State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

David Martin
Cabinet Secretary-Designate

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

Jami Bailey, 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: 5/20/14
Well information;
Operator ENERGEN, Well Name and Number Chacon Jicarilla 602H
API# 30-043-21234, Section 23, Township 23 (N)/S, Range 3 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
- o Hold C-104 for NSL, NSP, DHC
- o Spacing rule violation. Operator must follow up with change of status notification on other well to be shut in or abandoned
- o 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
- o 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
- o 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.

NMOCD Approved by Signature

7-10-14
Date

1220 South St. Francis Drive • Santa Fe, New Mexico 87505
Phone (505) 476-3460 • Fax (505) 476-3462 • www.emnrd.state.nm.us/ocd

Form 3160-3
(August 2007)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

RECEIVED
MAY 21 2014
Farmington Field Office
Bureau of Land Management

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

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.: Jicarilla Apache 183

1a. Type of Work: [X] DRILL [ ] REENTER

6. If Indian, Allotee or Tribe Name:

1b. Type of Well: [X] Oil Well [ ] Gas Well [ ] Other [X] Single Zone [ ] Multiple Zone

7. Unit or CA Agreement Name and No.:

2. Name of Operator: Energen Resources Corporation

8. Lease Name and Well No.: Chacon Jicarilla 602H

3a. Address: 2010 Afton Place, Farmington, New Mexico 87401

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

9. API Well No.: 30-043-21234

4. Location of Well *(Report location clearly and in accordance with any State equirements)**

At surface: M 861' FSL 802' FWL

OIL CONS. DIV DIST. 3

At proposed prod. zone: M 790' FSL 200' FWL

JUN 10 2014

BHL
SHL

10. Field and Pool, or Exploratory: Mancos

11. Sec., T., R., M., or Blk. and Survey or Area: Sec 22, T23N R3W
Sec 23 T23N, R03W, N.M.P.M.

14. Distance in miles and direction from nearest town or post office*: Approx. 8.25 miles S/SW of Lindrith, NM

12. County or Parish: Sandoval

13. State: NM

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drg. unit line, if any)	16. No. of Acres in lease	17. Spacing Unit dedicated to this well
200'	2240	S/2 S/2 Sec 22

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.	19. Proposed Depth	20. BLM/BIA Bond No. on file
36'	6540' TVD/11993' MD	

21. Elevations (Show whether DF, KDB, RT, GL, etc.	22. Approximate date work will start*	23. Estimated duration
7457' GL	11/15/2014	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.
2. A Drilling Plan.
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).
4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
5. Operator certification.
6. Such other site specific information and/or plans as may be required by the BLM

25. Signature	Name *(Printed/Typed)*	Date
Anna Stotts	Anna Stotts	05/20/14

Title: Regulatory Analyst

Approved by *(Signature)*	Name *(Printed/Typed)*	Date
/s/ Maurice Ward		6/6/14
Title: AFM	Office: 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)

NMOCD AV

DISTRICT I
1625 N. French Dr., Hobbs, N.M. 88240
Phone: (575) 393-6161 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) 334-6170

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

RECEIVED
JUN 06 2014
Bureau of Land Management

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
30-043-21234	39189	West Lindrith Gallup - Dakota Oil Pool

4 Property Code	5 Property Name	6 Well Number
313467	CHACON JICARILLA	602H
7 OGRID No.	**8 Operator Name**	**9 Elevation**
162928	ENERGEN RESOURCES CORPORATION	7457'

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
M	23	23N	3W	200	861'	SOUTH	802'	WEST	SANDOVAL

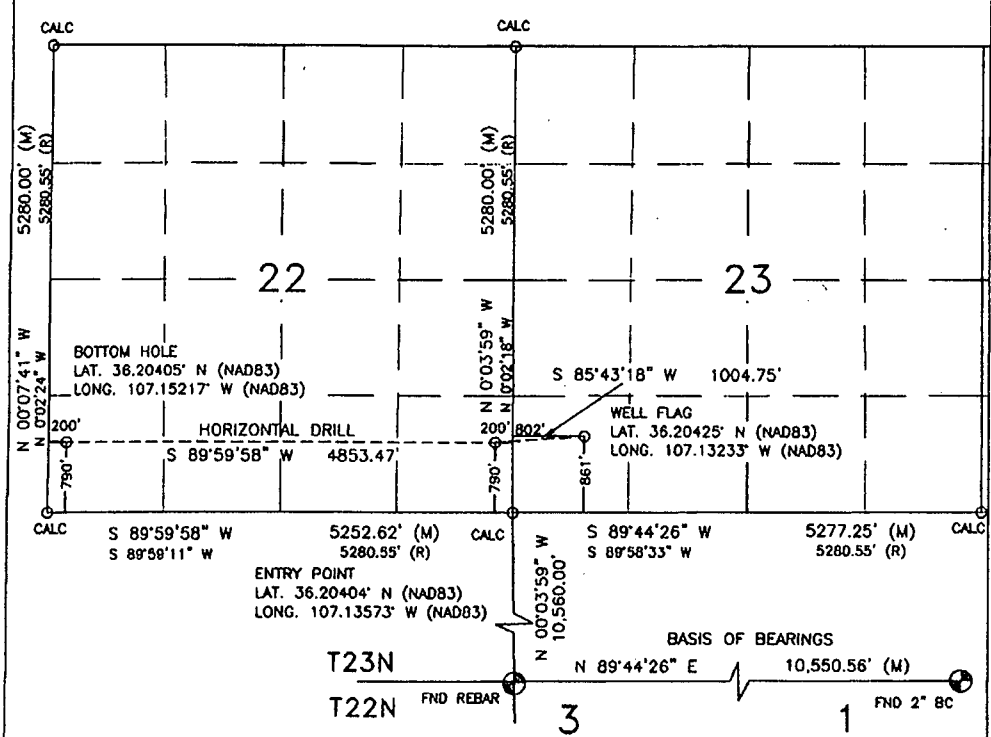
11 Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
M	22	23N	3W	200	790'	SOUTH	200'	WEST	SANDOVAL

12 Dedicated Acres	13 Joint or Infill	14 Consolidation Code	15 Order No.
S/2 - 320.00 Sec 22			

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 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.

Signature — Date: 6/6/14

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.

AUGUST 30, 2012
Date of Survey

Signature and Seal of Professional Surveyor:

DAVID R. RUSSELL
NEW MEXICO
10201
REGISTERED PROFESSIONAL LAND SURVEYOR

DAVID RUSSELL
Certificate Number 10201

ENERGEN
RESOURCES

Operator Certification

I hereby certify that I, or someone under my direct supervision, have inspected the drill site and access route proposed herein; that I am familiar with the conditions which currently exist; that I have full knowledge of state and Federal laws applicable to this operation; that the statements made in this APD package are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed in conformity with this APD package and the terms and conditions under which it is approved. I also certify that I, or the company I represent, am responsible for the operations conducted under this application. These statements are subject to the provisions of 18 U.S.C. 1001 for the filing of false statements.

Executed this 23 day of May, 2014
Name [signature]
Position Title Drilling Superintendent
Address 2010 Afton Place, Farmington, NM 87401
Telephone (505) 325-6800
Field Representative (if not above signatory) _____
Address (if different from above) _____
Telephone (if different from above) _____
E-mail (optional) _____

Drilling Plan
Energen Resources Corporation

Chacon Jicarilla #602H
Surface Location: 861 FSL, 802 FWL
Legal Description: Sec 23, T23N, R3W (36.20425° N, 107.13233° W – NAD83)
Bottom Hole Location: 790 FSL, 200 FWL
Legal Description: Sec 22, T23N, R3W (36.20405° N, 107.15217° W – NAD83)
Sandoval, NM

1. The elevation of the unprepared ground is 7,457 feet above sea level.
2. The geological name of the surface formation is the San Jose
3. A rotary rig will be used to drill the well to a Proposed Total Depth of 6,540' TVD/11,993' MD.
4. Estimated top of important geological markers:

Formation	Depth (TVD) (ft)	Depth (MD) (ft)
San Jose	Surface	Surface
Nacimiento	2,940	2,940
Ojo Alamo	2,720	2,720
Kirtland	2,800	2,800
Fruitland	2,870	2,870
Pictured Cliffs	3,120	3,120
Huerfanito Bentonite	3,450	3,450
Chacra	3,945	3,945
Cliff House	4,640	4,640
Menefee	4,685	4,685
Point Lookout	5,220	5,220
Mancos	5,530	5,530
Mancos/Niobrara "C"	6,460	6,711
Total Depth	**6,540**	**11,993**

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	2,870	Gas
Pictured Cliffs	3,120	Gas
Cliffhouse	4,640	Gas
Point Lookout	5,220	Gas
Mancos	5,530	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	13-3/8"	0-600	0-600	H-40	48.00	STC	1730	770	541
Intermediate	9-5/8"	0-5,600'	0-5,600'	L-80	43.50	LTC	6330	3810	1005
Tie-Back	7"	5,450-7,200'	5,450-6,540'	J-55	26.00	LTC	4980	4320	367
Production	4-1/2"	7,050'-11,990'	6,540'	P-110	11.60	LTC	10690	7560	279

7. Cementing Program:

a. 17-1/2" hole x 13-3/8" casing at 600' will have cement circulated to surface with 615 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. 12-1/4" hole x 9-5/8" casing at 5,600'. Cement will be circulated to surface and off a stage tool with 1230 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 230 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. CIRCULATE 4 HOURS BETWEEN STAGES ONCE PLUG IS LANDED ON FIRST STAGE. 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 FOR EACH STAGE. MULTI-STAGE COLLAR TO BE PLACED 50' INTO KIRTLAND FMN, OR APPROX 2,850'.

c. 8-3/4" hole x 7" casing at 7,200'. Cement will be circulated to top of liner overlap with 300 sks (50% 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 BOTTOM OF INTERMEDIATE CASING THEN 1 PER JOINT TO THE LINER HANGER. 10 BBLS OF WATER FOLLOWED BY 30 BBLS OF MUDFLUSH AHEAD OF CEMENT AS SPACER.

d. 6-1/4" hole x 4-1/2" liner at 11,990'. A fluid caliper will be run to determine base slurry cement to have TOC at 5,794'. Weighted Reactive Spacer to invert oil phase mud: 40 bbls Tuned Spacer with 0.20 gal/bbl Musol® A Solvent, 146.5 lb/bbl Barite, 0.20 gal/bbl SEM-7 Surfactant. Base slurry to consist of 375 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 7050' TO ACHIEVE 70% STAND OFF. PACKOFF SEAL ASSEMBLY TO BE USED FOR LINER TOP ISOLATION. ALL PERFORATED INTERVALS SHALL BE CONTAINED WITHIN THE 330' SETBACK REQUIREMENTS.

8. Pressure Control Equipment

a. Pressure control equipment will be used to meet 2,000 (2M) psi specifications.
b. BOPE working pressure of 3,000 psi.
c. Function test and visual inspection to be done at each casing size change prior to drill out.
d. BOP annular to be tested to 50 % minimum of working pressure.
e. Blind and Pipe Rams to be tested to 100 % working pressure.
f. BOP to be installed prior to Surface Casing drillout.
g. All BOP testing to conform with Onshore Order No. 2.
h. 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.
i. Kill line will be 2 in min and have two kill line valves, one being a check valve.
j. 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.
k. Float sub and TIW valve will be on the rig floor at all times.

9. Mud Program:

0' - 600'	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
600' – 7,200'	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
7,200' – 11,993'	Brine water/LSND with clay and shale 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. All leaks should be kept to less than 5 barrels. 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.

11. Bottom Hole Pressure expected to be 2,500 +/- psi
12. Bottom Hole Temperature expected to be 160 deg F.

Surface Use Plan

Energen Resources Corporation
Chacon Jicarilla #602H
Sec 23, T23N, R03W
861 fsl, 802 fwl
Sandoval County, NM

This plan is submitted as the partial requirements of an Application for Permit to Drill as outlined in Onshore Order 1 covering the above referenced well.

1. **Existing Roads**:
   A. A map depicting county roads and topography will be used showing access to the proposed location. All access roads will be labeled for points of reference. Any plans for improvement and/or maintenance of existing roads will be provided upon direction of the regulatory agency as identified during on-site meeting discussion. Roads will be maintained, if necessary, according to the 'BLM Gold Book Standards'.
   B. Directions: From the Int. of Hwy 537 and Hwy 550 turn left onto Hwy 537 and go 1.4 miles to J-22. Turn right on to J-22, and go 5.1 miles to "Y" int.. Bear left on J-22 and go 0.2 miles to "Y" int.. Bear left on to J-22, and go 0.2 mile to a "Y" int.. Bear left onto J-22, and go 1.4 miles to a "T" int.. Turn left on J-22, and go 0.6 mile. Turn left and go 0.5 miles to "Y" int.. Bear right and go 1.1 miles. Turn left and go 0.1 mile. Turn right and go 0.3 mile to existing well location.

2. **Proposed Access Road**:
   A. The proposed access re-route road for the subject well will begin on the North side of an existing wellpad. Approved and/or native material will be used in the construction of the road. Total length of new access is anticipated to be +/- 590' ft across Jicarilla Apache Nation surface.
   B. The access road will be maintained for adequate contour to permit proper draining.
   C. The surface, if needed, will be built up with approved and/or native fill

3. **Location of Existing Wells**:

The nearest wells are the Chacon Jicarilla D #13, Chacon Jicarilla #7, and the Chacon Jicarilla #9. A map indicating existing wells will be shown if within a 1 mile radius of the proposed location.

4. **Location of Proposed Production Facilities**:

A diagram depicting the planned location of production facilities will be provided for the subject well, Chacon Jicarilla #602H. Production facilities will be manufactured and transported off lease to the proposed wellpad, see attached diagram of 'Anticipated Wellsite Layout'. The anticipated flowline will travel the route of the planned access road for the delivery of natural gas. Expected length of this line is

approximately 590'. Produced oil and water will be stored and hauled to the appropriate facility. See attached Pipeline Route Plat.

5. **Water Supply for Drilling/Completion**:

Water source will be as follows:

A. Doyle Post Waterhole

6. **Construction Materials**:

All materials used will be from a native borrow source or as otherwise permitted by the regulatory agency and coordinated by Energen and construction contractor representatives.

7. **Methods of Handling Waste**:

✓ A. A closed loop system is anticipated to be used for the storage of drill fluids and drill cuttings.

B. Fluids and cuttings will be hauled off location once TD is reached and the drilling rig is released.

C. Flowback tanks will be used during the completion portion of the well with all fluids being hauled off location.

D. Current laws pertaining to the storage and disposal of human waste will be observed.

E. All other waste such as paper, plastic, and "junk" will be stored in a container on the wellsite and hauled to the nearest approved landfill area.

8. **Ancillary Facilities**: No other campsite, airstrip, or other facilities will be constructed for the drilling operations of the Chacon Jicarilla #602H.

9. **Wellsite Layout**:

A. The planned well pad size is 325' X 400'. A closed-loop system will be used.

B. A 425' X 500' area has been staked and flagged.

C. An accompanying NMOCD form C-102 along with wellpad layout, cut & fill diagrams, and surveyors maps have been included within the APD pkg for reference.

10. **Reclamation of Surface**:

A. Material will be removed by conventional methods and the topsoil stockpiled on the upper SE corner of the wellpad. Unused portions of the wellpad during production operations will be adequately reclaimed and monitored as outlined in the Interim Reclamation Plan and COA's. Remaining topsoil will be placed and/or stored within the confines of the interim reclamation area for final reclamation of surface. A portion of the topsoil will be used for material in the interim reclamation process and will be placed to reclaim to the original or near original contour.

B. When production operations cease, all equipment will be removed, the well plugged and abandoned, and all topsoil restored to natural contour of landscape.

C. Seed mix as outlined in the COA's will be placed during both interim and final reclamation

Energen Resources

Chacon Jicarilla
Mancos Shale
Chacon Jicarilla #602H
Plan #1

Plan: Copy of Preliminary Design

Preliminary Design

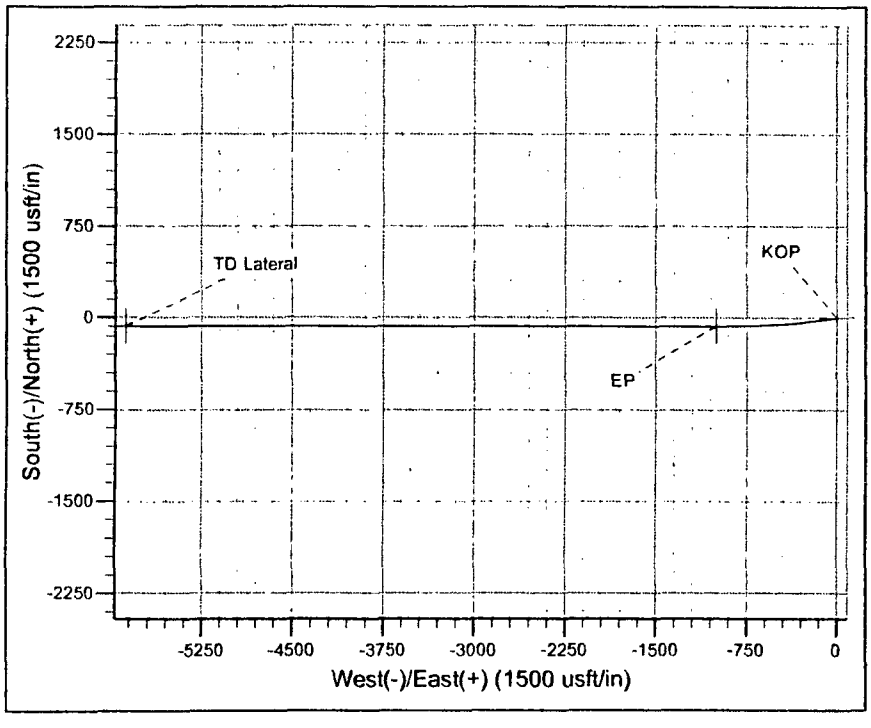
04 April, 2014

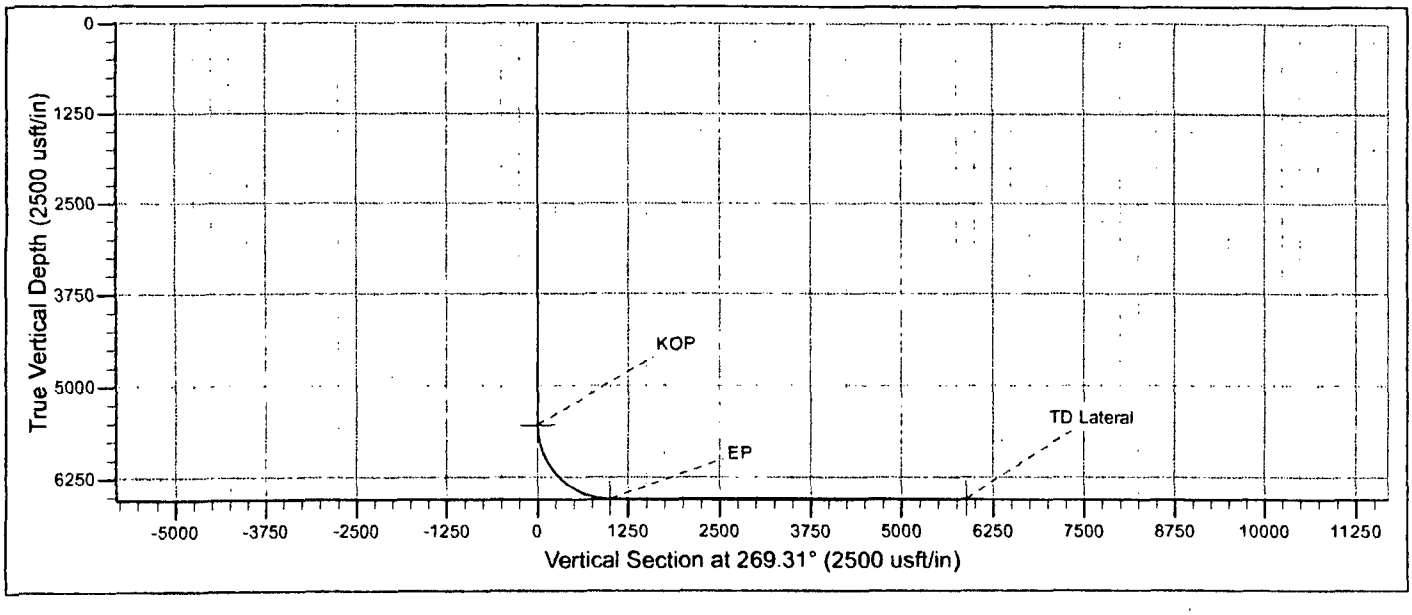
ENERGEN RESOURCES

Project:	Chacon Jicarilla
Site:	Mancos Shale
Well:	Chacon Jicarilla #602H
Wellbore:	Plan #1
Design:	Copy of Preliminary Design

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	5536.0	0.00	0.00	5536.0	0.0	0.0	0.00	0.00	0.0	KOP
3	6271.7	42.45	262.79	6206.2	-32.7	-258.2	5.77	262.79	258.6	
4	6283.1	42.45	262.79	6214.6	-33.6	-265.9	0.00	0.00	266.2	
5	7112.8	90.00	270.00	6540.0	-71.0	-1002.0	5.78	9.73	1002.8	EP
6	11992.8	90.00	270.00	6540.0	-71.0	-5882.0	0.00	0.00	5882.4	TD Lateral





Energen

Preliminary Design

Company:	Energen Resources	**Local Co-ordinate Reference:**	Site Mancos Shale
Project:	Chacon Jicarilla	**TVD Reference:**	WELL @ 0.0usft (Original Well Elev)
Site:	Mancos Shale	**MD Reference:**	WELL @ 0.0usft (Original Well Elev)
Well:	Chacon Jicarilla #602H	**North Reference:**	Grid
Wellbore:	Plan #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Copy of Preliminary Design	**Database:**	EDM 5000.1 Single User Db

Project Chacon Jicarilla

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

Site Mancos Shale

Site Position:		**Northing:**	1,894,796.89 usft	**Latitude:**	36° 12' 15.300 N
From:	Lat/Long	**Easting:**	1,380,110.42 usft	**Longitude:**	107° 7' 56.388 W
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16"	**Grid Convergence:**	-0.52 °

Well Chacon Jicarilla #602H

Well Position	**+N/-S**	0.0 usft	**Northing:**	1,894,796.89 usft	**Latitude:**	36° 12' 15.300 N
	+E/-W	0.0 usft	**Easting:**	1,380,110.42 usft	**Longitude:**	107° 7' 56.388 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	3/25/2014	9.21	63.08	50,332

Design Copy of 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	269.31	

Survey Tool Program **Date** 4/4/2014

From (usft)	**To (usft)**	**Survey (Wellbore)**	**Tool Name**	**Description**
0.0	11,992.8	Copy of 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
San Jose							
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
600.0	600.0	0.00	0.00	0.0	0.0	0.00	0.0
13 3/8"							
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

Company:	Energen Resources	**Local Co-ordinate Reference:**	Site Mancos Shale
Project:	Chacon Jicarilla	**TVD Reference:**	WELL @ 0.0usft (Original Well Elev)
Site:	Mancos Shale	**MD Reference:**	WELL @ 0.0usft (Original Well Elev)
Well:	Chacon Jicarilla #602H	**North Reference:**	Grid
Wellbore:	Plan #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Copy of 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)
1,000.0	1,000.0	0.00	0.00	0.0	0.0	0.00	0.0
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
2,720.0	2,720.0	0.00	0.00	0.0	0.0	0.00	0.0
Ojo Alamo							
2,800.0	2,800.0	0.00	0.00	0.0	0.0	0.00	0.0
Kirtland							
2,870.0	2,870.0	0.00	0.00	0.0	0.0	0.00	0.0
Fruitland							
2,900.0	2,900.0	0.00	0.00	0.0	0.0	0.00	0.0
2,940.0	2,940.0	0.00	0.00	0.0	0.0	0.00	0.0
Nacimiento							
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
3,120.0	3,120.0	0.00	0.00	0.0	0.0	0.00	0.0
Pictured Cliffs							
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
3,450.0	3,450.0	0.00	0.00	0.0	0.0	0.00	0.0
Huerfanito Bentonite							
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
3,945.0	3,945.0	0.00	0.00	0.0	0.0	0.00	0.0
Chacra							
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

Energen

Preliminary Design

Company:	Energen Resources	**Local Co-ordinate Reference:**	Site Mancos Shale
Project:	Chacon Jicarilla	**TVD Reference:**	WELL @ 0.0usft (Original Well Elev)
Site:	Mancos Shale	**MD Reference:**	WELL @ 0.0usft (Original Well Elev)
Well:	Chacon Jicarilla #602H	**North Reference:**	Grid
Wellbore:	Plan #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Copy of 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)
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
4,500.0	4,500.0	0.00	0.00	0.0	0.0	0.00	0.0
4,600.0	4,600.0	0.00	0.00	0.0	0.0	0.00	0.0
4,640.0	4,640.0	0.00	0.00	0.0	0.0	0.00	0.0
Cliff House							
4,685.0	4,685.0	0.00	0.00	0.0	0.0	0.00	0.0
Menefee							
4,700.0	4,700.0	0.00	0.00	0.0	0.0	0.00	0.0
4,800.0	4,800.0	0.00	0.00	0.0	0.0	0.00	0.0
4,900.0	4,900.0	0.00	0.00	0.0	0.0	0.00	0.0
5,000.0	5,000.0	0.00	0.00	0.0	0.0	0.00	0.0
5,100.0	5,100.0	0.00	0.00	0.0	0.0	0.00	0.0
5,200.0	5,200.0	0.00	0.00	0.0	0.0	0.00	0.0
5,220.0	5,220.0	0.00	0.00	0.0	0.0	0.00	0.0
Point Lookout							
5,300.0	5,300.0	0.00	0.00	0.0	0.0	0.00	0.0
5,400.0	5,400.0	0.00	0.00	0.0	0.0	0.00	0.0
5,500.0	5,500.0	0.00	0.00	0.0	0.0	0.00	0.0
5,530.0	5,530.0	0.00	0.00	0.0	0.0	0.00	0.0
Mancos							
5,536.0	5,536.0	0.00	0.00	0.0	0.0	0.00	0.0
KOP							
5,550.0	5,550.0	0.81	262.79	0.0	-0.1	5.77	0.1
5,600.0	5,600.0	3.69	262.79	-0.3	-2.0	5.76	2.1
9 5/8"							
5,649.7	5,650.0	6.58	262.79	-0.8	-6.5	5.77	6.5
5,699.3	5,700.0	9.46	262.79	-1.7	-13.4	5.77	13.4
5,748.3	5,750.0	12.35	262.79	-2.9	-22.8	5.77	22.8
5,796.9	5,800.0	15.23	262.79	-4.4	-34.6	5.77	34.7
5,844.8	5,850.0	18.12	262.79	-6.2	-48.8	5.77	48.9
5,891.9	5,900.0	21.00	262.79	-8.3	-65.4	5.77	65.5
5,938.1	5,950.0	23.89	262.79	-10.7	-84.4	5.77	84.5
5,983.3	6,000.0	26.77	262.79	-13.4	-105.6	5.77	105.8
6,027.4	6,050.0	29.66	262.79	-16.3	-129.0	5.77	129.2
6,070.2	6,100.0	32.54	262.79	-19.6	-154.7	5.77	154.9
6,111.6	6,150.0	35.43	262.79	-23.1	-182.4	5.77	182.7
6,151.6	6,200.0	38.31	262.79	-26.8	-212.1	5.77	212.5
6,190.1	6,250.0	41.19	262.79	-30.9	-243.9	5.77	244.2
6,206.2	6,271.7	42.45	262.79	-32.7	-258.2	5.77	258.6
6,214.6	6,283.1	42.45	262.79	-33.6	-265.9	0.00	266.2
6,227.0	6,300.0	43.41	263.03	-35.1	-277.3	5.70	277.7
6,262.5	6,350.0	46.26	263.69	-39.1	-312.3	5.70	312.7
6,296.1	6,400.0	49.12	264.30	-43.0	-349.1	5.71	349.6

Energen

Preliminary Design

Company:	Energen Resources	**Local Co-ordinate Reference:**	Site Mancos Shale
Project:	Chacon Jicarilla	**TVD Reference:**	WELL @ 0.0usft (Original Well Elev)
Site:	Mancos Shale	**MD Reference:**	WELL @ 0.0usft (Original Well Elev)
Well:	Chacon Jicarilla #602H	**North Reference:**	Grid
Wellbore:	Plan #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Copy of 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)
6,327.9	6,450.0	51.98	284.85	-46.6	-387.5	5.72	388.0
6,357.7	6,500.0	54.84	265.36	-50.1	-427.5	5.72	428.1
6,385.5	6,550.0	57.70	265.84	-53.3	-468.9	5.73	469.5
6,411.1	6,600.0	60.57	266.29	-56.2	-511.8	5.73	512.4
6,434.6	6,650.0	63.43	266.71	-58.9	-555.8	5.73	556.5
6,455.8	6,700.0	66.30	267.11	-61.3	-601.0	5.73	601.7
6,460.0	6,710.6	66.90	267.19	-61.8	-610.7	5.74	611.4
Mancos/Niobrara "C"							
6,474.8	6,750.0	69.17	267.50	-63.5	-647.2	5.74	647.9
6,491.4	6,800.0	72.04	267.87	-65.4	-694.3	5.74	695.1
6,505.6	6,850.0	74.91	268.23	-67.0	-742.2	5.74	743.0
6,517.4	6,900.0	77.78	268.57	-68.4	-790.8	5.74	791.6
6,526.7	6,950.0	80.65	268.92	-69.5	-839.9	5.74	840.7
6,533.6	7,000.0	83.52	269.25	-70.3	-889.4	5.74	890.2
6,538.0	7,050.0	86.39	269.59	-70.8	-939.2	5.74	940.0
6,539.9	7,100.0	89.26	269.92	-71.0	-989.2	5.74	990.0
6,540.0	7,112.8	90.00	270.00	-71.0	-1,002.0	5.74	1,002.8
Mancos/Niobrara "C" LP - EP							
6,540.0	7,200.0	90.00	270.00	-71.0	-1,089.2	0.00	1,089.9
7"							
6,540.0	7,300.0	90.00	270.00	-71.0	-1,189.2	0.00	1,189.9
6,540.0	7,400.0	90.00	270.00	-71.0	-1,289.2	0.00	1,289.9
6,540.0	7,500.0	90.00	270.00	-71.0	-1,389.2	0.00	1,389.9
6,540.0	7,600.0	90.00	270.00	-71.0	-1,489.2	0.00	1,489.9
6,540.0	7,700.0	90.00	270.00	-71.0	-1,589.2	0.00	1,589.9
6,540.0	7,800.0	90.00	270.00	-71.0	-1,689.2	0.00	1,689.9
6,540.0	7,900.0	90.00	270.00	-71.0	-1,789.2	0.00	1,789.9
6,540.0	8,000.0	90.00	270.00	-71.0	-1,889.2	0.00	1,889.9
6,540.0	8,100.0	90.00	270.00	-71.0	-1,989.2	0.00	1,989.9
6,540.0	8,200.0	90.00	270.00	-71.0	-2,089.2	0.00	2,089.9
6,540.0	8,300.0	90.00	270.00	-71.0	-2,189.2	0.00	2,189.9
6,540.0	8,400.0	90.00	270.00	-71.0	-2,289.2	0.00	2,289.9
6,540.0	8,500.0	90.00	270.00	-71.0	-2,389.2	0.00	2,389.9
6,540.0	8,600.0	90.00	270.00	-71.0	-2,489.2	0.00	2,489.8
6,540.0	8,700.0	90.00	270.00	-71.0	-2,589.2	0.00	2,589.8
6,540.0	8,800.0	90.00	270.00	-71.0	-2,689.2	0.00	2,689.8
6,540.0	8,900.0	90.00	270.00	-71.0	-2,789.2	0.00	2,789.8
6,540.0	9,000.0	90.00	270.00	-71.0	-2,889.2	0.00	2,889.8
6,540.0	9,100.0	90.00	270.00	-71.0	-2,989.2	0.00	2,989.8
6,540.0	9,200.0	90.00	270.00	-71.0	-3,089.2	0.00	3,089.8
6,540.0	9,300.0	90.00	270.00	-71.0	-3,189.2	0.00	3,189.8
6,540.0	9,400.0	90.00	270.00	-71.0	-3,289.2	0.00	3,289.8
6,540.0	9,500.0	90.00	270.00	-71.0	-3,389.2	0.00	3,389.8
6,540.0	9,600.0	90.00	270.00	-71.0	-3,489.2	0.00	3,489.8
6,540.0	9,700.0	90.00	270.00	-71.0	-3,589.2	0.00	3,589.8

Energen

Preliminary Design

Company:	Energen Resources	**Local Co-ordinate Reference:**	Site Mancos Shale
Project:	Chacon Jicarilla	**TVD Reference:**	WELL @ 0.0usft (Original Well Elev)
Site:	Mancos Shale	**MD Reference:**	WELL @ 0.0usft (Original Well Elev)
Well:	Chacon Jicarilla #602H	**North Reference:**	Grid
Wellbore:	Plan #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Copy of Preliminary Design	**Database:**	EDM 5000.1 Single User Db

Planned Survey

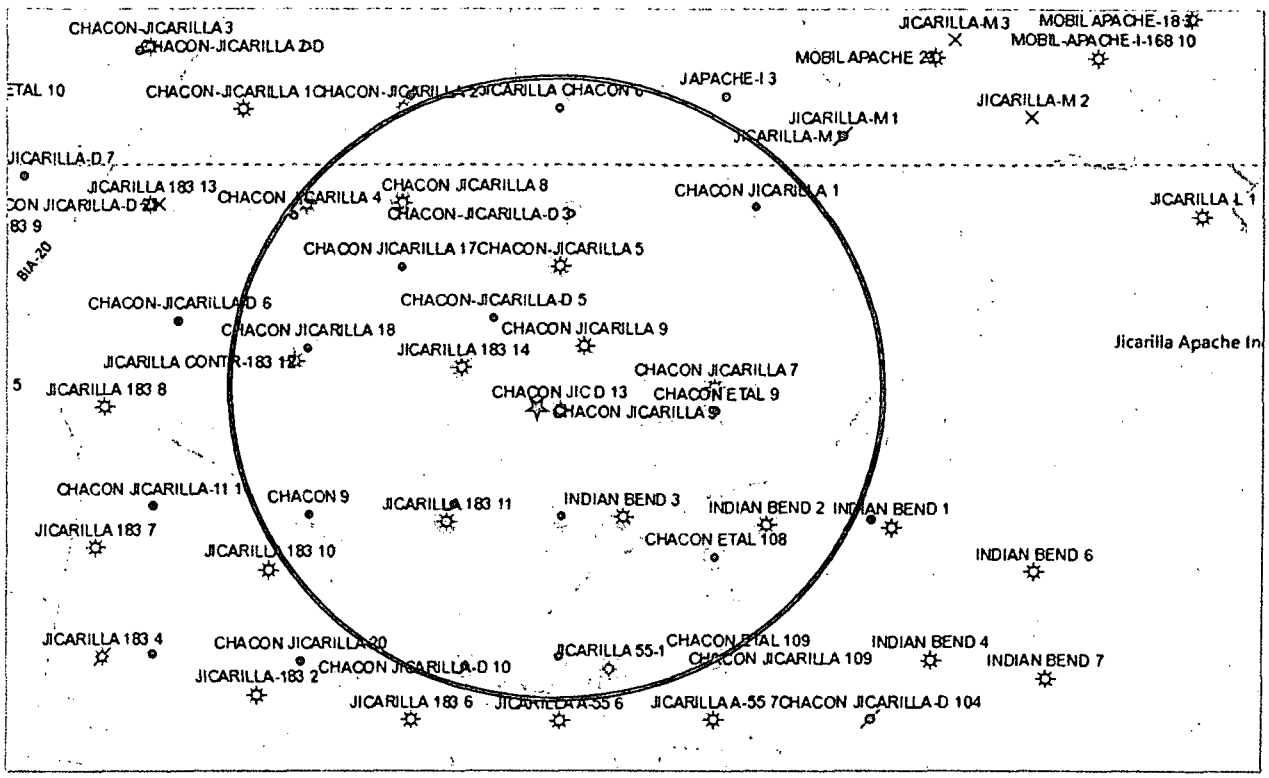
TVD (usft)	MD (usft)	Inc (°)	Azi (azimuth) (°)	N/S (usft)	E/W (usft)	Build (°/100usft)	V. Sec (usft)
6,540.0	9,800.0	90.00	270.00	-71.0	-3,689.2	0.00	3,689.8
6,540.0	9,900.0	90.00	270.00	-71.0	-3,789.2	0.00	3,789.8
6,540.0	10,000.0	90.00	270.00	-71.0	-3,889.2	0.00	3,889.7
6,540.0	10,100.0	90.00	270.00	-71.0	-3,989.2	0.00	3,989.7
6,540.0	10,200.0	90.00	270.00	-71.0	-4,089.2	0.00	4,089.7
6,540.0	10,300.0	90.00	270.00	-71.0	-4,189.2	0.00	4,189.7
6,540.0	10,400.0	90.00	270.00	-71.0	-4,289.2	0.00	4,289.7
6,540.0	10,500.0	90.00	270.00	-71.0	-4,389.2	0.00	4,389.7
6,540.0	10,600.0	90.00	270.00	-71.0	-4,489.2	0.00	4,489.7
6,540.0	10,700.0	90.00	270.00	-71.0	-4,589.2	0.00	4,589.7
6,540.0	10,800.0	90.00	270.00	-71.0	-4,689.2	0.00	4,689.7
6,540.0	10,900.0	90.00	270.00	-71.0	-4,789.2	0.00	4,789.7
6,540.0	11,000.0	90.00	270.00	-71.0	-4,889.2	0.00	4,889.7
6,540.0	11,100.0	90.00	270.00	-71.0	-4,989.2	0.00	4,989.7
6,540.0	11,200.0	90.00	270.00	-71.0	-5,089.2	0.00	5,089.7
6,540.0	11,300.0	90.00	270.00	-71.0	-5,189.2	0.00	5,189.6
6,540.0	11,400.0	90.00	270.00	-71.0	-5,289.2	0.00	5,289.6
6,540.0	11,500.0	90.00	270.00	-71.0	-5,389.2	0.00	5,389.6
6,540.0	11,600.0	90.00	270.00	-71.0	-5,489.2	0.00	5,489.6
6,540.0	11,700.0	90.00	270.00	-71.0	-5,589.2	0.00	5,589.6
6,540.0	11,800.0	90.00	270.00	-71.0	-5,689.2	0.00	5,689.6
6,540.0	11,900.0	90.00	270.00	-71.0	-5,789.2	0.00	5,789.6
6,540.0	11,990.0	90.00	270.00	-71.0	-5,879.2	0.00	5,879.6
4 1/2"							
6,540.0	11,992.8	90.00	270.00	-71.0	-5,882.0	0.00	5,882.4
TD Lateral							

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
600.0	600.0	13 3/8"	13-3/8	17-1/2
5,600.0	5,600.0	9 5/8"	9-5/8	12-1/4
7,200.0	6,540.0	7"	7	7-1/2
11,990.0	6,540.0	4 1/2"	4-1/2	6-1/4

One Mile Radius

Energen Resources Corporation
Chacon Jicarilla #602H
Sec 23, T23N, R03W
861 fsl, 802 fwl
Sandoval County, NM



Proposed well