

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 3160-3 APD form.

Operator Signature Date: 3-19-15

Well information;

Operator Energen, Well Name and Number Federal F #687H

API# 30-045-35674, Section 13, Township 24 N/S, Range 10 E/W

Conditions of Approval:

(See the below checked and handwritten 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
- ☐ Regarding the use of a pit, closed loop system or below grade tank, the operator must comply with the following as applicable:
 - A pit requires a complete C-144 be submitted and approved prior to the construction or use of the pit, pursuant to 19.15.17.8.A
 - A closed loop system requires notification prior to use, pursuant to 19.15.17.9.A
 - A below grade tank requires a registration be filed prior to the construction or use of the below grade tank, pursuant to 19.15.17.8.C
- ☐ 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.

NMOCD Approved by Signature

10-9-2015
Date KC

RECEIVED

MAR 20 2015

FORM APPROVED
OMB No. 1004-0137
Expires July 31, 2010UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

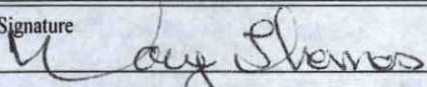
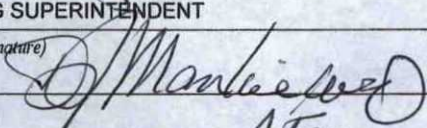
Farmington Field Office
Bureau of Land Management

1a. Type of work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		5. Lease Serial No. NM45210
1b. Type of Well: <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other <input checked="" type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone		6. If Indian, Allottee or Tribe Name
2. Name of Operator ENERGEN RESOURCES CORPORATION		7. If Unit or CA Agreement, Name and No. NMNM-133971
3a. Address 2010 AFTON PLACE FARMINGTON, NM 87401	3b. Phone No. (include area code) 505-325-6800	8. Lease Name and Well No. FEDERAL F #687H
4. Location of Well (Report location clearly and in accordance with any State requirements.)* At surface A 1100' FNL & 430' FEL, SEC 13, T24N, R10W At proposed prod. zone D 380' FNL & 380' FWL, SEC 13, T24N, R10W		9. API Well No. 30-045-35674
10. Field and Pool, or Exploratory BISTI LOWER GALLUP		11. Sec., T. R. M. or Blk. and Survey or Area SEC 13, T24N, R10W. NMPM
12. Distance in miles and direction from nearest town or post office* Approximately 3.5 miles southwest of Blanco Trading Post, New Mexico		12. County or Parish SAN JUAN COUNTY
13. State NM		
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) 430'	16. No. of acres in lease 320 ACRES	17. Spacing Unit dedicated to this well 160 ACRES N2N2
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 50'	19. Proposed Depth 10,607' MD 5,530' TVD	20. BLM/BIA Bond No. on file NM2707 NMB000747
21. Elevations (Show whether DF, KDB, RT, GL, etc.) GL: 6,964.5' (NAVD 88)	22. Approximate date work will start* 06/01/2015	23. Estimated duration 45 DAYS

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No.1, must be attached to this form:

- | | |
|--|---|
| 1. Well plat certified by a registered surveyor. | 4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above). |
| 2. A Drilling Plan. | 5. Operator certification |
| 3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office). | 6. Such other site specific information and/or plans as may be required by the BLM. |

25. Signature 	Name (Printed/Typed) DOUG THOMAS	Date 3-19-15
Title DRILLING SUPERINTENDENT		
Approved by (Signature) 	Name (Printed/Typed) AFM	Date 9/23/15
Title FFO		

Application approval 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.
Conditions of approval, if any, are attached.

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make 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.

(Continued on page 2)

*(Instructions on page 2)

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

This action is subject to technical and procedural review pursuant to 43 CFR 3165.3 and appeal pursuant to 43 CFR 3165.4

DRILLING OPERATIONS AUTHORIZED ARE SUBJECT TO COMPLIANCE WITH ATTACHED "GENERAL REQUIREMENTS"

NMOC

DISTRICT I
1025 N French Dr., Hobbs, N.M. 88240
Phone: (575) 393-8181 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) 334-8178 Fax: (505) 334-8170

DISTRICT IV
1220 S St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 478-3460 Fax: (505) 478-3482

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 30-045-35674	² Pool Code 5890	³ Pool Name BISTI LOWER GALLUP
⁴ Property Code 315300	⁵ Property Name FEDERAL F	⁶ Well Number 687H
⁷ OGRID No. 162928	⁸ Operator Name ENERGEN RESOURCES CORPORATION	⁹ Elevation 6962.5

¹⁰ Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A	13	24N	10W		1100'	NORTH	430'	EAST	SAN JUAN

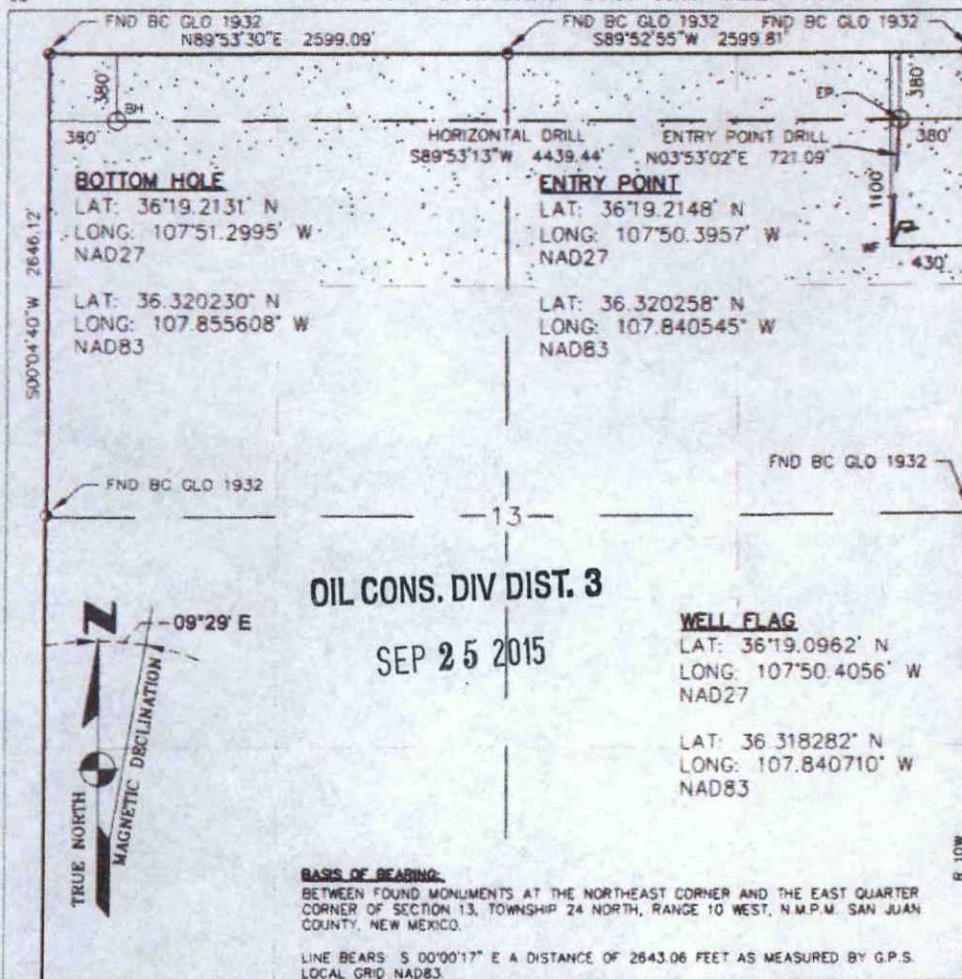
¹¹ Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
D	13	24N	10W		380'	NORTH	380'	WEST	SAN JUAN

¹² Dedicated Acres N/2 N/2 SEC 13 160 ACRES	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

16



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 undivided 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 3/20/15
Signature Date

Nathan Smith
Printed Name

nsmith@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.

JANUARY 14, 2015
Date of Survey

Signature and Seal of Professional Surveyor:

Glen W. Russell
GLEN W. RUSSELL
NEW MEXICO
15/09/14/15
LICENSED PROFESSIONAL SURVEYOR

GLEN W. RUSSELL
Certificate Number 15703

Drilling Plan **Energen Resources Corporation**

Federal F #687H

Surface Location: 1100 FNL, 430 FEL

Legal Description: Sec 13, T24N, R10W (36.318282° N, 107.840710° W – NAD83)

Bottom Hole Location: 380 FNL, 380 FWL

Legal Description: Sec 13, T24N, R10W (36.320230° N, 107.855608° W – NAD83)

San Juan County, NM

1. The elevation of the unprepared ground is 6,964 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 5,530' TVD/10,607' MD.
4. Estimated top of important geological markers:

<u>Formation</u>	<u>Depth (TVD)(ft)</u>	<u>Depth (MD)(ft)</u>
Nacimiento	Surface	Surface
Ojo Alamo	955	955
Kirtland	1,058	1,058
Fruitland	1,261	1,261
Pictured Cliffs	1,778	1,778
Huerfanto Bentonite	2,055	2,055
Chacra	2,569	2,569
Cliff House	3,248	3,249
Menefee	3,288	3,290
Point Lookout	4,230	4,325
Mancos	4,431	4,553
Mancos/Niobrara "C"	5,530	6,098

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>
Fruitland	1,261	Gas
Pictured Cliffs	1,778	Gas
Cliffhouse	3,248	Gas
Point Lookout	4,230	Gas
Mancos	4,431	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"	0-500'	0-500'	J-55	36.00	STC	3520	2020	394
Intermediate	7"	0-6,200'	0-5,530'	J-55	26.00	LTC	4980	4320	367
Production	4-1/2"	6,050'-10,606'	5,530-5,412'	L-80	11.60	Ultra DQX	7780	6350	267

7. Cementing Program:

- a. 12-1/4" hole x 9-5/8" casing at 500' will have cement circulated to surface with 270 sks (100% excess true hole) Class H Cement with 1.0 % CaCl_2 , 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
- b. 8-3/4" hole x 7" casing at 6,200'. Cement will be circulated to surface with 660 sks (50% excess true hole) of HLC with 1.0 % CaCl_2 , 1/4 #/sk Poly-E-Flake, 5 #/sk Kol-Seal (Gilsonite) – 12.3 ppg, 1.95 ft³/sk followed by 115 sks (100% excess true hole) 50/50 Glass H/Poz with 0.15% Versaset, 0.30% HALAD-9, 1/4 #/sk Poly-E-Flake, 5 #/sk Kol-Seal – 13.5 ppg, 1.31 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.
- c. 6-1/4" hole x 4-1/2" liner at 10,606'. A fluid caliper will be run to determine base slurry cement to have TOC at 6,050'. Base slurry to consist of 425 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 ft³/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 6150' 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.

9. Mud Program:

0' - 500'	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
500' - 6,200'	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
6,200' - 10,606'	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: TBD
- c. LWD Program: TBD
- d. Coring Program: None.
- 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.

Energen Resources

Federal F

Federal F #687H

Design #1

Preliminary Design

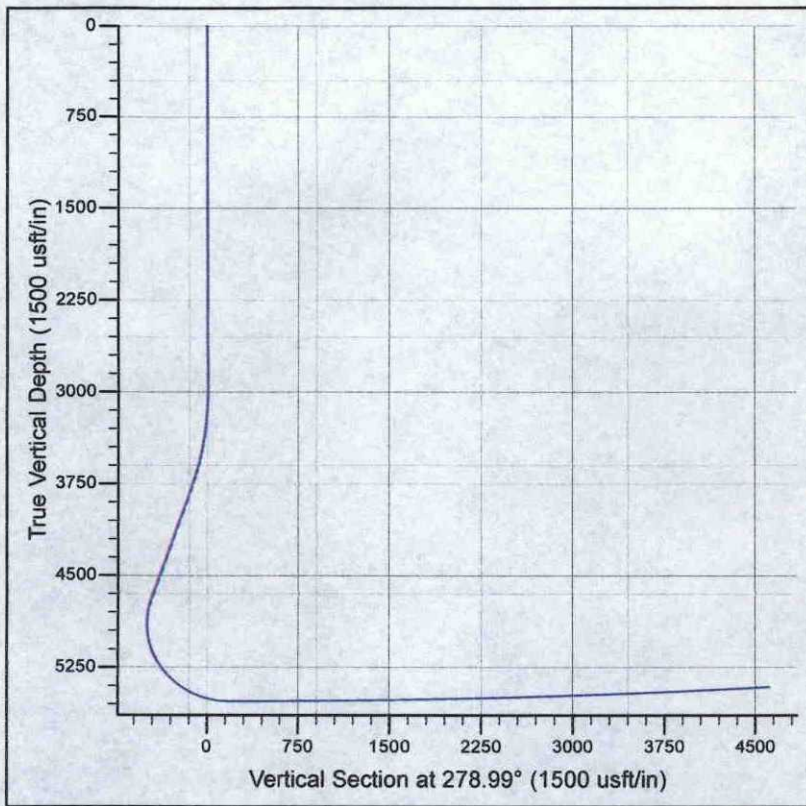
Plan: APD Plan

Preliminary Design

30 January, 2015

Company Name: Energen Resources

Project: Federal F
Site: Federal F #687H
Well: Design #1
Wellbore: Preliminary Design
Design: APD Plan

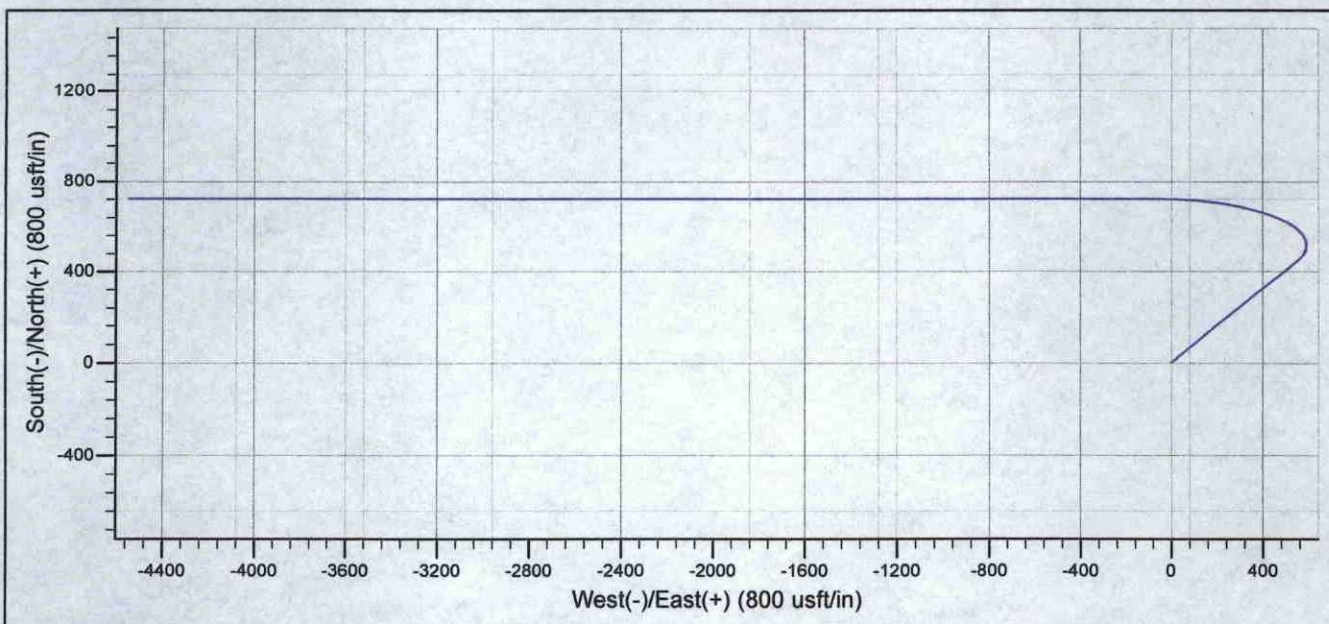


OIL CONS. DIV DIST. 3

SEP 25 2015

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	3000.0	0.00	0.00	3000.0	0.0	0.0	0.00	0.00	0.0
3	3810.8	28.38	50.96	3778.0	123.9	152.8	3.50	50.96	-131.6
4	4864.1	28.38	50.96	4704.8	439.2	541.7	0.00	0.00	-466.3
5	6104.8	90.00	270.00	5530.0	720.0	-50.0	9.00	-137.33	161.9
6	10606.8	93.00	270.00	5412.2	720.0	-4549.9	0.07	0.00	4606.5



Energen
Preliminary Design

OIL CONS. DIV DIST. 3

SEP 25 2015

Company:	Energen Resources	Local Co-ordinate Reference:	Site Federal F #687H
Project:	Federal F	TVD Reference:	WELL @ 0.0usft (Original Well Elev)
Site:	Federal F #687H	MD Reference:	WELL @ 0.0usft (Original Well Elev)
Well:	Design #1	North Reference:	Grid
Wellbore:	Preliminary Design	Survey Calculation Method:	Minimum Curvature
Design:	APD Plan	Database:	EDM 5000.1 Single User Db

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

Site	Federal F #687H				
Site Position:		Northing:	1,935,154.95 usft	Latitude:	36° 19' 5.815 N
From:	Lat/Long	Easting:	2,720,918.54 usft	Longitude:	107° 50' 26.556 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16"	Grid Convergence:	0.00 °

Well	Design #1				
Well Position	+N/-S	0.0 usft	Northing:	1,935,154.95 usft	Latitude:
	+E/-W	0.0 usft	Easting:	2,720,918.54 usft	Longitude:
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level:
					0.0 usft

Wellbore	Preliminary Design				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	12/4/2014	9.44	63.03	50,242

Design	APD Plan				
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	278.99	

Survey Tool Program	Date	1/5/2015			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.0	10,606.8	APD Plan (Preliminary Design)	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	
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	
9 5/8"								
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
Project: Federal F
Site: Federal F #687H
Well: Design #1
Wellbore: Preliminary Design
Design: APD Plan

Local Co-ordinate Reference: Site Federal F #687H
TVD Reference: WELL @ 0.0usft (Original Well Elev)
MD Reference: WELL @ 0.0usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
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
3,099.9	3,100.0	3.50	50.96	1.9	2.4	3.50	-2.0
3,199.5	3,200.0	7.00	50.96	7.7	9.5	3.50	-8.2
3,298.3	3,300.0	10.50	50.96	17.3	21.3	3.50	-18.3
3,396.0	3,400.0	14.00	50.96	30.6	37.8	3.50	-32.5
3,492.3	3,500.0	17.50	50.96	47.7	58.9	3.50	-50.7
3,586.7	3,600.0	21.00	50.96	68.5	84.5	3.50	-72.7
3,678.9	3,700.0	24.50	50.96	92.8	114.5	3.50	-98.6
3,768.5	3,800.0	28.00	50.96	120.7	148.8	3.50	-128.1
3,778.0	3,810.8	28.38	50.96	123.9	152.8	3.50	-131.6
3,856.5	3,900.0	28.38	50.96	150.6	185.7	0.00	-159.9
3,944.5	4,000.0	28.38	50.96	180.5	222.6	0.00	-191.7
4,032.5	4,100.0	28.38	50.96	210.5	259.6	0.00	-223.5
4,120.5	4,200.0	28.38	50.96	240.4	296.5	0.00	-255.3
4,208.5	4,300.0	28.38	50.96	270.4	333.4	0.00	-287.0
4,296.4	4,400.0	28.38	50.96	300.3	370.3	0.00	-318.8
4,384.4	4,500.0	28.38	50.96	330.2	407.2	0.00	-350.6
4,472.4	4,600.0	28.38	50.96	360.2	444.1	0.00	-382.4
4,560.4	4,700.0	28.38	50.96	390.1	481.1	0.00	-414.2
4,648.4	4,800.0	28.38	50.96	420.0	518.0	0.00	-446.0
4,704.8	4,864.1	28.38	50.96	439.2	541.7	0.00	-466.3
4,736.7	4,900.0	26.09	45.98	450.1	553.9	-6.38	-476.8
4,782.1	4,950.0	23.24	37.61	465.5	567.9	-5.69	-488.1
4,828.5	5,000.0	20.95	27.29	481.3	578.0	-4.59	-495.7
4,875.4	5,050.0	19.41	15.01	497.3	584.3	-3.09	-499.4

Energen Preliminary Design

Company: Energen Resources
Project: Federal F
Site: Federal F #687H
Well: Design #1
Wellbore: Preliminary Design
Design: APD Plan

Local Co-ordinate Reference: Site Federal F #687H
TVD Reference: WELL @ 0.0usft (Original Well Elev)
MD Reference: WELL @ 0.0usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
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)
4,922.7	5,100.0	18.80	1.35	513.4	586.6	-1.22	-499.2
4,970.0	5,150.0	19.21	347.56	529.5	585.0	0.83	-495.1
5,017.0	5,200.0	20.59	334.94	545.5	579.5	2.75	-487.1
5,063.5	5,250.0	22.75	324.23	561.3	570.1	4.33	-475.4
5,109.2	5,300.0	25.50	315.50	576.8	556.9	5.50	-459.9
5,153.7	5,350.0	28.67	308.47	592.0	540.0	6.34	-440.8
5,196.8	5,400.0	32.14	302.79	606.6	519.4	6.93	-418.2
5,238.3	5,450.0	35.81	298.14	620.7	495.3	7.35	-392.2
5,277.8	5,500.0	39.64	294.25	634.2	467.9	7.65	-363.0
5,315.2	5,550.0	43.57	290.96	646.9	437.2	7.87	-330.7
5,350.2	5,600.0	47.58	288.11	658.8	403.6	8.03	-295.6
5,382.6	5,650.0	51.66	285.61	669.8	367.1	8.15	-257.9
5,412.2	5,700.0	55.79	283.38	679.9	328.1	8.25	-217.8
5,438.8	5,750.0	59.95	281.35	689.0	286.8	8.32	-175.5
5,462.2	5,800.0	64.14	279.49	696.9	243.3	8.38	-131.4
5,482.3	5,850.0	68.35	277.76	703.8	198.1	8.42	-85.7
5,499.1	5,900.0	72.58	276.13	709.5	151.3	8.46	-38.6
5,512.2	5,950.0	76.82	274.57	714.0	103.3	8.48	9.5
5,521.8	6,000.0	81.07	273.06	717.2	54.4	8.50	58.4
5,527.8	6,050.0	85.33	271.59	719.2	4.8	8.51	107.7
5,530.0	6,104.8	90.00	270.00	720.0	-50.0	8.52	161.9
5,529.9	6,200.0	90.06	270.00	720.0	-145.1	0.07	255.9
7"							
5,529.8	6,300.0	90.13	270.00	720.0	-245.2	0.07	354.7
5,529.5	6,400.0	90.20	270.00	720.0	-345.2	0.07	453.4
5,529.1	6,500.0	90.26	270.00	720.0	-445.2	0.07	552.2
5,528.6	6,600.0	90.33	270.00	720.0	-545.2	0.07	651.0
5,527.9	6,700.0	90.40	270.00	720.0	-645.1	0.07	749.8
5,527.2	6,800.0	90.46	270.00	720.0	-745.1	0.07	848.5
5,526.3	6,900.0	90.53	270.00	720.0	-845.1	0.07	947.3
5,525.3	7,000.0	90.60	270.00	720.0	-945.1	0.07	1,046.1
5,524.2	7,100.0	90.66	270.00	720.0	-1,045.1	0.07	1,144.8
5,523.0	7,200.0	90.73	270.00	720.0	-1,145.1	0.07	1,243.6
5,521.7	7,300.0	90.80	270.00	720.0	-1,245.1	0.07	1,342.3
5,520.2	7,400.0	90.86	270.00	720.0	-1,345.1	0.07	1,441.1
5,518.7	7,500.0	90.93	270.00	720.0	-1,445.1	0.07	1,539.9
5,517.0	7,600.0	91.00	270.00	720.0	-1,545.1	0.07	1,638.6
5,515.2	7,700.0	91.06	270.00	720.0	-1,645.1	0.07	1,737.4
5,513.3	7,800.0	91.13	270.00	720.0	-1,745.0	0.07	1,836.1
5,511.2	7,900.0	91.20	270.00	720.0	-1,845.0	0.07	1,934.9
5,509.1	8,000.0	91.26	270.00	720.0	-1,945.0	0.07	2,033.6
5,506.8	8,100.0	91.33	270.00	720.0	-2,045.0	0.07	2,132.4
5,504.5	8,200.0	91.40	270.00	720.0	-2,144.9	0.07	2,231.1
5,502.0	8,300.0	91.46	270.00	720.0	-2,244.9	0.07	2,329.9
5,499.4	8,400.0	91.53	270.00	720.0	-2,344.9	0.07	2,428.6

Energen Preliminary Design

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North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User Db

Planned Survey

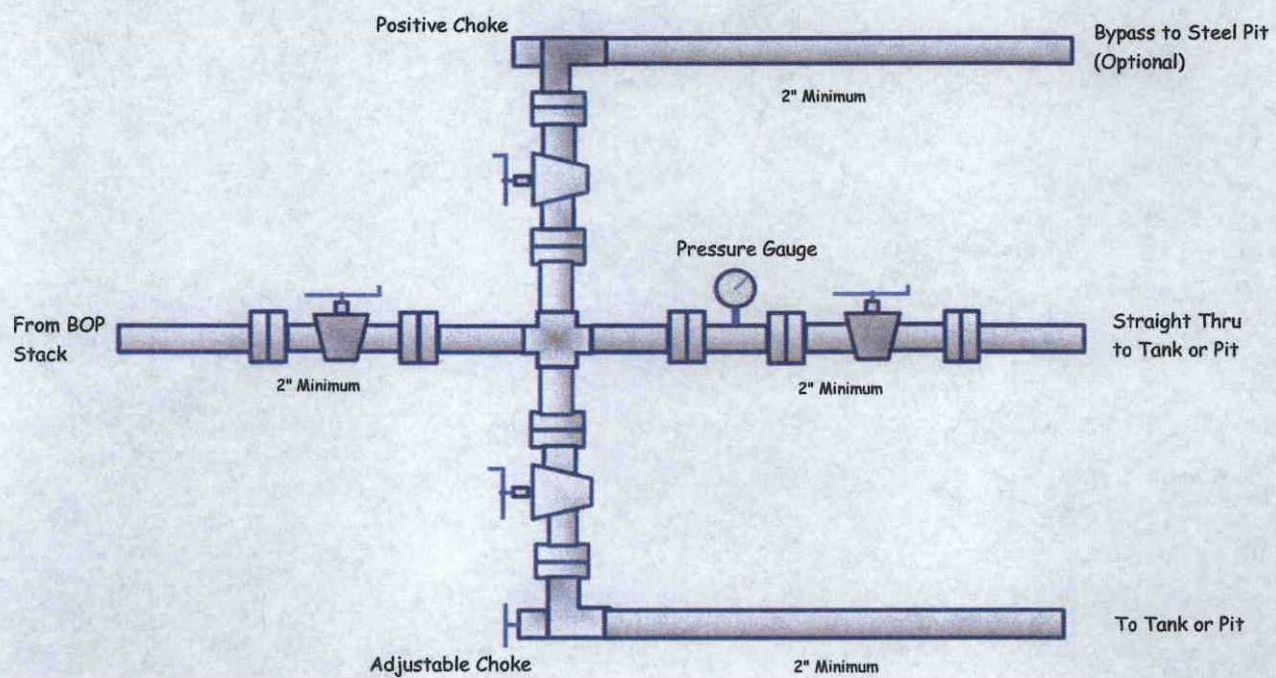
TVD (usft)	MD (usft)	Inc (°)	Azi (azimuth) (°)	N/S (usft)	E/W (usft)	Build (°/100usft)	V. Sec (usft)
5,496.6	8,500.0	91.60	270.00	720.0	-2,444.8	0.07	2,527.3
5,493.8	8,600.0	91.66	270.00	720.0	-2,544.8	0.07	2,626.1
5,490.8	8,700.0	91.73	270.00	720.0	-2,644.8	0.07	2,724.8
5,487.8	8,800.0	91.80	270.00	720.0	-2,744.7	0.07	2,823.5
5,484.6	8,900.0	91.86	270.00	720.0	-2,844.7	0.07	2,922.2
5,481.3	9,000.0	91.93	270.00	720.0	-2,944.6	0.07	3,021.0
5,477.8	9,100.0	92.00	270.00	720.0	-3,044.5	0.07	3,119.7
5,474.3	9,200.0	92.06	270.00	720.0	-3,144.5	0.07	3,218.4
5,470.6	9,300.0	92.13	270.00	720.0	-3,244.4	0.07	3,317.1
5,466.9	9,400.0	92.20	270.00	720.0	-3,344.3	0.07	3,415.8
5,463.0	9,500.0	92.26	270.00	720.0	-3,444.3	0.07	3,514.5
5,459.0	9,600.0	92.33	270.00	720.0	-3,544.2	0.07	3,613.2
5,454.8	9,700.0	92.40	270.00	720.0	-3,644.1	0.07	3,711.9
5,450.6	9,800.0	92.46	270.00	720.0	-3,744.0	0.07	3,810.5
5,446.2	9,900.0	92.53	270.00	720.0	-3,843.9	0.07	3,909.2
5,441.8	10,000.0	92.60	270.00	720.0	-3,943.8	0.07	4,007.9
5,437.2	10,100.0	92.66	270.00	720.0	-4,043.7	0.07	4,106.6
5,432.5	10,200.0	92.73	270.00	720.0	-4,143.6	0.07	4,205.2
5,427.7	10,300.0	92.80	270.00	720.0	-4,243.5	0.07	4,303.9
5,422.7	10,400.0	92.86	270.00	720.0	-4,343.4	0.07	4,402.5
5,417.7	10,500.0	92.93	270.00	720.0	-4,443.2	0.07	4,501.2
5,412.2	10,606.0	93.00	270.00	720.0	-4,549.1	0.07	4,605.7
4 1/2"							
5,412.2	10,606.8	93.00	270.00	720.0	-4,549.9	0.07	4,606.5

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
500.0	500.0	9 5/8"	9-5/8	12-1/4
6,200.0	5,529.9	7"	7	8-3/4
10,606.0	5,412.2	4 1/2"	4-1/2	6-1/4

Checked By: _____ Approved By: _____ Date: _____

2M Choke & Kill Manifold



Note: All connections are bolted flange
Working pressure for all equipment is
2,000 psi or greater

proposed project will be stored and protected until it is redistributed during reclamation. Topsoil will be stored within the construction zone separately from subsoil material. The topsoil will be free of brush, tree limbs, trunks, and roots. Vehicle/equipment traffic will not be allowed to cross topsoil stockpiles. The topsoil will be protected using wattles or other BMPs so that erosion is minimized. If topsoil is stored for a length of time such that nutrients are depleted, amendments will be added to the topsoil as advised by the Energen's environmental scientist or appropriate agent/contractor.

The well pad will be leveled with heavy equipment to provide space and a level surface for vehicles and equipment. Excavated materials from the cuts will be used to the fill portions of the location to level the proposed well pad. Approximately 5.2 feet of cut and 4.8 feet of fill will be needed to create a level well pad. No additional materials will be required for construction of the proposed well pad.

Within 90 days of installation, aboveground structures not subject to safety requirements will be painted according to stipulations as outlined in the BLM COAs to reduce visual resource impacts and blend with vegetation and characteristics of the surrounding landscape.

Construction plats are provided in the APD permit packages.

9. METHODS FOR HANDLING WASTE

- ✓ Drilling operations will utilize a closed-loop system. Drilling of the horizontal lateral will be done using a water based mud system. All water-based mud cuttings will be hauled to a commercial disposal facility. The drilling operations area will be enclosed by a containment berm and ditches, and the containment berm will be ramped to allow access to the solids control area. The contained operations area will drain gradually to one area of the pad which will be contoured for spill prevention and control.

Energen will follow New Mexico Oil Conservation Division Pit Rule and Onshore Order No. 1 and No. 7 regarding placement, operation, and closure of any reserve pits or closed-loop systems. No blow pit will be used.

All refuse will be placed in metal trash basket and will be hauled off site, as needed, and properly disposed in an approved landfill. Portable toilets will be provided and maintained as needed during construction, drilling and completion operations.

10. ANCILLARY FACILITIES

There are no ancillary facilities or TUAs associated with the proposed project.

11. WELL SITE LAYOUT

The interim reclamation/long-term disturbance layout is depicted in Appendix C and is described below.

The following areas (known as the "non-reseeded working areas") will remain unreclaimed throughout the lifetime of the proposed project. These areas will be regularly used for equipment or for vehicular access.

- Production facilities will be located within a facility area measuring approximately 105-by-250 foot (0.60 acre) on the northern end of the proposed well pad.
- The teardrop for the proposed well pad will include a looped, 20-foot-wide driving surface, totaling approximately 0.81 acre.

The following areas (known as the "reseeded working areas") will be reseeded and not recontoured during interim reclamation. These areas may be used for future activities within the proposed well pad, but will not be used for daily activities.

ENERGEN RESOURCES CORPORATION

FEDERAL F #687H

1100' FNL & 430' FEL

LOCATED IN THE NE/4 SEC. 13, T-24-N, R-10-W, N.M.P.M.
SAN JUAN COUNTY, NEW MEXICO

WELL FLAG LOCATED AT


36.318282° N


107.840710° W

NAD 83

DIRECTIONS

1. FROM THE INTERSECTION OF HWY 64 AND US-550 IN BLOOMFIELD NEW MEXICO, TRAVEL SOUTH ON HWY 550 28.2 MILES TO BLANCO TRADING POST.
2. TURN RIGHT (SOUTHWESTERLY) ONTO NM-57 FOR 3.1 MILES.
3. TURN LEFT (SOUTHERLY) ONTO DIRT ROAD THROUGH LOCKED GATE FOR 0.6 MILES
4. TURN LEFT (EASTERLY) FOR 0.1 MILE TO BEGINNING OF NEW ACCESS ON THE RIGHT (SOUTH) SIDE OF THE DIRT ROAD WHICH CONTINUES FOR 190' TO THE NEW LOCATION.

 1199 MAIN AVENUE SUITE 101 DURANGO, COLORADO 81301 (970)828-4732	ENERGEN RESOURCES CORPORATION FEDERAL F #687H, 1100' FNL & 430' FEL SEC 13, T 24N, R 10W, NMPM, SAN JUAN CO, NM GROUND ELEVATION: 6964.5' DESIGN ELEVATION: 6966.7'				SHEET 1 OF 1
	PROJ. NO. 3040914	DRAWN BY MJW	DATE 01/14/15	CHECKED BY GWR	



Typical BOP Schematic - 3M psi System

