

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: 2/3/14

Well information;

Operator EnerVest, Well Name and Number Jicarilla Contract 155 20M

API# 30-039-31215, Section 29, Township 26 NS, Range 5 EW

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

Charles P. ...  
NMOCD Approved by Signature

3-18-2014  
Date CA

**SUPERVISOR DISTRICT # 3**

RECEIVED

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

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

FEB 04 2014

APPLICATION FOR PERMIT TO DRILL OR REENTER

Permitting Field Office  
Bureau of Land Management

5. Lease Serial No.  
Jicarilla Contract 155

6. If Indian, Allottee or Tribe Name  
Jicarilla Apache Tribe

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

8. Lease Name and Well No.  
Jicarilla Contract 155 #20M

9. API Well No.  
30-039-31215

10. Field and Pool, or Exploratory  
Blanco Mesaverde/Basin Dakota

11. Sec., T. R. M. or Blk. and Survey or Area  
Sec. 29 T26N R05W

12. County or Parish  
Rio Arriba

13. State  
NM

1a. Type of work:  DRILL  REENTER

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

2. Name of Operator  
EnerVest Operating, L.L.C.

3a. Address 1001 Fannin Street, Suite 800  
Houston, TX 77002

3b. Phone No. (include area code)  
713-659-3500

4. Location of Well (Report location clearly and in accordance with any State requirements.)\*  
At surface 1201' FSL & 762' FWL (UL M), Sec. 29 T26N R05W  
At proposed prod. zone 1300' FSL & 660' FWL (UL M), Sec. 29 T26N R05W

14. Distance in miles and direction from nearest town or post office\*  
30 miles from Lindreth, NM

15. Distance from proposed\*  
location to nearest  
property or lease line, ft. 762'  
(Also to nearest drig. unit line, if any)

16. No. of acres in lease  
2477.56

17. Spacing Unit dedicated to this well  
MV - SW/4  
DK - W/2

18. Distance from proposed location\*  
to nearest well, drilling, completed,  
applied for, on this lease, ft. 245'

19. Proposed Depth  
7315'

20. BLM/BIA Bond No. on file **RCVD MAR 12 '14**  
RLB0007886 **OIL CONS. DIV.**

21. Elevations (Show whether DF, KDB, RT, GL, etc.)  
6492' GL

22. Approximate date work will start\*  
04/01/2014

23. Estimated duration  
5 weeks **DIST. 3**

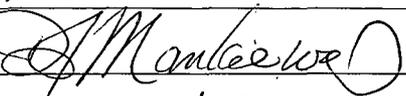
24. Attachments

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

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

25. Signature  Name (Printed/Typed) Bart Treviño Date 02/03/2014

Title Regulatory Analyst

Approved by (Signature)  Name (Printed/Typed) AEM Date 3/11/14

Title AEM 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)

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

PERMITS APPROVAL OR ACCEPTANCE OF THIS  
OPERATION DOES NOT RELIEVE THE LESSEE AND  
OPERATOR FROM OBLIGATIONS  
AUTHORIZATION REQUIRED FOR OPERATIONS  
ON FEDERAL AND INDIAN LANDS

\*(Instructions on page 2)  
**DRILLING OPERATIONS  
AUTHORIZED ARE SUBJECT TO  
COMPLIANCE WITH ATTACHED  
"GENERAL REQUIREMENTS"**

NMOCDA

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 Brillante 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

Form C-102  
Revised August 1, 2011

State of New Mexico  
Energy, Minerals & Natural Resources Department

Submit one copy to appropriate District Office

**OIL CONSERVATION DIVISION**  
1220 South St. Francis Dr.  
Santa Fe, NM 87505

**RECEIVED**  
FEB 04 2014  
 AMENDED REPORT  
Farmington Field Office  
PLA and Management

WELL LOCATION AND ACREAGE DEDICATION

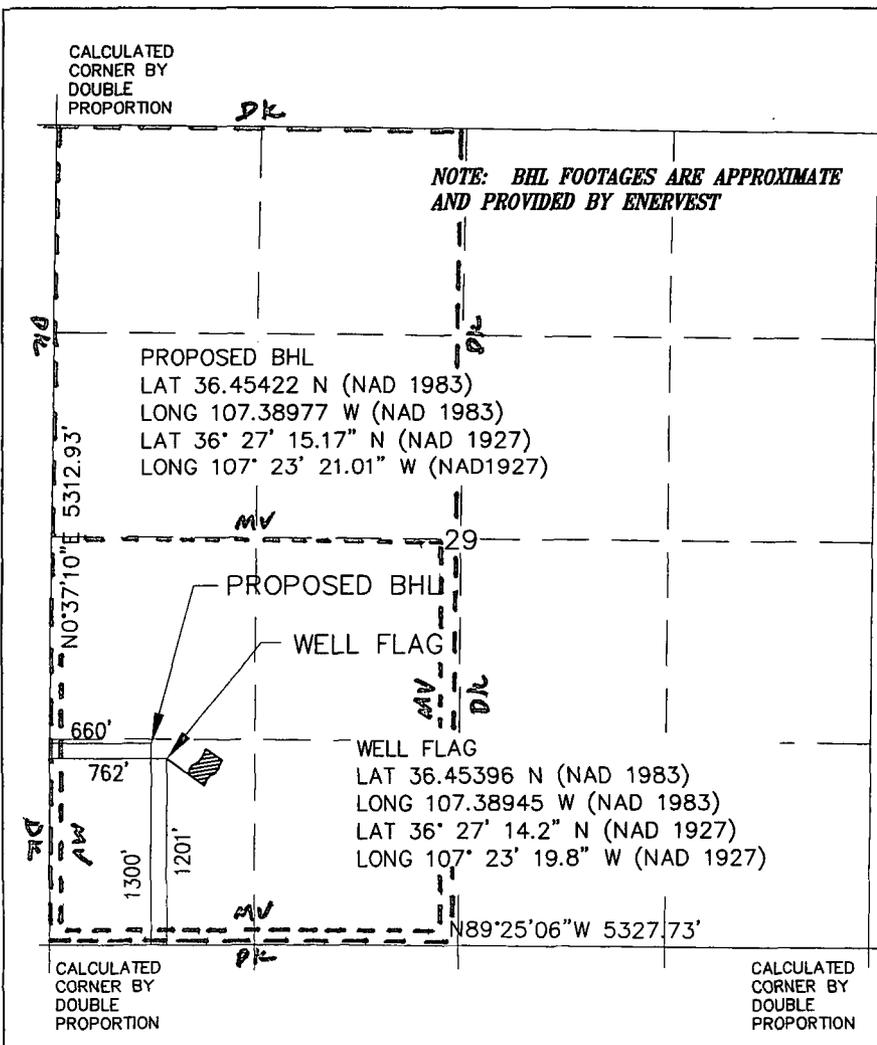
<sup>1</sup> API Number <b>30-039-3915</b>	<sup>2</sup> Pool Code <b>72319/71599</b>	<sup>3</sup> Pool Name <b>BLANCO MESA VERDE / BASIN DAKOTA</b>
<sup>4</sup> Property Code <b>306758</b>	<sup>5</sup> Property Name JICARILLA CONTRACT 155	
<sup>7</sup> OGRID No. <b>143199</b>	<sup>8</sup> Operator Name ENERVEST OPERATING, LLC	
		<sup>6</sup> Well Number #20M
		<sup>9</sup> Elevation 6492'

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	29	26N	5W		1201'	SOUTH	762'	WEST	RIO ARRIBA

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	29	26N	5W		1300	SOUTH	660	WEST	RIO ARRIBA

<sup>12</sup> Dedicated Acres - 160 <b>MV - SW/4 ; DK - W/2</b>	<sup>13</sup> Joint of Infill <b>320</b>				<sup>14</sup> Consolidation Code <b>NSP 1400 (MV)</b>				
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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.



**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: *[Signature]* Date: **2/3/14**  
 Printed Name: **BART TREVINO**  
 E-mail Address: **BTREVINO@ENERVEST.NET**

**18 SURVEYOR CERTIFICATION**  
 I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my behalf.

Survey Date: **AUGUST 22, 2013**  
 Signature and Seal of Professional Surveyor



Certificate Number 11643

Well Details: Jicarilla 155 #20M

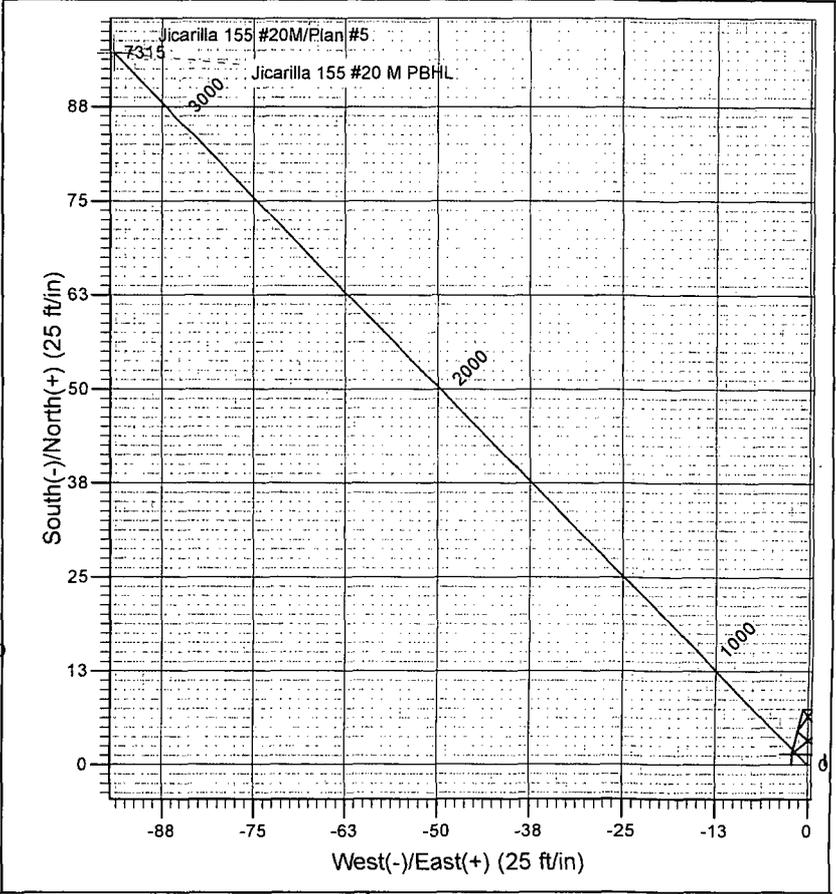
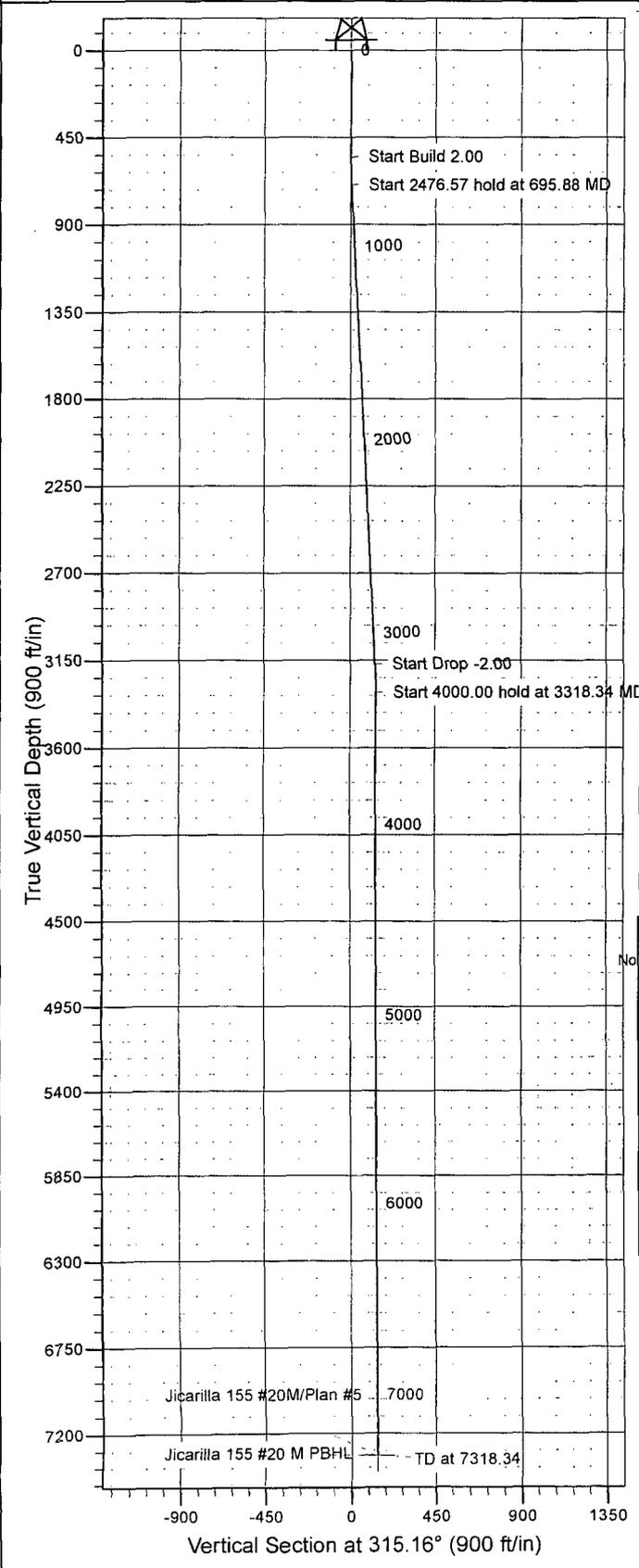
TVD Reference: GL 6492' @ 6492.00ft Ground Level: 6492.00

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	1986492.78	1305322.96	36° 27' 14.256 N	107° 23' 22.020 W	

T M Azimuths to True North  
 Magnetic North: 9.45°



Magnetic Field  
 Strength: 50315.5nT  
 Dip Angle: 63.24°  
 Date: 11/27/2013  
 Model: BGGM2013



FORMATION TOP DETAILS	Plan: Plan #5
No formation data is available	12:34, December 20 2013 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	VSec	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	550.00	0.00	0.00	550.00	0.00	0.00	0.00	0.00	0.00	
3	695.88	2.92	315.16	695.82	2.63	-2.62	2.00	315.16	3.71	
4	3172.45	2.92	315.16	3169.18	92.03	-91.50	0.00	0.00	129.77	
5	3318.34	0.00	0.00	3315.00	94.66	-94.12	2.00	180.00	133.49	
6	7318.34	0.00	0.00	7315.00	94.66	-94.12	0.00	0.00	133.49	Jicarilla 155 #20 M PBHL



<b>Database:</b>	Grand Junction District	<b>Local Co-ordinate Reference:</b>	Well Jicarilla 155 #20M
<b>Company:</b>	EnerVest Operating LLC	<b>TVD Reference:</b>	GL 6492' @ 6492.00ft
<b>Project:</b>	Rio Arriba County, NM (NAD83)	<b>MD Reference:</b>	GL 6492' @ 6492.00ft
<b>Site:</b>	Jicarilla	<b>North Reference:</b>	True
<b>Well:</b>	Jicarilla 155 #20M	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #5		

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

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

<b>Well:</b>	Jicarilla 155 #20M					
<b>Well Position</b>	<b>+N/-S</b>	460,434,976.25 ft	<b>Northing:</b>	1,986,492.78 usft	<b>Latitude:</b>	36° 27' 14.256 N
	<b>+E/-W</b>	40,063,721.49 ft	<b>Easting:</b>	1,305,322.96 usft	<b>Longitude:</b>	107° 23' 22.020 W
<b>Position Uncertainty</b>	0.00 ft		<b>Wellhead Elevation:</b>	0.00 ft	<b>Ground Level:</b>	6,492.00 ft

<b>Wellbore:</b>	OH				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination</b>	<b>Dip Angle</b>	<b>Field Strength</b>
	BGGM2013	11/27/2013	(°) 9.45	(°) 63.24	(nT) 50,315

<b>Design:</b>	Plan #5				
<b>Audit Notes:</b>					
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.00	
<b>Vertical Section:</b>	<b>Depth From (TVD)</b>	<b>+N/-S</b>	<b>+E/-W</b>	<b>Direction</b>	
	(ft)	(ft)	(ft)	(°)	
	0.00	0.00	0.00	315.16	

Plan Sections										
Measured Depth	Inclination	Azimuth	Vertical Depth	+N/-S	+E/-W	Dogleg Rate	Build Rate	Turn Rate	TFO	Target
(ft)	(°)	(°)	(ft)	(ft)	(ft)	(°/100ft)	(°/100ft)	(°/100ft)	(°)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
550.00	0.00	0.00	550.00	0.00	0.00	0.00	0.00	0.00	0.00	
695.88	2.92	315.16	695.82	2.63	-2.62	2.00	2.00	0.00	315.16	
3,172.45	2.92	315.16	3,169.18	92.03	-91.50	0.00	0.00	0.00	0.00	
3,318.34	0.00	0.00	3,315.00	94.66	-94.12	2.00	-2.00	0.00	180.00	
7,318.34	0.00	0.00	7,315.00	94.66	-94.12	0.00	0.00	0.00	0.00	Jicarilla 155 #20 M PE

<b>Database:</b>	Grand Junction District	<b>Local Co-ordinate Reference:</b>	Well Jicarilla 155 #20M
<b>Company:</b>	EnerVest Operating LLC	<b>TVD Reference:</b>	GL 6492' @ 6492.00ft
<b>Project:</b>	Rio Arriba County, NM (NAD83)	<b>MD Reference:</b>	GL 6492' @ 6492.00ft
<b>Site:</b>	Jicarilla	<b>North Reference:</b>	True
<b>Well:</b>	Jicarilla 155 #20M	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #5		

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
550.00	0.00	0.00	550.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	1.00	315.16	600.00	0.31	-0.31	0.44	2.00	2.00	0.00
695.88	2.92	315.16	695.82	2.63	-2.62	3.71	2.00	2.00	0.00
700.00	2.92	315.16	699.93	2.78	-2.77	3.92	0.00	0.00	0.00
800.00	2.92	315.16	799.80	6.39	-6.35	9.01	0.00	0.00	0.00
900.00	2.92	315.16	899.67	10.00	-9.94	14.10	0.00	0.00	0.00
1,000.00	2.92	315.16	999.54	13.61	-13.53	19.19	0.00	0.00	0.00
1,100.00	2.92	315.16	1,099.41	17.22	-17.12	24.28	0.00	0.00	0.00
1,200.00	2.92	315.16	1,199.28	20.83	-20.71	29.37	0.00	0.00	0.00
1,300.00	2.92	315.16	1,299.15	24.44	-24.30	34.46	0.00	0.00	0.00
1,400.00	2.92	315.16	1,399.02	28.05	-27.89	39.55	0.00	0.00	0.00
1,500.00	2.92	315.16	1,498.89	31.66	-31.48	44.64	0.00	0.00	0.00
1,600.00	2.92	315.16	1,598.77	35.27	-35.07	49.73	0.00	0.00	0.00
1,700.00	2.92	315.16	1,698.64	38.88	-38.65	54.82	0.00	0.00	0.00
1,800.00	2.92	315.16	1,798.51	42.49	-42.24	59.91	0.00	0.00	0.00
1,900.00	2.92	315.16	1,898.38	46.10	-45.83	65.00	0.00	0.00	0.00
2,000.00	2.92	315.16	1,998.25	49.71	-49.42	70.09	0.00	0.00	0.00
2,100.00	2.92	315.16	2,098.12	53.32	-53.01	75.18	0.00	0.00	0.00
2,200.00	2.92	315.16	2,197.99	56.93	-56.60	80.27	0.00	0.00	0.00
2,300.00	2.92	315.16	2,297.86	60.53	-60.19	85.36	0.00	0.00	0.00
2,400.00	2.92	315.16	2,397.73	64.14	-63.78	90.45	0.00	0.00	0.00
2,500.00	2.92	315.16	2,497.60	67.75	-67.37	95.54	0.00	0.00	0.00
2,600.00	2.92	315.16	2,597.47	71.36	-70.95	100.63	0.00	0.00	0.00
2,700.00	2.92	315.16	2,697.34	74.97	-74.54	105.72	0.00	0.00	0.00
2,800.00	2.92	315.16	2,797.21	78.58	-78.13	110.81	0.00	0.00	0.00
2,900.00	2.92	315.16	2,897.08	82.19	-81.72	115.90	0.00	0.00	0.00
3,000.00	2.92	315.16	2,996.95	85.80	-85.31	120.99	0.00	0.00	0.00
3,100.00	2.92	315.16	3,096.82	89.41	-88.90	126.08	0.00	0.00	0.00
3,172.45	2.92	315.16	3,169.18	92.03	-91.50	129.77	0.00	0.00	0.00
3,200.00	2.37	315.16	3,196.70	92.93	-92.39	131.04	2.00	-2.00	0.00
3,300.00	0.37	315.16	3,296.66	94.62	-94.08	133.43	2.00	-2.00	0.00
3,318.34	0.00	0.00	3,315.00	94.66	-94.12	133.49	2.00	-2.00	0.00
3,400.00	0.00	0.00	3,396.66	94.66	-94.12	133.49	0.00	0.00	0.00
3,500.00	0.00	0.00	3,496.66	94.66	-94.12	133.49	0.00	0.00	0.00
3,600.00	0.00	0.00	3,596.66	94.66	-94.12	133.49	0.00	0.00	0.00
3,700.00	0.00	0.00	3,696.66	94.66	-94.12	133.49	0.00	0.00	0.00
3,800.00	0.00	0.00	3,796.66	94.66	-94.12	133.49	0.00	0.00	0.00
3,900.00	0.00	0.00	3,896.66	94.66	-94.12	133.49	0.00	0.00	0.00
4,000.00	0.00	0.00	3,996.66	94.66	-94.12	133.49	0.00	0.00	0.00
4,100.00	0.00	0.00	4,096.66	94.66	-94.12	133.49	0.00	0.00	0.00
4,200.00	0.00	0.00	4,196.66	94.66	-94.12	133.49	0.00	0.00	0.00
4,300.00	0.00	0.00	4,296.66	94.66	-94.12	133.49	0.00	0.00	0.00
4,400.00	0.00	0.00	4,396.66	94.66	-94.12	133.49	0.00	0.00	0.00
4,500.00	0.00	0.00	4,496.66	94.66	-94.12	133.49	0.00	0.00	0.00
4,600.00	0.00	0.00	4,596.66	94.66	-94.12	133.49	0.00	0.00	0.00
4,700.00	0.00	0.00	4,696.66	94.66	-94.12	133.49	0.00	0.00	0.00
4,800.00	0.00	0.00	4,796.66	94.66	-94.12	133.49	0.00	0.00	0.00
4,900.00	0.00	0.00	4,896.66	94.66	-94.12	133.49	0.00	0.00	0.00

Database:	Grand Junction District	Local Co-ordinate Reference:	Well Jicarilla 155 #20M
Company:	EnerVest Operating LLC	TVD Reference:	GL 6492' @ 6492.00ft
Project:	Rio Arriba County, NM (NAD83)	MD Reference:	GL 6492' @ 6492.00ft
Site:	Jicarilla	North Reference:	True
Well:	Jicarilla 155 #20M	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #5		

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)
5,000.00	0.00	0.00	4,996.66	94.66	-94.12	133.49	0.00	0.00	0.00
5,100.00	0.00	0.00	5,096.66	94.66	-94.12	133.49	0.00	0.00	0.00
5,200.00	0.00	0.00	5,196.66	94.66	-94.12	133.49	0.00	0.00	0.00
5,300.00	0.00	0.00	5,296.66	94.66	-94.12	133.49	0.00	0.00	0.00
5,400.00	0.00	0.00	5,396.66	94.66	-94.12	133.49	0.00	0.00	0.00
5,500.00	0.00	0.00	5,496.66	94.66	-94.12	133.49	0.00	0.00	0.00
5,600.00	0.00	0.00	5,596.66	94.66	-94.12	133.49	0.00	0.00	0.00
5,700.00	0.00	0.00	5,696.66	94.66	-94.12	133.49	0.00	0.00	0.00
5,800.00	0.00	0.00	5,796.66	94.66	-94.12	133.49	0.00	0.00	0.00
5,900.00	0.00	0.00	5,896.66	94.66	-94.12	133.49	0.00	0.00	0.00
6,000.00	0.00	0.00	5,996.66	94.66	-94.12	133.49	0.00	0.00	0.00
6,100.00	0.00	0.00	6,096.66	94.66	-94.12	133.49	0.00	0.00	0.00
6,200.00	0.00	0.00	6,196.66	94.66	-94.12	133.49	0.00	0.00	0.00
6,300.00	0.00	0.00	6,296.66	94.66	-94.12	133.49	0.00	0.00	0.00
6,400.00	0.00	0.00	6,396.66	94.66	-94.12	133.49	0.00	0.00	0.00
6,500.00	0.00	0.00	6,496.66	94.66	-94.12	133.49	0.00	0.00	0.00
6,600.00	0.00	0.00	6,596.66	94.66	-94.12	133.49	0.00	0.00	0.00
6,700.00	0.00	0.00	6,696.66	94.66	-94.12	133.49	0.00	0.00	0.00
6,800.00	0.00	0.00	6,796.66	94.66	-94.12	133.49	0.00	0.00	0.00
6,900.00	0.00	0.00	6,896.66	94.66	-94.12	133.49	0.00	0.00	0.00
7,000.00	0.00	0.00	6,996.66	94.66	-94.12	133.49	0.00	0.00	0.00
7,100.00	0.00	0.00	7,096.66	94.66	-94.12	133.49	0.00	0.00	0.00
7,200.00	0.00	0.00	7,196.66	94.66	-94.12	133.49	0.00	0.00	0.00
7,300.00	0.00	0.00	7,296.66	94.66	-94.12	133.49	0.00	0.00	0.00
7,318.34	0.00	0.00	7,315.00	94.66	-94.12	133.49	0.00	0.00	0.00

Jicarilla 155 #20 M PBHL

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
Jicarilla 155 #20 M PBHL	- plan hits target center	0.00	0.00	7,315.00	94.66	-94.12	1,986,588.55	1,305,229.97	36° 27' 15.192 N	107° 23' 23.172 W
	- Point									

# EnerVest Operating, LLC

## Jicarilla Contract 155 # 20M

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Lat: 36.45396, Long: 107.38945

Bottom Hole: 1300' FSL, 660' FWL Unit M, Sec 29, T26N, R05W

Lat: 36.45422, Long: 107.38977

Rio Arriba County, NM

GL Elev: 6492'

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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	2081'	Sandstone	Possible Gas, Water
Kirtland	2401'	Shale	
Fruitland	2655'	Coal, Shale, Sandstone	Possible Lost Circ, Gas, Water
Pictured Cliffs	2806'	Sandstone	Possible Lost Circ, Gas, water
Lewis	2873'	Shale	Sloughing Shale
Chacra	3697'	Sandstone	Possible Gas
Mesa Verde (Cliffhouse)	4482'	Sandstone	Possible Lost Circ, Gas, Water
Mesa Verde (Menefee)	4509''	Coal, Sandstone, Shale	Possible Lost Circ, Gas, Water
Mesa Verde (Point Lookout)	5017'	Sandstone	Possible Lost Circ, Gas, Water
Mancos	5206'	Shale	Sloughing Shale
Gallup	6176'	Sandstone, Shale	Possible Lost Circ, Gas, Oil
Greenhorn	6917'	Limestone	Gas, Oil
Graneros	6973'	Shale	Gas, Oil, Water
Dakota	6999'	Sandstone	Gas, Oil, Water
Proposed Total Depth	7315'		

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 315 degree azimuth to a point approx 133' north and west of the surface location. At an estimated MD of +/- 3450' the well will be drilled vertically from that point to the estimated TD.

## **EnerVest Operating, LLC**

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#### 4.3 PRESSURE CONTROL:

Maximum expected pressure is ~1609 (.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 preventors, 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

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Rio Arriba County, NM

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#### 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	7 7/8"	4 1/2"	11.6	N-80	New	LT&C	0	7318'
TVD							0	7315'

**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**

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Stage 1 cement; mix and pump 524 sacks (1053 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 +/- 4142 ft. MD

Stage 2 Lead cement; mix and pump 270 sacks (575 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 +/- 2256 ft. MD

Stage 3 Lead cement; mix and pump 307 sacks (654 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 Contract 155 # 20M

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Rio Arriba County, NM

GL Elev: 6492'

#### 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'-7318'	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 NMOCD 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.  
**2300' to TD;** Cased hole GR/Neutron

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**

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4.8 ANTICIPATED PRESSURES AND TEMPERATURES:

- a. Expected bottom hole pressure: < 1609 psi
- b. Anticipated abnormal pressure: None
- c. Anticipated abnormal temperatures: None
- d. Anticipated hazardous gas (H2S): 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 spring 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.

**EnerVest Operating, LLC**  
**Jicarilla Contract 155 #20M**

SHL: 1201' FSL, 762' FWL Unit M Sec 29, T26N, R05W  
BHL: 1300' FSL, 660' FWL Unit M Sec 29, T26N R05W Rio Arriba, NM

**Surface Use Plan**

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

The location is approximately 33 miles NW of the intersection of US Hwy 550 and NM Hwy 537

Latitude: N 36.45396

Latitude: W 107.38977

From Intersection of US Hwy 550 and NM State Hwy 537: Turn north on Hwy 537 for 28 miles, turn left on J-6 for 8.3 mi, turn right on J-63, go 2.3 mi, turn left, go 1.6 mi to Jicarilla Contract 155 #26 CH location, go through location to new well location.

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

- A. Drilling of this well will require the construction of 93' of new access road from an existing access road that connects with J-63 road. After the well is completed as a commercial producer, the need for a pipeline is ascertained, it is proposed to construct 466' of pipeline to tie-in to an existing Williams pipeline which runs with the access road that connects with J-63.
- B. Width: 20 ft running surface; 40 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 thirty-one existing wells within a one-mile radius of the proposed location as shown on the Vicinity map.

**EnerVest Operating, LLC**  
**Jicarilla Contract 155 #20M**

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5. WELL SITE LAYOUT

The attached figure (Fig A) shows the proposed well location layout while drilling this well. The drilling contractor has not been chosen and the layout of the may vary with the particular drilling contractor's rig requirements. A construction zone will be built on the sides of the well location as per attached survey plats and will be reclaimed as per item # 11 below after the completion of this well.

6. PROPOSED PRODUCTION FACILITIES

The actual equipment used and the configuration will be determined after the well is completed. At a minimum, the facilities will include a meter run, a separator, a produced water storage tank and a condensate/oil storage tank. All surface equipment will be painted with a non-reflective paint color as per specifications as specified by the Conditions of Approval.

7. WATER SUPPLY

Drilling and completion water will come from sources as agreed with the Jicarilla Apache Tribe. Fresh water will be trucked from several sources; local ponds, or wells from the area. No water wells are to be drilled for this location.

8. CONSTRUCTION MATERIALS & METHODS

NM One Call (811), US Forest Service and BLM will be notified before construction starts. The top 6" of soil from the location will be saved and will be piled at near the location to be used for reclamation at a later date. Any road base, gravel or other fill material will be hauled from a source as agreed upon by the Jicarilla Apache Tribe or as specified in the Conditions of Approval.

9. WASTE DISPOSAL

- ✓ A. The drill cuttings will be handled with a closed loop system and stored in steel rig tanks. These will then be hauled to a properly-permitted site for disposal. The drilling fluid will be processed for re-use, any drilling fluid that cannot be re-used will be hauled to a properly-permitted facility for disposal. The closed loop system will be closed and removed as per NMOCD.
- B. Drilling mud that cannot be re-used will be disposed of at a properly permitted facility.
- C. Produced water will be collected and disposed of a properly permitted facility.
- D. Any sewage will be collected by the portable toilet provider for disposal.
- E. All garbage and general trash will be collected in a portable trash cage and will be removed from the site and disposed of in a properly permitted disposal facility. There will be no burning of trash.
- F. Drilling crews under the supervision of the contractor or operator will control and dispose of garbage and waste materials during the drilling operations.
- G. Roustabout or completion crews will dispose of all garbage or trash generated during the completion (or abandonment) of the well site.

**EnerVest Operating, LLC**  
**Jicarilla Contract 155 #20M**

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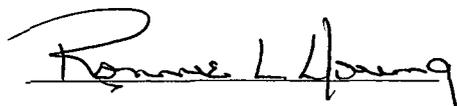
Houston, TX 77002  
713-495-5355

14. OPERATOR CERTIFICATION

EnerVest, Operating, LLC has the necessary consents from the proper lease owners to conduct lease operations in conjunction with this well. Bond coverage pursuant to 43 CFR 3104 for lease activities and operations is being provided RLB0007886.

I hereby certify that I, or persons under my direct supervision, have inspected the proposed drill site and access route; 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 operations proposed herein will be performed by EnerVest Operating, LLC and its contractors and subcontractors in conformity with this APD package and the terms and conditions under which it is approved. I also certify that I or EnerVest Operating, LLC am/is 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 a false statement.

Executed this 3<sup>rd</sup> day of FEBRUARY 2014.



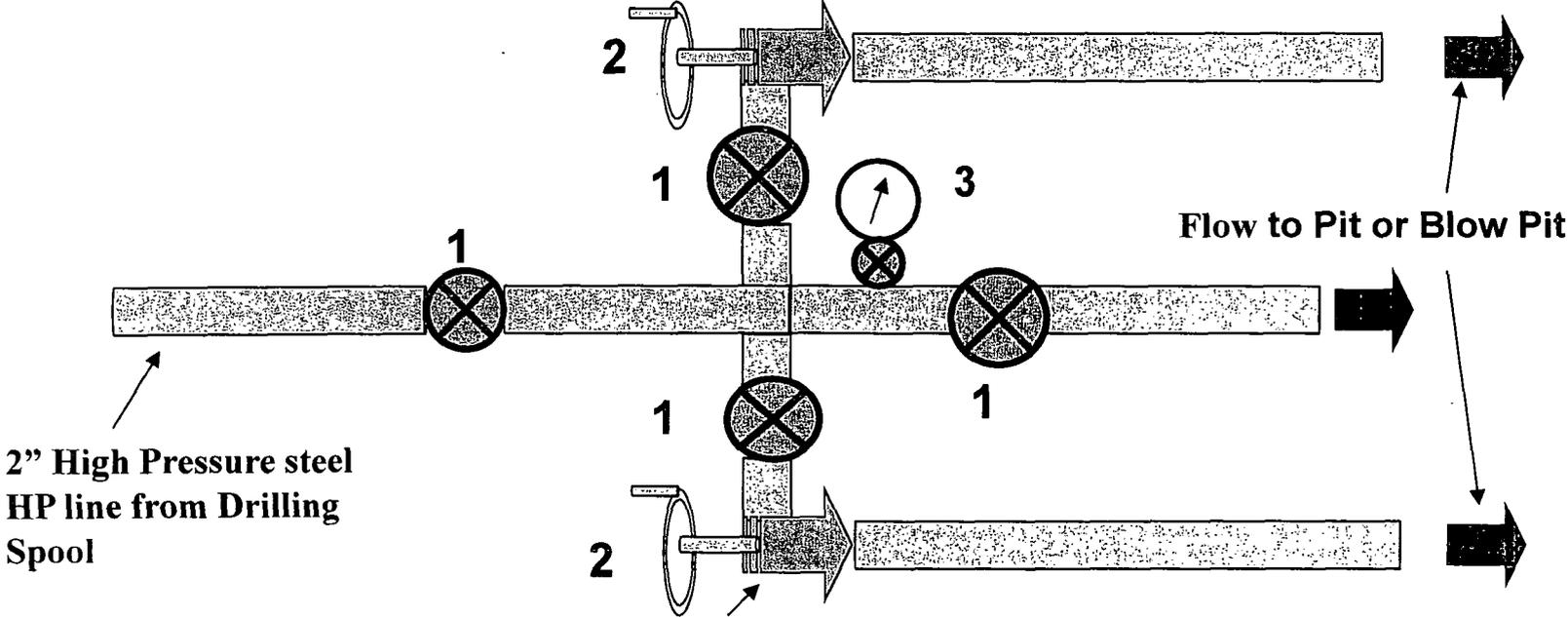
Ronnie L. Young  
Director - Regulatory  
1001 Fannin Street, Suite 800  
Houston, TX 77002  
713-495-6530



**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 8 5/8"
  2. Drilling Spool
  3. Pipe Rams
  4. Blind Rams
  5. Bell Nipple
  6. 2" Check Valve
  7. 2" Manual Valves
  8. Rotating Head, when needed if air drilling
  9. Blooie Line will be used if air drilling

