

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: 4/7/14

Well information;

Operator Enervest, Well Name and Number Jicarilla Apache Tribal #18

API# 30-039-31229, Section 26, Township 25 (N)S, Range 4 (W)E

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
- ☐ 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.

Charles L. L...  
NMOCD Approved by Signature

6-13-2014  
Date

UNITED STATES

RECEIVED

FORM APPROVED  
OMB NO. 1004-0137  
Expires: October 31, 2014

DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT  
APR 14 2014  
APPLICATION FOR PERMIT TO DRILL OR REENTER

Fortmon Field Office

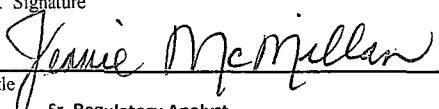
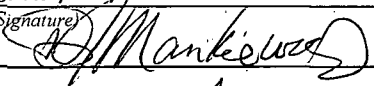
Bureau of Land Management

1a. Type of Work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		5. Lease Serial No. <b>Jicarilla Contract 125</b>
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 <b>Jicarilla Apache Tribe</b>
2. Name of Operator <b>EnerVest Operating, L.L.C.</b>		7. If Unit or CA Agreement, Name and No.
3a. Address <b>1001 Fannin St. Suite 800, Houston, Tx 77034</b>		8. Lease Name and Well No. <b>Jicarilla Apache Tribal 125 #18</b>
3b. Phone No. (include area code) <b>713-790-1847</b>		9. API Well No. <b>30-039- 31229</b>
4. Location of well (Report location clearly and in accordance with any State requirements. *) At surface <b>895' FSL &amp; 1874' FEL (UL O) Sec. 26, T25N, R04W</b> At proposed prod. zone <b>SESE UL P, 670' FSL, 1100' FEL Sec. 26, T25N, R04W</b>		10. Field and Pool, or Exploratory <b>Lindreth Gallup-Dakota, West</b>
14. Distance in miles and direction from the nearest town or post office* <b>9 miles NE from Lindreth, NM</b>		11. Sec., T., R., M., or Blk. And Survey or Area <b>Sec. 26 T25N R04W</b>
15. Distance from proposed* location to nearest property or lease line, ft. <b>895' SHL</b> (Also to nearest drlg. unit line, if any) <b>670' BHL</b>	16. No. of acres in lease <b>2560</b>	12. County or Parish <b>Rio Arriba</b>
17. Spacing Unit dedicated to this well <b>SE/4 - 160 acres</b>	18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. <b>879'</b>	13. State <b>NM</b>
19. Proposed Depth <b>7974'</b>	20. BLM/ BIA Bond No. on file <b>RLB30007886</b>	
21. Elevations (Show whether DF, RT, GR, etc.) <b>7116' GL</b>	22. Approximate date work will start* <b>7/15/2014</b>	23. Estimated duration <b>5 weeks</b>

24. Attachments

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

- |   |  |
|---|--|
| 1. Well plat certified by a registered surveyor.  | 4. Bond to cover the operations unless covered by 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 SUPD shall be filed with the appropriate Forest Service Office). | 6. Such other site specific information and/ or plans as may be required by the the BLM      |

25. Signature 	Name (Printed/ Typed) <b>Jeanie McMillan</b>	Date <b>4/7/2014</b>
Title <b>Sr. Regulatory Analyst</b>		
Approved By (Signature) 	Name (Printed/ Typed)	Date <b>6/12/14</b>
Title <b>AFM</b>	Office <b>FFO</b>	

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.

\*(Instructions on page 2)

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

**BLM'S APPROVAL OR ACCEPTANCE OF THIS  
APPLICATION 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**

NMOCDV

District I  
1625 N. French Dr., Hobbs, NM 88240  
Phone: (575) 393-6161 Fax: (575) 393-0720  
District II  
811 S. First St., Artesia, NM 88210  
Phone: (575) 748-1283 Fax: (575) 748-9720  
District III  
1000 Rio Brazos Road, Aztec, NM 87410  
Phone: (505) 334-6178 Fax: (505) 334-6170  
District IV  
1220 S. St. Francis Dr., Santa Fe, NM 87505  
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico  
Energy, Minerals & Natural Resources  
Department  
OIL CONSERVATION DIVISION

Form C-102  
Revised August 1, 2011  
Submit one copy to appropriate  
District Office

1220 South St. Francis  
Santa Fe, NM 87505

AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

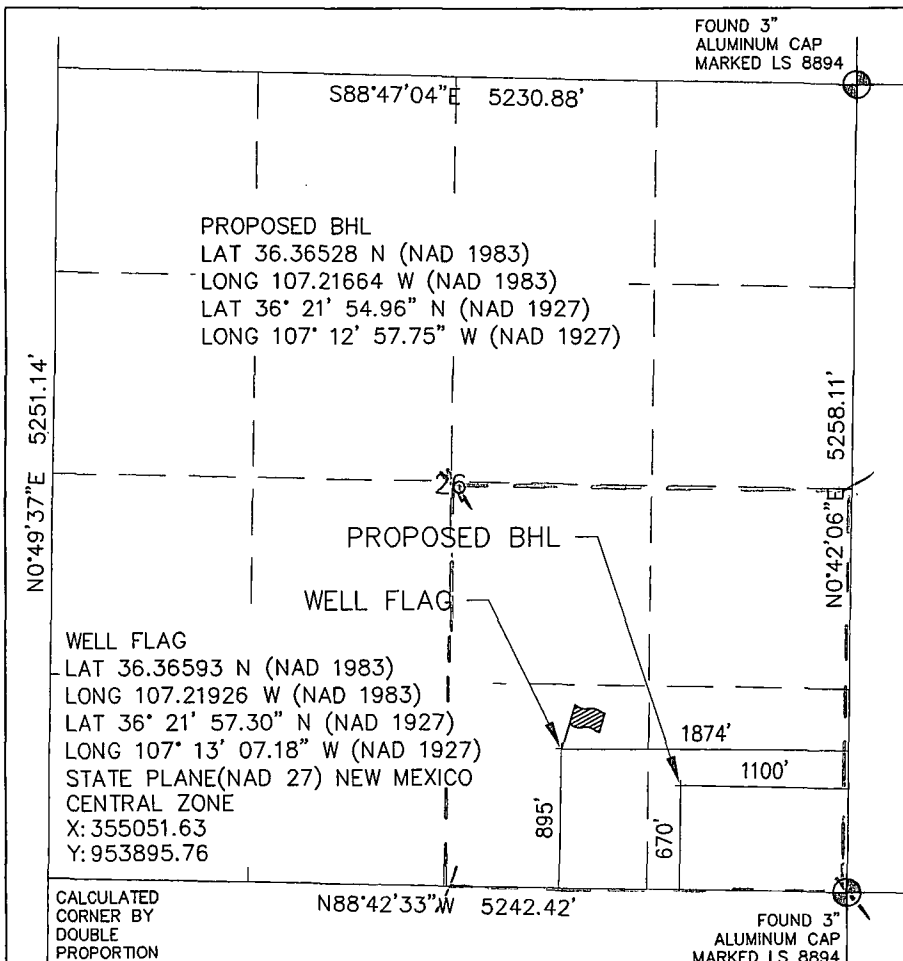
<sup>1</sup> API Number 30-039-31229	<sup>2</sup> Pool Code 39189	<sup>3</sup> Pool Name West Lindrith Gallup - Dakota
<sup>4</sup> Property Code 301277	<sup>5</sup> Property Name JICARILLA APACHE TRIBAL 125	<sup>6</sup> Well Number #18
<sup>7</sup> OGRID No. 143199	<sup>8</sup> Operator Name ENERVEST OPERATING, LLC	<sup>9</sup> Elevation 7116'

<sup>10</sup> Surface Location									
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
0	26	25	4		895'	SOUTH	1874'	EAST	RIO ARRIBA

<sup>11</sup> Bottom Hole Location If Different From Surface									
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
P	26	25	4		670'	SOUTH	1100'	EAST	RIO ARRIBA

<sup>12</sup> Dedicated Acres SE 1/4 - 160 ACRES	<sup>13</sup> Joint of Infill	<sup>14</sup> Consolidation Code	<sup>15</sup> 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.



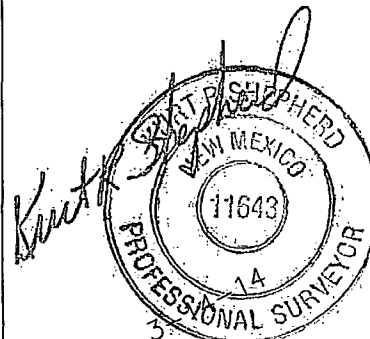
NOTE: BHL FOOTAGES ARE APPROXIMATE  
AND PROVIDED BY ENERVEST

<sup>17</sup>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.

*Kearie McMillan*  
Signature  
Date  
Kearie McMillan  
Printed Name  
imcmillan@enervest.net  
E-mail Address

<sup>18</sup>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.

Survey Date: JANUARY 6, 2014  
Signature and Seal of Professional Surveyor



Certificate Number 11643

## **EnerVest Operating, LLC**

### **Jicarilla Apache Tribal 125 # 18**

Surface: 895' FSL, 1874' FEL Unit O, Sec. 26, T25N R04W

Lat: 36.36593, Long: 107.21926 NAD 83

Bottom Hole: 670' FSL, 1100' FEL Unit O, Sec 26, T25N, R04W

Lat: 36.36528, Long: 107.21664 NAD 83

Rio Arriba County, NM

GL Elev: 7116'

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### **Drilling Plan**

All Lease and /or unit operations will be conducted in such a manner that full compliance is made with applicable laws, regulations, BLM Onshore orders and NMOCD rules. The operator is fully responsible for the actions of its subcontractors. A copy of the APD and Conditions of Approval will be available to the field representatives to ensure compliance.

#### **4.1, 4.2 ESTIMATED (TVD) FORMATION TOPS (KB) and NOTABLE ZONES:**

The following are estimates of formation and proposed casing depths.

<u>Formation Name</u>	<u>Depth (TVD)</u>	<u>Rock Type</u>	<u>Comments</u>
San Jose	Surface	Sandstone	
Ojo Alamo	2734'	Sandstone	Possible Gas, Water
Kirtland	3115'	Shale	
Fruitland	3288'	Coal, Shale, Sandstone	Possible Lost Circ, Gas, Water
Pictured Cliffs	3405'	Sandstone	Possible Lost Circ, Gas, water
Lewis	3482'	Shale	Sloughing Shale
Chacra	4369'	Sandstone	Possible Gas, Water
Mesa Verde (Cliffhouse)	5131'	Sandstone	Possible Lost Circ, Gas, Water
Mesa Verde (Menefee)	5190''	Coal, Sandstone, Shale	Possible Lost Circ, Gas, Water
Mesa Verde (Point Lookout)	5663'	Sandstone	Possible Lost Circ, Gas, Water
Mancos	5774'	Shale	Sloughing Shale
Gallup	6763'	Sandstone	Gas, Oil
Greenhorn	7560'	Limestone	Gas, Oil
Graneros	7617'	Shale	Gas, Oil, Water
Dakota	7642'	Sandstone	Gas, Oil, Water
Proposed Total Depth	7974'		

Fresh water zones will be adequately protected by setting and cementing the surface casing. All zones containing commercial quantities of oil or gas will be cased and cemented.

This well is to be drilled as a directionally drilled "S-shaped" well. The well is to be drilled vertically from surface to a kick off point at +/- 600'. The well will be directionally drilled at a 107degree azimuth to a point approx 807' east and south of the surface location. At an estimated MD of +/- 6000' the well will be drilled vertically from that point to the estimated TD.

**EnerVest Operating, LLC**

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Rio Arriba County, NM

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**4.3 PRESSURE CONTROL:**

Maximum expected pressure is ~1754 (.22 pressure gradient) psi. The drilling contract has not yet been awarded, thus the exact BOP and Choke Manifold model to be used is not yet known. A typical 11" 2000 psi model is pictured in Exhibits A & B.

A remote accumulator will be used, the pressures, capacities location of the remote and manual controls will be identified at the time of the BLM supervised BOP test.

BOP equipment, accumulator, choke manifold and all accessories will meet or exceed BLM requirements as listed in Onshore Order #2 for the 2M systems. The pressure control equipment considerations include but will not be limited to:

1. BOP will be a double gate ram preventer with a set of blind rams and a set of properly-sized pipe rams.
2. Accumulator will have sufficient capacity to close the BOP rams and retain 200 psi above pre charge.
3. Accumulator fluid volume is to be maintained at manufacturer's recommendations.
4. BOP will also have manual closing handles available.
5. 2" minimum kill line and kill line valves (2).
6. Choke manifold (2" lines) with 2 adjustable chokes with valves and gauge.
7. Manually operated Kelly cocks available.
8. Safety valve and sub(s) with adequate opening for all drill strings used.
9. Fill line and flow line above the upper-most BOP rams.

BOPs will be pressure tested; after initial installation, before drilling out from under all set and cemented casing strings and any time a seal is broken. The BOPs will also be pressure tested a minimum of once every 21 days by a 3<sup>rd</sup> party. Additionally, the BOPs will be operationally checked every 24 hours.

All tests and pressure tests will be recorded on IADC log.

Ram type preventers, choke manifold and related pressure control equipment will be pressure tested to the rated working pressure of 2000 psi (high) and 250 psi (low).

The casing strings will be pressure tested per BLM Onshore Order #2 for 30 min as follows:

- a. Surface casing tested to 600 psi prior to drilling out the shoe.
- b. Production casing will be tested to 6000 psi at the commencement of completion operations.

## EnerVest Operating, LLC

### Jicarilla Apache Tribal 125 # 18

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Rio Arriba County, NM

GL Elev: 7116'

#### 4.4 PROPOSED CASING PROGRAM :

Hole/Casing Description	Hole Size	Casing OD	Weight lb/ft	Grade	Age	Connection	Top	Bottom
Surface	12 1/4"	8 5/8"	24	J-55	New	ST&C	0	500'
Prod Csg - MD TVD	7 7/8"	4 1/2"	11.6	N-80	New	LT&C	0 0	8038' 7974'

**Surface casing is to be cemented to surface. The production casing is to be cemented in 3 stages covering all zones of production potential and the 3<sup>rd</sup> stage is intended to circulate cement to surface.**

#### 4.5 CASING CEMENT:

A prototypical cementing program is listed as follows, site-specific cement designs will be produced for each well as the hole conditions warrant. The cement program will be designed to meet the BLM Onshore Order #2 and NMOCD requirements.

**Surface casing** will be cemented to the surface.

Cement and properties; Mix and pump 297 sacks (413 cu ft) Type III cement (or equivalent) cement. Slurry density is to be 14.6 (yield = 1.39 cu ft/sx). Volume will include 100% excess. Cement is to be displaced using a top plug.

Two centralizers will be run on the shoe joint, one centralizer each on the next two joints and then one centralizer on every third joint thereafter.

The surface casing will be pressure tested to 600 psi prior to drilling out the shoe.

**Production casing** will be cemented in 3 stages covering all zones of production potential and the 3<sup>rd</sup> stage is intended to circulate cement to surface. Volumes based on 45%-50% OH excess over gauge volume.

**EnerVest Operating, LLC**

**Jicarilla Apache Tribal 125 # 18**

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Rio Arriba County, NM

GL Elev: 7116'

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Stage 1 cement; mix and pump 526 sacks (1058 cu ft) premium lite high strength cement with CaCl<sub>2</sub>, cellophane, gilsonite and fluid loss agent. Slurry density is to be 12.5 (yield = 2.01 cu ft/sx).

DV tool at +/- 4847 ft. MD

Stage 2 Lead cement; mix and pump 282 sacks (600 cu ft) premium lite slurry with CaCl<sub>2</sub>, cello flake and gilsonite. Estimated slurry density is to be 12.1 (yield = 2.13 cu ft/sx).

Stage 2 Tail cement; mix and pump 50 sacks (69 cu ft) Type III cement (or equivalent) cement. Slurry density is to be 14.6 (yield = 1.39 cu ft/sx) or equivalent cement.

DV tool at +/- 2888 ft. MD

Stage 3 Lead cement; mix and pump 409 sacks (870 cu ft) premium lite slurry with CaCl<sub>2</sub>, cello flake and gilsonite. Estimated slurry density is to be 12.1 (yield = 2.13 cu ft/sx).

Stage 3 Tail cement; mix and pump 50 sacks (69 cu ft) Type III cement (or equivalent) cement. Slurry density is to be 14.6 (yield = 1.39 cu ft/sx) or equivalent cement.

Two centralizers will be run on the shoe joint, one centralizer on every third joint into the surface casing.

**The production casing will be pressure tested for 30 minutes at the commencement of completion operations as outlined above**

Where cement has not been circulated to surface (or to planned depth) a CBL or temperature survey will be run to determine the TOC for that casing string. A CBL log will be run in the production casing prior to the commencement of completion operations.

Cement specifications may vary slightly due to cement type and cement contractor availability.

## **EnerVest Operating, LLC**

### **Jicarilla Apache Tribal 125 # 18**

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Lat: 36.36528, Long: 107.21664 NAD 83

Rio Arriba County, NM

GL Elev: 7116'

#### 4.6 MUD PROGRAM

Depth	Type	Wt / pp	Visc	Fluid Loss
0-500'	FW gel/Lime Spud Mud	8.4-9.0	30-40	N/C
500'-8038'	LSND/Gel sweeps, LCM as needed	8.7-9.0	20-32	4-6 cc

✓ The well will be drilled utilizing a closed loop mud handling system. The closed loop system will comply with the NMOCDD pit rules pertaining to the use of the system and disposal of the drill cuttings and waste. Drilling mud will be moved for re-use to drill subsequent wells whenever possible.

Viscosity, mud weight and other physical and chemical characteristics of the drilling mud will be varied as required to keep the hole clean, circulate drill cuttings, prevent caving, prevent lost circulation and maximize penetration rate.

Sufficient mud and materials will be kept on site to maintain mud properties and meet lost circulation or mud weight requirements at all times.

Mud design may change depending on well conditions, LCM, fluid loss and viscosity will be determined by the EnerVest representative and the mud engineer on site.

#### 4.7 CORING, TESTING, & LOGGING

No cores or drill stem tests are planned. Well logs to be run are:

**Surface to TD;** GR/ Cement Bond Log, at the commencement of completion operations.  
**2000' to TD;** GR/Induction/Density Neutron. (Cased hole GR/Neutron will be run if the hole conditions do not allow the use of the open hole logs)

This well will be directionally drilled and a record of the deviation will be run while drilling. A deviation survey will be submitted at the conclusion of the well completion.



**EnerVest Operating, LLC**

**Jicarilla Apache Tribal 125 # 18**

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Rio Arriba County, NM

GL Elev: 7116'

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4.8 ANTICIPATED PRESSURES AND TEMPERATURES:

- |    |   |            |
|----|---|------------|
| a. | Expected bottom hole pressure:                | < 1754 psi |
| b. | Anticipated abnormal pressure:                | None       |
| c. | Anticipated abnormal temperatures:            | None       |
| d. | Anticipated hazardous gas (H <sub>2</sub> S): | None       |

If any of the foregoing conditions are unexpectedly encountered, suitable steps will be taken to mitigate according to accepted industry best practices.

4.9 OTHER INFORMATION:

The anticipated spud date is summer 2014. The spud date will be dependent on the weather conditions, road conditions and the Conditions of Approval.

The dirt work for road and well pad construction will commence upon approval of the APD and will be dependent on weather conditions.

The well will be spud after well pad construction is complete and a suitable rig becomes available. The duration of drilling operations is expected to be from two to three weeks. The drilling rig and associated equipment will be removed and preparations will be made for the completion of the well.

Completion will start about one to four weeks after the finish of the drilling operations. A completion rig will be moved in for the completion phase. The completion phase of the well is expected to +/- two weeks. The completion phase will include; perforating, acidizing, fracture stimulation and well testing.

Some events/situations may arise that could potentially change the starting date or project duration that are out of EnerVest's control. If such events/situations arise, the proper officials will be promptly notified.



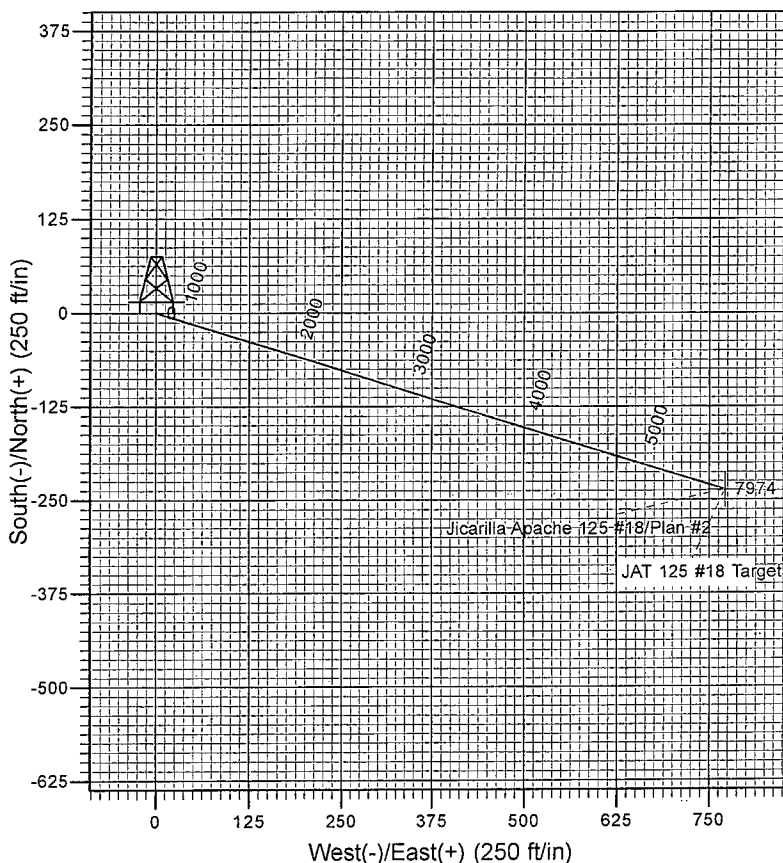
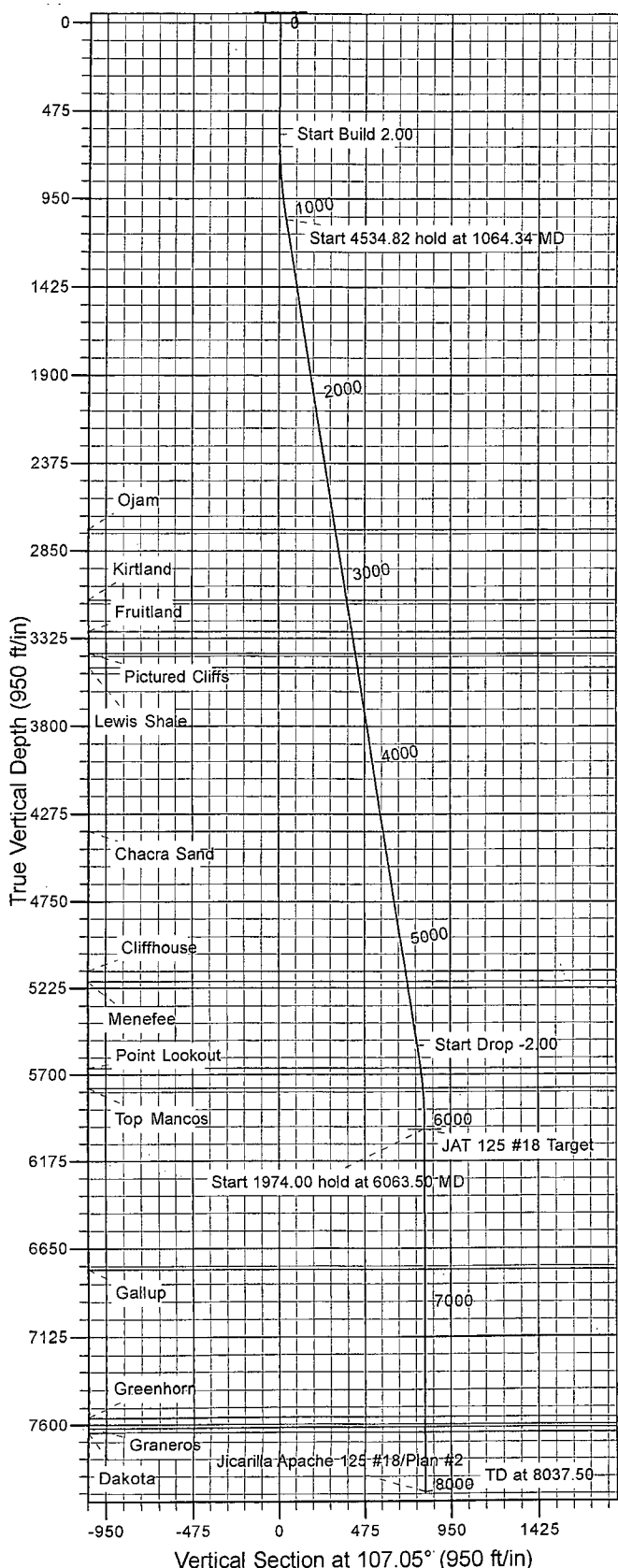
# Scientific Drilling

Company: EnerVest Operating LLC  
Project: Rio Arriba County, NM (NAD83)  
Site: Jicarilla

Well Details: Jicarilla Apache 125 #18

TVD Reference: GL 7116' & RKB 13' @ 7129.00ft Ground Level: 7116.00  
+N/-S +E/-W Northing Easting Latitude Longitude Slot  
0.00 0.00 1953898.82 1355052.80 36° 21' 57.348 N 107° 13' 9.336 W

T M Azimuths to True North  
Magnetic North: 9.33°  
Magnetic Field  
Strength: 50248.9snT  
Dip Angle: 63.18°  
Date: 3/10/2014  
Model: BGGM2013



## FORMATION TOP DETAILS

TVDPath	MDPath	Formation
2734.00	2758.23	Ojam
3115.00	3144.29	Kirtland
3288.00	3319.59	Fruitland
3405.00	3438.14	Pictured Cliffs
3482.00	3516.17	Lewis Shale
4369.00	4414.95	Chacra Sand
5131.00	5187.07	Cliffhouse
5190.00	5246.85	Menefee
5663.00	5725.72	Point Lookout
5774.00	5837.26	Top Mancos
6763.00	6826.50	Gallup
7560.00	7623.50	Greenhorn
7617.00	7680.50	Graneros
7642.00	7705.50	Dakota

## Plan: Plan #2

10:19, March 11 2014  
Created By: Janie Collins

PROJECT DETAILS: Rio Arriba County, NM (NAD83)

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

## SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSeet	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	
3	1064.34	9.29	107.05	1062.31	-11.01	35.90	2.00	107.05	37.55	
4	5599.16	9.29	107.05	5537.69	-225.62	735.54	0.00	0.00	769.36	
5	6063.50	0.00	0.00	6000.00	-236.63	771.43	2.00	180.00	806.91	JAT 125 #18 Target
6	8037.50	0.00	0.00	7974.00	-236.63	771.43	0.00	0.00	806.91	

# EnerVest Operating LLC

Rio Arriba County, NM (NAD83)

Jicarilla

Jicarilla Apache 125 #18

OH

Plan: Plan #2

## Standard Planning Report

11 March, 2014



# Planning Report



**Database:** Grand Junction District  
**Company:** EnerVest Operating LLC  
**Project:** Rio Arriba County, NM (NAD83)  
**Site:** Jicarilla  
**Well:** Jicarilla Apache 125 #18  
**Wellbore:** OH  
**Design:** Plan #2

**Local Co-ordinate Reference:** Well Jicarilla Apache 125 #18  
**TVD Reference:** GL 7116' & RKB 13' @ 7129.00ft  
**MD Reference:** GL 7116' & RKB 13' @ 7129.00ft  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature

**Project:** Rio Arriba County, NM (NAD83)  
**Map System:** US State Plane 1983  
**Geo Datum:** North American Datum 1983  
**Map Zone:** New Mexico Central Zone  
**System Datum:** Mean Sea Level

**Site:** Jicarilla  
**Site Position:** Northing: -274,017,644.35 usft Latitude: 7° 5' 24.101 S  
**From:** Lat/Long Easting: 372,015,898.75 usft Longitude: 42° 3' 21.841 E  
**Position Uncertainty:** 0.00 ft Slot Radius: 13.200 in Grid Convergence: 0.00 °

**Well:** Jicarilla Apache 125 #18  
**Well Position:** +N/-S 460,375,538.35 ft Northing: 1,953,898.82 usft Latitude: 36° 21' 57.348 N  
 +E/-W 40,062,117.40 ft Easting: 1,355,052.80 usft Longitude: 107° 13' 9.336 W  
**Position Uncertainty:** 0.00 ft Wellhead Elevation: 0.00 ft Ground Level: 7,116.00 ft

**Wellbore:** OH  
**Magnetics:** Model Name Sample Date Declination Dip Angle Field Strength  
 (°) (°) (nT)  
 BGGM2013 3/10/2014 9.33 63.18 50,249

**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 0.00 107.05

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	
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,064.34	9.29	107.05	1,062.31	-11.01	35.90	2.00	2.00	0.00	107.05	
5,599.16	9.29	107.05	5,537.69	-225.62	735.54	0.00	0.00	0.00	0.00	
6,063.50	0.00	0.00	6,000.00	-236.63	771.43	2.00	-2.00	0.00	180.00	JAT 125 #18 Target
8,037.50	0.00	0.00	7,974.00	-236.63	771.43	0.00	0.00	0.00	0.00	

**Database:** Grand Junction District  
**Company:** EnerVest Operating LLC  
**Project:** Rio Arriba County, NM (NAD83)  
**Site:** Jicarilla  
**Well:** Jicarilla Apache 125 #18  
**Wellbore:** OH  
**Design:** Plan #2

**Local Co-ordinate Reference:** Well Jicarilla Apache 125 #18  
**TVD Reference:** GL 7116' & RKB 13' @ 7129.00ft  
**MD Reference:** GL 7116' & RKB 13' @ 7129.00ft  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature

**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	2.00	107.05	699.98	-0.51	1.67	1.75	2.00	2.00	0.00
800.00	4.00	107.05	799.84	-2.05	6.67	6.98	2.00	2.00	0.00
900.00	6.00	107.05	899.45	-4.60	15.00	15.69	2.00	2.00	0.00
1,000.00	8.00	107.05	998.70	-8.18	26.65	27.88	2.00	2.00	0.00
1,064.34	9.29	107.05	1,062.31	-11.01	35.90	37.55	2.00	2.00	0.00
1,100.00	9.29	107.05	1,097.50	-12.70	41.40	43.30	0.00	0.00	0.00
1,200.00	9.29	107.05	1,196.19	-17.43	56.83	59.44	0.00	0.00	0.00
1,300.00	9.29	107.05	1,294.88	-22.16	72.26	75.58	0.00	0.00	0.00
1,400.00	9.29	107.05	1,393.57	-26.90	87.68	91.72	0.00	0.00	0.00
1,500.00	9.29	107.05	1,492.26	-31.63	103.11	107.85	0.00	0.00	0.00
1,600.00	9.29	107.05	1,590.95	-36.36	118.54	123.99	0.00	0.00	0.00
1,700.00	9.29	107.05	1,689.64	-41.09	133.97	140.13	0.00	0.00	0.00
1,800.00	9.29	107.05	1,788.33	-45.83	149.40	156.27	0.00	0.00	0.00
1,900.00	9.29	107.05	1,887.02	-50.56	164.82	172.40	0.00	0.00	0.00
2,000.00	9.29	107.05	1,985.71	-55.29	180.25	188.54	0.00	0.00	0.00
2,100.00	9.29	107.05	2,084.40	-60.02	195.68	204.68	0.00	0.00	0.00
2,200.00	9.29	107.05	2,183.08	-64.75	211.11	220.82	0.00	0.00	0.00
2,300.00	9.29	107.05	2,281.77	-69.49	226.54	236.95	0.00	0.00	0.00
2,400.00	9.29	107.05	2,380.46	-74.22	241.97	253.09	0.00	0.00	0.00
2,500.00	9.29	107.05	2,479.15	-78.95	257.39	269.23	0.00	0.00	0.00
2,600.00	9.29	107.05	2,577.84	-83.68	272.82	285.37	0.00	0.00	0.00
2,700.00	9.29	107.05	2,676.53	-88.42	288.25	301.51	0.00	0.00	0.00
2,758.23	9.29	107.05	2,734.00	-91.17	297.23	310.90	0.00	0.00	0.00
<b>Ojam</b>									
2,800.00	9.29	107.05	2,775.22	-93.15	303.68	317.64	0.00	0.00	0.00
2,900.00	9.29	107.05	2,873.91	-97.88	319.11	333.78	0.00	0.00	0.00
3,000.00	9.29	107.05	2,972.60	-102.61	334.53	349.92	0.00	0.00	0.00
3,100.00	9.29	107.05	3,071.29	-107.35	349.96	366.06	0.00	0.00	0.00
3,144.29	9.29	107.05	3,115.00	-109.44	356.80	373.20	0.00	0.00	0.00
<b>Kirtland</b>									
3,200.00	9.29	107.05	3,169.98	-112.08	365.39	382.19	0.00	0.00	0.00
3,300.00	9.29	107.05	3,268.67	-116.81	380.82	398.33	0.00	0.00	0.00
3,319.59	9.29	107.05	3,288.00	-117.74	383.84	401.49	0.00	0.00	0.00
<b>Fruitland</b>									
3,400.00	9.29	107.05	3,367.36	-121.54	396.25	414.47	0.00	0.00	0.00
3,438.14	9.29	107.05	3,405.00	-123.35	402.13	420.62	0.00	0.00	0.00
<b>Pictured Cliffs</b>									
3,500.00	9.29	107.05	3,466.05	-126.28	411.67	430.61	0.00	0.00	0.00
3,516.17	9.29	107.05	3,482.00	-127.04	414.17	433.22	0.00	0.00	0.00
<b>Lewis Shale</b>									
3,600.00	9.29	107.05	3,564.73	-131.01	427.10	446.74	0.00	0.00	0.00
3,700.00	9.29	107.05	3,663.42	-135.74	442.53	462.88	0.00	0.00	0.00
3,800.00	9.29	107.05	3,762.11	-140.47	457.96	479.02	0.00	0.00	0.00
3,900.00	9.29	107.05	3,860.80	-145.21	473.39	495.16	0.00	0.00	0.00
4,000.00	9.29	107.05	3,959.49	-149.94	488.82	511.29	0.00	0.00	0.00
4,100.00	9.29	107.05	4,058.18	-154.67	504.24	527.43	0.00	0.00	0.00
4,200.00	9.29	107.05	4,156.87	-159.40	519.67	543.57	0.00	0.00	0.00

# Planning Report



Scientific Drilling

Database:	Grand Junction District	Local Co-ordinate Reference:	Well Jicarilla Apache 125 #18
Company:	EnerVest Operating LLC	TVD Reference:	GL 7116' & RKB 13' @ 7129.00ft
Project:	Rio Arriba County, NM (NAD83)	MD Reference:	GL 7116' & RKB 13' @ 7129.00ft
Site:	Jicarilla	North Reference:	True
Well:	Jicarilla Apache 125 #18	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)	
4,300.00	9.29	107.05	4,255.56	-164.13	535.10	559.71	0.00	0.00	0.00	
4,400.00	9.29	107.05	4,354.25	-168.87	550.53	575.84	0.00	0.00	0.00	
4,414.95	9.29	107.05	4,369.00	-169.57	552.83	578.26	0.00	0.00	0.00	
Chacra Sand										
4,500.00	9.29	107.05	4,452.94	-173.60	565.96	591.98	0.00	0.00	0.00	
4,600.00	9.29	107.05	4,551.63	-178.33	581.38	608.12	0.00	0.00	0.00	
4,700.00	9.29	107.05	4,650.32	-183.06	596.81	624.26	0.00	0.00	0.00	
4,800.00	9.29	107.05	4,749.01	-187.80	612.24	640.40	0.00	0.00	0.00	
4,900.00	9.29	107.05	4,847.70	-192.53	627.67	656.53	0.00	0.00	0.00	
5,000.00	9.29	107.05	4,946.38	-197.26	643.10	672.67	0.00	0.00	0.00	
5,100.00	9.29	107.05	5,045.07	-201.99	658.52	688.81	0.00	0.00	0.00	
5,187.07	9.29	107.05	5,131.00	-206.11	671.96	702.86	0.00	0.00	0.00	
Cliffhouse										
5,200.00	9.29	107.05	5,143.76	-206.73	673.95	704.95	0.00	0.00	0.00	
5,246.85	9.29	107.05	5,190.00	-208.94	681.18	712.51	0.00	0.00	0.00	
Menefee										
5,300.00	9.29	107.05	5,242.45	-211.46	689.38	721.08	0.00	0.00	0.00	
5,400.00	9.29	107.05	5,341.14	-216.19	704.81	737.22	0.00	0.00	0.00	
5,500.00	9.29	107.05	5,439.83	-220.92	720.24	753.36	0.00	0.00	0.00	
5,599.16	9.29	107.05	5,537.69	-225.62	735.54	769.36	0.00	0.00	0.00	
5,600.00	9.27	107.05	5,538.52	-225.66	735.67	769.50	2.00	-2.00	0.00	
5,700.00	7.27	107.05	5,637.48	-229.87	749.42	783.88	2.00	-2.00	0.00	
5,725.72	6.76	107.05	5,663.00	-230.79	752.42	787.02	2.00	-2.00	0.00	
Point Lookout										
5,800.00	5.27	107.05	5,736.87	-233.08	759.86	794.80	2.00	-2.00	0.00	
5,837.26	4.52	107.05	5,774.00	-234.01	762.90	797.98	2.00	-2.00	0.00	
Top Mancos										
5,900.00	3.27	107.05	5,836.59	-235.26	766.97	802.24	2.00	-2.00	0.00	
6,000.00	1.27	107.05	5,936.51	-236.42	770.76	806.21	2.00	-2.00	0.00	
6,063.50	0.00	0.00	6,000.00	-236.63	771.43	806.91	2.00	-2.00	0.00	
JAT 125 #18 Target										
6,100.00	0.00	0.00	6,036.50	-236.63	771.43	806.91	0.00	0.00	0.00	
6,200.00	0.00	0.00	6,136.50	-236.63	771.43	806.91	0.00	0.00	0.00	
6,300.00	0.00	0.00	6,236.50	-236.63	771.43	806.91	0.00	0.00	0.00	
6,400.00	0.00	0.00	6,336.50	-236.63	771.43	806.91	0.00	0.00	0.00	
6,500.00	0.00	0.00	6,436.50	-236.63	771.43	806.91	0.00	0.00	0.00	
6,600.00	0.00	0.00	6,536.50	-236.63	771.43	806.91	0.00	0.00	0.00	
6,700.00	0.00	0.00	6,636.50	-236.63	771.43	806.91	0.00	0.00	0.00	
6,800.00	0.00	0.00	6,736.50	-236.63	771.43	806.91	0.00	0.00	0.00	
6,826.50	0.00	0.00	6,763.00	-236.63	771.43	806.91	0.00	0.00	0.00	
Gallup										
6,900.00	0.00	0.00	6,836.50	-236.63	771.43	806.91	0.00	0.00	0.00	
7,000.00	0.00	0.00	6,936.50	-236.63	771.43	806.91	0.00	0.00	0.00	
7,100.00	0.00	0.00	7,036.50	-236.63	771.43	806.91	0.00	0.00	0.00	
7,200.00	0.00	0.00	7,136.50	-236.63	771.43	806.91	0.00	0.00	0.00	
7,300.00	0.00	0.00	7,236.50	-236.63	771.43	806.91	0.00	0.00	0.00	
7,400.00	0.00	0.00	7,336.50	-236.63	771.43	806.91	0.00	0.00	0.00	
7,500.00	0.00	0.00	7,436.50	-236.63	771.43	806.91	0.00	0.00	0.00	
7,600.00	0.00	0.00	7,536.50	-236.63	771.43	806.91	0.00	0.00	0.00	
7,623.50	0.00	0.00	7,560.00	-236.63	771.43	806.91	0.00	0.00	0.00	
Greenhorn										
7,680.50	0.00	0.00	7,617.00	-236.63	771.43	806.91	0.00	0.00	0.00	
Graneros										

# Planning Report



Database:	Grand Junction District	Local Co-ordinate Reference:	Well Jicarilla Apache 125 #18
Company:	EnerVest Operating LLC	TVD Reference:	GL 7116' & RKB 13' @ 7129.00ft
Project:	Rio Arriba County, NM (NAD83)	MD Reference:	GL 7116' & RKB 13' @ 7129.00ft
Site:	Jicarilla	North Reference:	True
Well:	Jicarilla Apache 125 #18	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)
7,700.00	0.00	0.00	7,636.50	-236.63	771.43	806.91	0.00	0.00	0.00
7,705.50	0.00	0.00	7,642.00	-236.63	771.43	806.91	0.00	0.00	0.00
Dakota									
7,800.00	0.00	0.00	7,736.50	-236.63	771.43	806.91	0.00	0.00	0.00
7,900.00	0.00	0.00	7,836.50	-236.63	771.43	806.91	0.00	0.00	0.00
8,000.00	0.00	0.00	7,936.50	-236.63	771.43	806.91	0.00	0.00	0.00
8,037.50	0.00	0.00	7,974.00	-236.63	771.43	806.91	0.00	0.00	0.00

Design Targets									
Target Name	hit/miss target	Dip Angle (°)	Dip Dir (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude Longitude
JAT 125 #18 Target	- plan hits target center	0.00	0.00	6,000.00	-236.63	771.43	1,953,654.47	1,355,821.82	36° 21' 55.008 N 107° 12' 59.904 W
- Point									

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
2,758.23	2,734.00	Ojam		0.00		
3,144.29	3,115.00	Kirtland		0.00		
3,319.59	3,288.00	Fruitland		0.00		
3,438.14	3,405.00	Pictured Cliffs		0.00		
3,516.17	3,482.00	Lewis Shale		0.00		
4,414.95	4,369.00	Chacra Sand		0.00		
5,187.07	5,131.00	Cliffhouse		0.00		
5,246.85	5,190.00	Menefee		0.00		
5,725.72	5,663.00	Point Lookout		0.00		
5,837.26	5,774.00	Top Mancos		0.00		
6,826.50	6,763.00	Gallup		0.00		
7,623.50	7,560.00	Greenhorn		0.00		
7,680.50	7,617.00	Graneros		0.00		
7,705.50	7,642.00	Dakota		0.00		

**EnerVest Operating, LLC**  
**Jicarilla Apache Tribal 125 #18**  
895' FSL & 1874' FEL (Unit Letter O), Sec. 26, T25N, R04W, Rio Arriba, NM

**Surface Use Plan**

1. **DIRECTIONS & EXISTING ROADS** (See attached Vicinity map)

The location is approximately 17 miles N of the intersection of US Hwy 550 and NM Hwy 537

Latitude: N 36.36593

Latitude: W 107.21926

From Intersection of US Hwy 550 and NM State Hwy 537: Turn north on Hwy 537 for 17 miles, turn right on lease road, go 0.8 miles, turn right and go 0.7 miles to well site.

2. **ROAD TO BE BUILT OR UPGRADED**

- A. Drilling of this well will require the construction of 818' of new access road from the existing access road as shown on the Access Plat. After the well is completed as a commercial producer, the need for a pipeline is ascertained, it is proposed to construct 321' of pipeline to tie-in at the west side of the location to an existing Williams pipeline which runs adjacent to the location and the access road.
- B. Width: 20 ft running surface; 45 ft total ROW with is applied for to accommodate access and drainage installation along the road.
- C. Maximum grade: 0-1%.
- D. Turnouts: No turnouts are planned for this access road.
- E. Drainage design: The drainage design for the proposed new access road will be in conformance with Jicarilla Apache Tribal and BIA standards – with the agreement of the of the Jicarilla Apache Tribe. It is proposed to build a drainage holding and diversion pond near location if needed to prevent location erosion and divert drainage around the location. Any area used in this fashion will have been reviewed and given clearance for the possible archaeological and environmental impact.
- F. Location and size of culverts: None are required.
- G. Surface Materials: No gates, cattle guards or fences to be installed along the access road or the location. Road base material may be used as necessary during the drilling and completion phases of this project.

3. **SURFACE OWNERSHIP**

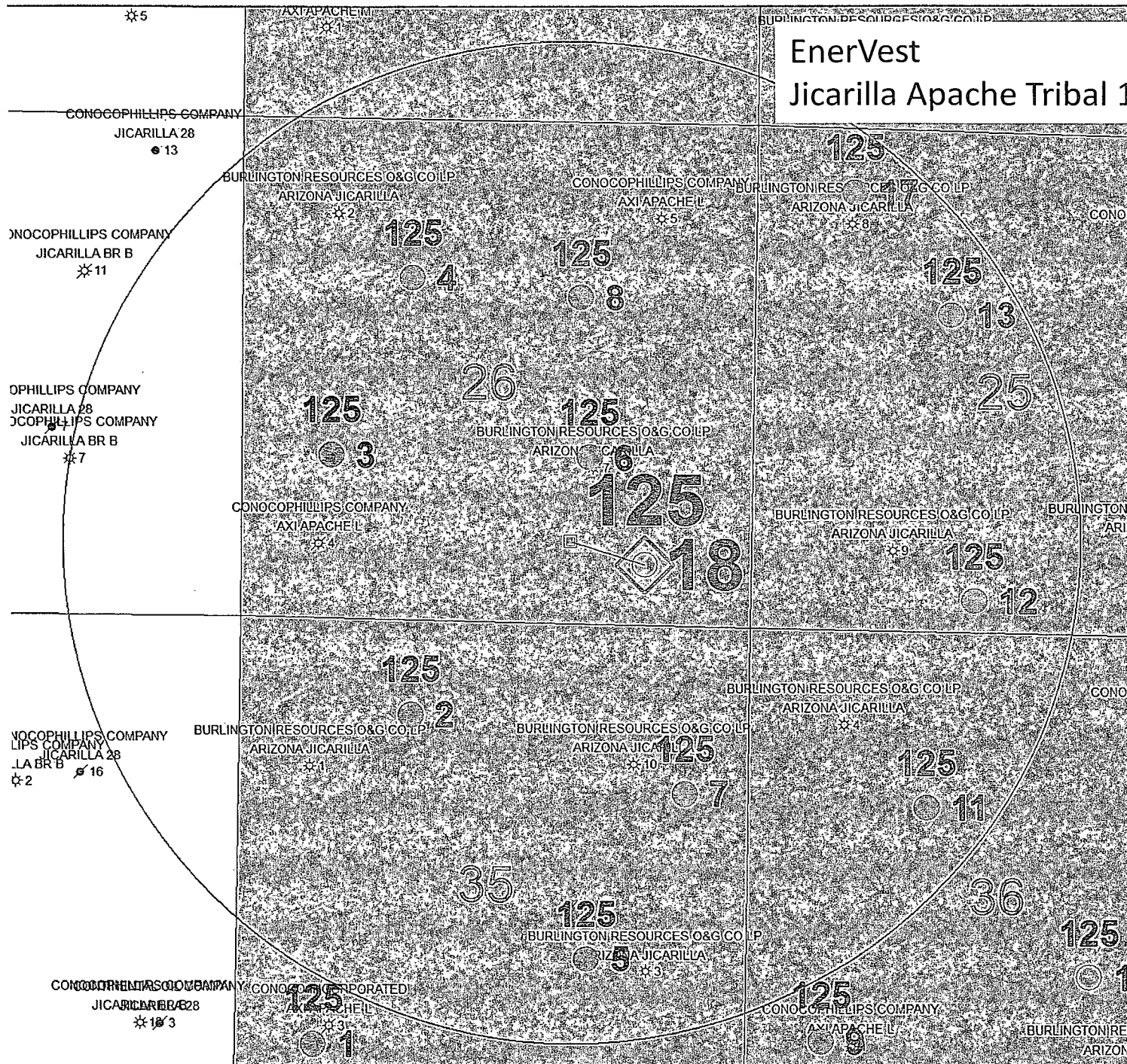
The surface ownership of the well site location and access roads are all on Jicarilla Apache Nation land.

4. **EXISTING WELLS** (See the Vicinity map)

This is a development location. There are twenty-three existing wells within a one-mile radius of the proposed location as shown on the Vicinity map.



# EnerVest Jicarilla Apache Tribal 125 #18

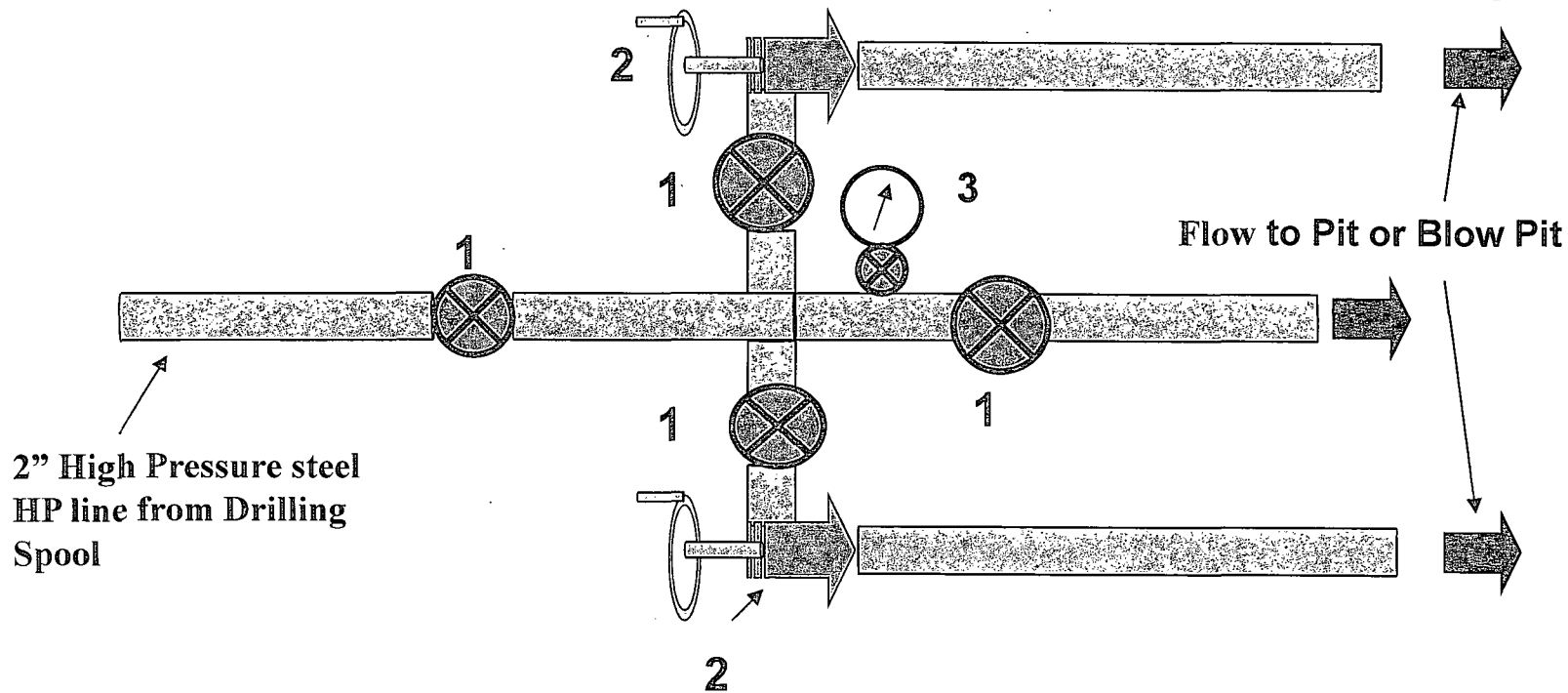


## Exhibit B

EnerVest  
Jicarilla 2014 Drilling  
Program  
2000 psi Choke Manifold

### Components

1. 2" Valves (2M)
2. Adjustable Chokes
3. Gauge



**EnerVest  
Jicarilla 2014  
Drilling Program  
Blowout Preventer  
2000 psi**

**Exhibit A**

**Components**

1. Wellhead 9 5/8"
2. Drilling Spool
3. Pipe Rams
4. Blind Rams
5. Spool
6. 2" Check Valve
7. 2" Manual Valves

