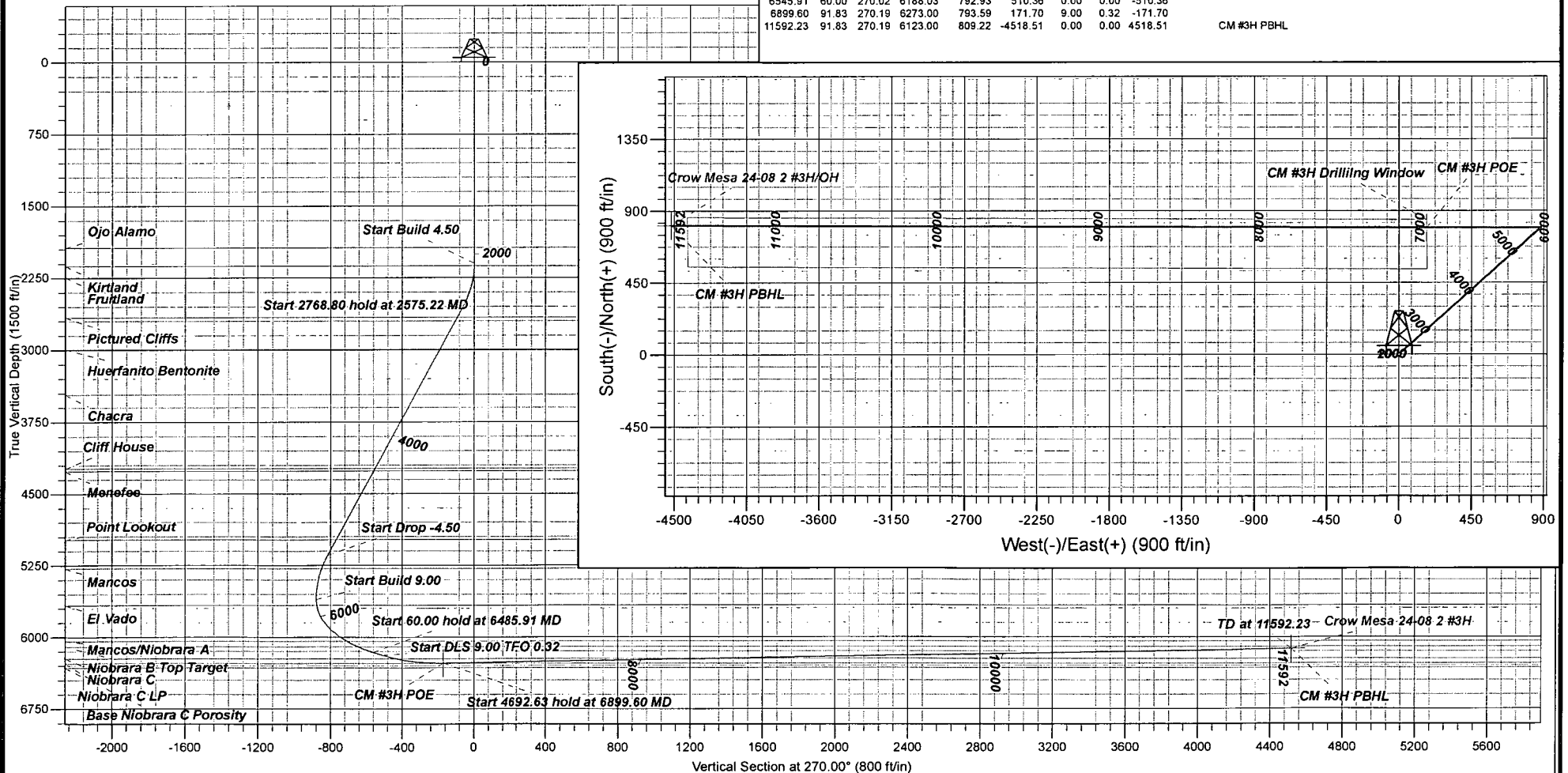
Created By: Janie Collins Date: 16:25, September 14 2015

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
CM #3H PBHL	6123.00	809.22	-4518.51	1943676.79	2774024.48	36.3415670	-107.6603906
CM #3H POE	6273.00	793.59	171.70	1943670.29	2778714.70	36.3415250	-107.6444650

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target	Annotation
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
2100.00	0.00	0.00	2100.00	0.00	0.00	0.00	0.00	0.00		
2575.22	21.39	48.00	2564.27	58.65	65.15	4.50	48.00	-65.15		
5344.02	21.39	48.00	5142.43	734.15	815.48	0.00	0.00	-815.48		
5819.24	0.00	0.00	5606.70	792.80	880.63	4.50	180.00	-880.63		
6485.91	60.00	270.02	6158.03	792.91	562.32	9.00	270.02	-562.32		
6545.91	60.00	270.02	6188.03	792.93	510.36	0.00	0.00	-510.36		
6899.60	91.83	270.18	6273.00	793.59	171.70	9.00	0.32	-171.70		
11592.23	91.83	270.18	6123.00	809.22	-4518.51	0.00	0.00	4518.51	CM #3H PBHL	



Database:	Grand Junction District	Local Co-ordinate Reference:	Well Crow Mesa 24-08 2 #3H
Company:	Energen Resources Corp.	TVD Reference:	GL 7318' & RKB 17' @ 7335.00ft (Key 881)
Project:	San Juan County, NM (NAD83)	MD Reference:	GL 7318' & RKB 17' @ 7335.00ft (Key 881)
Site:	Crow Mesa	North Reference:	True
Well:	Crow Mesa 24-08 2 #3H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #2		

Project	San Juan County, NM (NAD83)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Western Zone		

Site		Crow Mesa			
Site Position:		Northing:	1,942,876.38 usft	Latitude:	36.3393450
From:	Lat/Long	Easting:	2,778,544.55 usft	Longitude:	-107.6450480
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in	Grid Convergence:	0.11 °

Well	Crow Mesa 24-08 2 #3H					
Well Position	+N/-S	0.00 ft	Northing:	1,942,876.38 usft	Latitude:	36.3393450
	+E/-W	0.00 ft	Easting:	2,778,544.55 usft	Longitude:	-107.6450480
Position Uncertainty		0.00 ft	Wellhead Elevation:	0.00 ft	Ground Level:	7,318.00 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
			(°)	(°)	(nT)
	HDGM	9/3/2015	9.08	63.03	49,920

Design	Plan #2			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(ft)	(ft)	(ft)	(°)
	0.00	0.00	0.00	270.00

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,575.22	21.39	48.00	2,564.27	58.65	65.15	4.50	4.50	0.00	48.00	
5,344.02	21.39	48.00	5,142.43	734.15	815.48	0.00	0.00	0.00	0.00	
5,819.24	0.00	0.00	5,606.70	792.80	880.63	4.50	-4.50	0.00	180.00	
6,485.91	60.00	270.02	6,158.03	792.91	562.32	9.00	9.00	0.00	270.02	
6,545.91	60.00	270.02	6,188.03	792.93	510.36	0.00	0.00	0.00	0.00	
6,899.60	91.83	270.19	6,273.00	793.59	171.70	9.00	9.00	0.05	0.32	
11,592.23	91.83	270.19	6,123.00	809.22	-4,518.51	0.00	0.00	0.00	0.00	CM #3H PBHL

Database:	Grand Junction District	Local Co-ordinate Reference:	Well Crow Mesa 24-08 2 #3H
Company:	Energen Resources Corp.	TVD Reference:	GL 7318' & RKB 17' @ 7335.00ft (Key 881)
Project:	San Juan County, NM (NAD83)	MD Reference:	GL 7318' & RKB 17' @ 7335.00ft (Key 881)
Site:	Crow Mesa	North Reference:	True
Well:	Crow Mesa 24-08 2 #3H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #2		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,934.00	0.00	0.00	1,934.00	0.00	0.00	0.00	0.00	0.00	0.00
Ojo Alamo									
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,124.00	1.08	48.00	2,124.00	0.15	0.17	-0.17	4.50	4.50	0.00
Kirtland									
2,200.00	4.50	48.00	2,199.90	2.63	2.92	-2.92	4.50	4.50	0.00
2,245.32	6.54	48.00	2,245.00	5.54	6.16	-6.16	4.50	4.50	0.00
Fruitland									
2,300.00	9.00	48.00	2,299.18	10.49	11.65	-11.65	4.50	4.50	0.00
2,400.00	13.50	48.00	2,397.23	23.54	26.15	-26.15	4.50	4.50	0.00
2,500.00	18.00	48.00	2,493.45	41.69	46.31	-46.31	4.50	4.50	0.00
2,575.22	21.39	48.00	2,564.27	58.65	65.15	-65.15	4.50	4.50	0.00
2,600.00	21.39	48.00	2,587.34	64.70	71.86	-71.86	0.00	0.00	0.00
2,679.11	21.39	48.00	2,661.00	84.00	93.30	-93.30	0.00	0.00	0.00
Pictured Cliffs									
2,700.00	21.39	48.00	2,680.45	89.09	98.96	-98.96	0.00	0.00	0.00
2,800.00	21.39	48.00	2,773.57	113.49	126.06	-126.06	0.00	0.00	0.00
2,900.00	21.39	48.00	2,866.68	137.89	153.16	-153.16	0.00	0.00	0.00
3,000.00	21.39	48.00	2,959.80	162.28	180.26	-180.26	0.00	0.00	0.00
3,035.66	21.39	48.00	2,993.00	170.98	189.93	-189.93	0.00	0.00	0.00
Huerfanito Bentonite									
3,100.00	21.39	48.00	3,052.91	186.68	207.36	-207.36	0.00	0.00	0.00
3,200.00	21.39	48.00	3,146.03	211.08	234.46	-234.46	0.00	0.00	0.00
3,300.00	21.39	48.00	3,239.14	235.47	261.56	-261.56	0.00	0.00	0.00
3,400.00	21.39	48.00	3,332.26	259.87	288.66	-288.66	0.00	0.00	0.00
3,500.00	21.39	48.00	3,425.37	284.27	315.76	-315.76	0.00	0.00	0.00
3,540.41	21.39	48.00	3,463.00	294.13	326.71	-326.71	0.00	0.00	0.00
Chacra									
3,600.00	21.39	48.00	3,518.49	308.66	342.86	-342.86	0.00	0.00	0.00
3,700.00	21.39	48.00	3,611.60	333.06	369.96	-369.96	0.00	0.00	0.00
3,800.00	21.39	48.00	3,704.72	357.46	397.06	-397.06	0.00	0.00	0.00
3,900.00	21.39	48.00	3,797.83	381.85	424.16	-424.16	0.00	0.00	0.00

Database:	Grand Junction District	Local Co-ordinate Reference:	Well Crow Mesa 24-08 2 #3H
Company:	Energen Resources Corp.	TVD Reference:	GL 7318' & RKB 17' @ 7335.00ft (Key 881)
Project:	San Juan County, NM (NAD83)	MD Reference:	GL 7318' & RKB 17' @ 7335.00ft (Key 881)
Site:	Crow Mesa	North Reference:	True
Well:	Crow Mesa 24-08 2 #3H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #2		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N-S (ft)	+E-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
4,000.00	21.39	48.00	3,890.95	406.25	451.26	-451.26	0.00	0.00	0.00
4,100.00	21.39	48.00	3,984.06	430.65	478.36	-478.36	0.00	0.00	0.00
4,200.00	21.39	48.00	4,077.18	455.04	505.46	-505.46	0.00	0.00	0.00
4,300.00	21.39	48.00	4,170.29	479.44	532.56	-532.56	0.00	0.00	0.00
4,368.42	21.39	48.00	4,234.00	496.13	551.10	-551.10	0.00	0.00	0.00
Cliff House									
4,398.49	21.39	48.00	4,262.00	503.47	559.25	-559.25	0.00	0.00	0.00
Menefee									
4,400.00	21.39	48.00	4,263.41	503.84	559.66	-559.66	0.00	0.00	0.00
4,500.00	21.39	48.00	4,356.52	528.23	586.75	-586.75	0.00	0.00	0.00
4,600.00	21.39	48.00	4,449.64	552.63	613.85	-613.85	0.00	0.00	0.00
4,700.00	21.39	48.00	4,542.75	577.03	640.95	-640.95	0.00	0.00	0.00
4,800.00	21.39	48.00	4,635.87	601.42	668.05	-668.05	0.00	0.00	0.00
4,900.00	21.39	48.00	4,728.98	625.82	695.15	-695.15	0.00	0.00	0.00
5,000.00	21.39	48.00	4,822.10	650.22	722.25	-722.25	0.00	0.00	0.00
5,100.00	21.39	48.00	4,915.21	674.62	749.35	-749.35	0.00	0.00	0.00
5,171.72	21.39	48.00	4,982.00	692.11	768.79	-768.79	0.00	0.00	0.00
Point Lookout									
5,200.00	21.39	48.00	5,008.33	699.01	776.45	-776.45	0.00	0.00	0.00
5,300.00	21.39	48.00	5,101.44	723.41	803.55	-803.55	0.00	0.00	0.00
5,344.02	21.39	48.00	5,142.43	734.15	815.48	-815.48	0.00	0.00	0.00
5,400.00	18.87	48.00	5,194.99	747.03	829.79	-829.79	4.50	-4.50	0.00
5,491.95	14.73	48.00	5,283.00	764.81	849.54	-849.54	4.50	-4.50	0.00
Mancos									
5,500.00	14.37	48.00	5,290.79	766.16	851.04	-851.04	4.50	-4.50	0.00
5,600.00	9.87	48.00	5,388.54	780.20	866.64	-866.64	4.50	-4.50	0.00
5,700.00	5.37	48.00	5,487.63	789.07	876.48	-876.48	4.50	-4.50	0.00
5,800.00	0.87	48.00	5,587.46	792.70	880.52	-880.52	4.50	-4.50	0.00
5,819.24	0.00	0.00	5,606.70	792.80	880.63	-880.63	4.50	-4.50	0.00
5,879.63	5.44	270.02	5,667.00	792.80	877.77	-877.77	9.00	9.00	0.00
El Vado									
5,900.00	7.27	270.02	5,687.24	792.80	875.51	-875.51	9.00	9.00	0.00
6,000.00	16.27	270.02	5,785.04	792.81	855.14	-855.14	9.00	9.00	0.00
6,100.00	25.27	270.02	5,878.44	792.82	819.72	-819.72	9.00	9.00	0.00
6,200.00	34.27	270.02	5,965.16	792.84	770.12	-770.12	9.00	9.00	0.00
6,298.56	43.14	270.02	6,042.00	792.86	708.55	-708.55	9.00	9.00	0.00
Mancos/Niobrara A									
6,300.00	43.27	270.02	6,043.05	792.86	707.57	-707.57	9.00	9.00	0.00
6,383.62	50.79	270.02	6,100.00	792.88	646.43	-646.43	9.00	9.00	0.00
Niobrara B Top Target									
6,400.00	52.27	270.02	6,110.19	792.89	633.60	-633.60	9.00	9.00	0.00
6,485.91	60.00	270.02	6,158.03	792.91	562.32	-562.32	9.00	9.00	0.00
6,500.00	60.00	270.02	6,165.07	792.92	550.12	-550.12	0.00	0.00	0.00
6,545.91	60.00	270.02	6,188.03	792.93	510.36	-510.36	0.00	0.00	0.00
6,600.00	64.87	270.05	6,213.05	792.96	462.42	-462.42	9.00	9.00	0.06
6,629.61	67.53	270.07	6,225.00	792.99	435.33	-435.33	9.00	9.00	0.05
Niobrara C									
6,700.00	73.87	270.10	6,248.25	793.08	368.93	-368.93	9.00	9.00	0.05
6,800.00	82.87	270.15	6,268.39	793.30	271.09	-271.09	9.00	9.00	0.05
6,899.60	91.83	270.19	6,273.00	793.59	171.70	-171.70	9.00	9.00	0.04
CM #3H POE									
6,900.00	91.83	270.19	6,272.98	793.59	171.30	-171.30	0.05	0.05	0.00
7,000.00	91.83	270.19	6,269.79	793.92	71.35	-71.35	0.00	0.00	0.00

Database:	Grand Junction District	Local Co-ordinate Reference:	Well Crow Mesa 24-08 2 #3H
Company:	Energen Resources Corp.	TVD Reference:	GL 7318' & RKB 17' @ 7335.00ft (Key 881)
Project:	San Juan County, NM (NAD83)	MD Reference:	GL 7318' & RKB 17' @ 7335.00ft (Key 881)
Site:	Crow Mesa	North Reference:	True
Well:	Crow Mesa 24-08 2 #3H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #2		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
7,100.00	91.83	270.19	6,266.59	794.26	-28.60	28.60	0.00	0.00	0.00
7,200.00	91.83	270.19	6,263.39	794.59	-128.55	128.55	0.00	0.00	0.00
7,300.00	91.83	270.19	6,260.20	794.92	-228.50	228.50	0.00	0.00	0.00
7,400.00	91.83	270.19	6,257.00	795.26	-328.44	328.44	0.00	0.00	0.00
7,500.00	91.83	270.19	6,253.80	795.59	-428.39	428.39	0.00	0.00	0.00
7,600.00	91.83	270.19	6,250.61	795.92	-528.34	528.34	0.00	0.00	0.00
7,700.00	91.83	270.19	6,247.41	796.25	-628.29	628.29	0.00	0.00	0.00
7,800.00	91.83	270.19	6,244.22	796.59	-728.24	728.24	0.00	0.00	0.00
7,900.00	91.83	270.19	6,241.02	796.92	-828.19	828.19	0.00	0.00	0.00
8,000.00	91.83	270.19	6,237.82	797.25	-928.13	928.13	0.00	0.00	0.00
8,100.00	91.83	270.19	6,234.63	797.59	-1,028.08	1,028.08	0.00	0.00	0.00
8,200.00	91.83	270.19	6,231.43	797.92	-1,128.03	1,128.03	0.00	0.00	0.00
8,300.00	91.83	270.19	6,228.23	798.25	-1,227.98	1,227.98	0.00	0.00	0.00
8,400.00	91.83	270.19	6,225.04	798.59	-1,327.93	1,327.93	0.00	0.00	0.00
8,500.00	91.83	270.19	6,221.84	798.92	-1,427.88	1,427.88	0.00	0.00	0.00
8,600.00	91.83	270.19	6,218.64	799.25	-1,527.82	1,527.82	0.00	0.00	0.00
8,700.00	91.83	270.19	6,215.45	799.59	-1,627.77	1,627.77	0.00	0.00	0.00
8,800.00	91.83	270.19	6,212.25	799.92	-1,727.72	1,727.72	0.00	0.00	0.00
8,900.00	91.83	270.19	6,209.05	800.25	-1,827.67	1,827.67	0.00	0.00	0.00
9,000.00	91.83	270.19	6,205.86	800.58	-1,927.62	1,927.62	0.00	0.00	0.00
9,100.00	91.83	270.19	6,202.66	800.92	-2,027.57	2,027.57	0.00	0.00	0.00
9,200.00	91.83	270.19	6,199.47	801.25	-2,127.51	2,127.51	0.00	0.00	0.00
9,300.00	91.83	270.19	6,196.27	801.58	-2,227.46	2,227.46	0.00	0.00	0.00
9,400.00	91.83	270.19	6,193.07	801.92	-2,327.41	2,327.41	0.00	0.00	0.00
9,500.00	91.83	270.19	6,189.88	802.25	-2,427.36	2,427.36	0.00	0.00	0.00
9,600.00	91.83	270.19	6,186.68	802.58	-2,527.31	2,527.31	0.00	0.00	0.00
9,700.00	91.83	270.19	6,183.48	802.92	-2,627.26	2,627.26	0.00	0.00	0.00
9,800.00	91.83	270.19	6,180.29	803.25	-2,727.20	2,727.20	0.00	0.00	0.00
9,900.00	91.83	270.19	6,177.09	803.58	-2,827.15	2,827.15	0.00	0.00	0.00
10,000.00	91.83	270.19	6,173.89	803.92	-2,927.10	2,927.10	0.00	0.00	0.00
10,100.00	91.83	270.19	6,170.70	804.25	-3,027.05	3,027.05	0.00	0.00	0.00
10,200.00	91.83	270.19	6,167.50	804.58	-3,127.00	3,127.00	0.00	0.00	0.00
10,300.00	91.83	270.19	6,164.31	804.91	-3,226.95	3,226.95	0.00	0.00	0.00
10,400.00	91.83	270.19	6,161.11	805.25	-3,326.89	3,326.89	0.00	0.00	0.00
10,500.00	91.83	270.19	6,157.91	805.58	-3,426.84	3,426.84	0.00	0.00	0.00
10,600.00	91.83	270.19	6,154.72	805.91	-3,526.79	3,526.79	0.00	0.00	0.00
10,700.00	91.83	270.19	6,151.52	806.25	-3,626.74	3,626.74	0.00	0.00	0.00
10,800.00	91.83	270.19	6,148.32	806.58	-3,726.69	3,726.69	0.00	0.00	0.00
10,900.00	91.83	270.19	6,145.13	806.91	-3,826.64	3,826.64	0.00	0.00	0.00
11,000.00	91.83	270.19	6,141.93	807.25	-3,926.58	3,926.58	0.00	0.00	0.00
11,100.00	91.83	270.19	6,138.73	807.58	-4,026.53	4,026.53	0.00	0.00	0.00
11,200.00	91.83	270.19	6,135.54	807.91	-4,126.48	4,126.48	0.00	0.00	0.00
11,300.00	91.83	270.19	6,132.34	808.25	-4,226.43	4,226.43	0.00	0.00	0.00
11,400.00	91.83	270.19	6,129.14	808.58	-4,326.38	4,326.38	0.00	0.00	0.00
11,500.00	91.83	270.19	6,125.95	808.91	-4,426.33	4,426.33	0.00	0.00	0.00
11,592.23	91.83	270.19	6,123.00	809.22	-4,518.51	4,518.51	0.00	0.00	0.00

CM #3H PBHL