UNITED STATES DEPARTMENT OF THE INTERIOR **BUREAU OF LAND MANAGEMENT**

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

APPLICATION FOR PERMIT TO DRI	3.	USA NMNM 66864					
APPLICATION FOR PERMIT TO DRI Ia. Type of Work X DRILL REE	NTER	ਤਿਸ਼ਾeau of Land Ma	a Off C6	If Indian, A	llotee or	Tribe Name	=
1b. Type of Well Oil Well Gas Well Other							
2. Name of Operator			8	Lease Name	and Wel	I No.	_
Energen Resources Corporation		In property of		Carraca	s 27B		
3a. Address 2010 Afton Place Farmington, New Mexico 8740 4. Location of Well (Report location clearly and in accordance with any)1	3b. Phone No. (include area co		API Well N	39-	31056	_
At surface 1.044' FSL. 748' FWL	y siate e	quirements).		Field and Po. Basin F	<u>ruitla</u>	nd Coal	
At proposed prod. zone 1,000' FSL, 100' FWL		27-32N-4W	. [11	.Sec., T., R. Sec. 26		Blk. and Survey or A	Area
14. Distance in miles and direction from nearest town or post office*		7 05 100	12	.County or F		13.State	_
9 miles from A	Arbole	ς		io Arriba		NM	
73. Distance from proposed*		6. No. of Acres in lease		ng Unit dedi			_
location to nearest property or lease line, ft. (Also to nearest drg. unit line, if any)		320	, , , , , , , , , , , , , , , , , , ,		320 S/		
18. Distance from proposed location*	1	9. Proposed Depth	20. BLM	/BIA Bond	No. on fi	le 	
to nearest well, drilling, completed, applied for, on this lease, ft. 48*		946 0' MD		9		015.01V. 151.3	
21. Elevations (Show whether DF, KDB, RT, GL, etc.	1 2	22. Approximate date work will star	tart* 23. Estimated dur				_
7,058' GL		04/01/2011	30 days				
	24. /	Attachments					ως
The following, completed in accordance with the requirements of Onshore	e Oil and	Gas Order No. 1, must be attached	to this fo	orm:			nd "As i
 Well plat certified by a registered surveyor. A Drilling Plan. A Surface Use Plan (if the location is on National Forest System Land SUPO must be filed with the appropriate Forest Service Office). 	ds, the	 Bond to cover the operation of tem 20 above). Operator certification. Such other site specific inf BLM 		·			0 5
25. Signature	Nam	e (Printed/Typed)			Date		
Sei C	Dev	vin Mills				04/08/10	
Title Diilling Engineer							
Drilling Engineer Approved by (Signautre)	Nam	e (Printed/Typed)			Date		
Our Hearth	' ' ' '	JOE Hewith				15-11	
Title acting ADM	Offic	Office FFO					
					·		
Application approval does not warrant or certify that the applicant holds conduct operations thereon. Conditions of approval, if any, are attached.	s legal or	equitable title to those rights in t	he subject	t lease which	1 would (entitle the applicant	t to
Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a States any false, fictitious or fraudulent statements or representations as to	crime fo any mat	r any person knowlingly and willful ter within its jurisdiction.	lly to mak	e to any dep	artment o	or agency of the Un	iited
	r Directio	onal Survey	:Aleo	*(Instru	ctions on	page 2)	 2 Y S1
° a	nd "As Dr	illed" plat					

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

This action is subject to technical and procedural review pursuant to 43 CFR 3165.5 and appeal pursuant to 43 CFR 3165.4

NMOCD JUL 0 1 2011

BLM'S APPROVAL OR ACCEPTANCE OF THIS ACTION DOES NOT RELIEVE THE LESSEE AND OPERATOR FROM OBTAINING ANY OTHER **AUTHORIZATION REQUIRED FOR OPERATIONS** ON FEDERAL AND INDIAN LANDS

NOTIFY AZTEC OCD 24 HRS. PRIOR TO CASING & CEMENT

DISTRICT | 1825 N. French Dr., Hobbs, N.M. 68240 State of New Mexico Energy, Minerals & Natural Resources Department

Form C-102 Revised July 16, 2010

DISTRICT II
1301 W. Grand Avenue, Artesia, N.M. 88210

Submit one copy to appropriate District Office

DISTRICT III 1000 Rio Brazos Rd., Aztec, N.M. 87410 OIL CONSERVATION DIVISION 1220 South St. Francis Dr. Santa Fe, NM 87505

☐ AMENDED REPORT

DISTRICT IV 1220 S. St. Francis Dr., Santa Fe, NM 87505

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number					
30-039-310	56	71629 , BASIN FRUITLAND COAL			
*Property Code		Property Name			
35664		CARRACAS 27B			
⁷ OGRID No.	· · · · · · · · · · · · · · · · · · ·	Elevation			
162928		7058'			

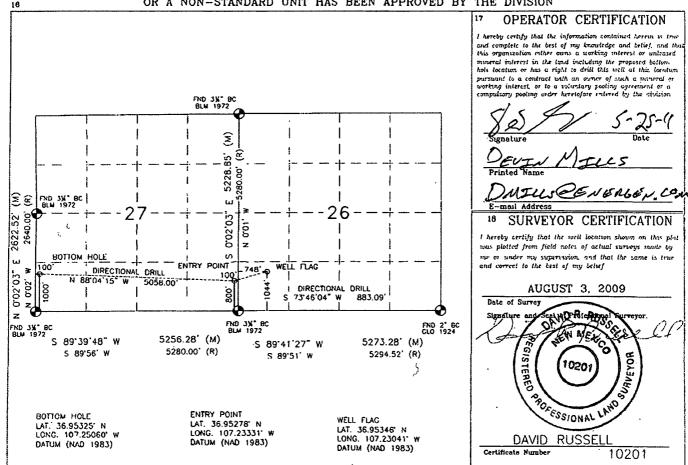
¹⁰ Surface Location

Í	UL or lot no	Section	Yownship	Range	Lot idn	Feet from the	North/South line	Feet from the	East/West line	County
	M	26	32N	4W		1044'	SOUTH	748'	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
М	27	32N	4W		1000'	SOUTH	100'	WEST	RIO ARRIBA
u Dedicated Acre		12	13 Joint or	lnfil)	¹⁴ Consolidation C	ode	16 Order No.	-13119	

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



ζ



Operations Plan

Well Name:

Carracas 27B 16

Job Type:

Horizontal Coal

Dept:

Drilling and Completions

General Information

Project:

2011 - CARRACAS

Area:

Carracas

Surface Location

1044' FSL 748' FWL

S-T-R

Sec. 26, T32, R4

Bottom Hole Location

1000 FSL 100 FWL

S-T-R

Sec.27, T32N, R4W

County/State:

RIO ARRIBA / NM

Elevations

7058

Elevations

Total Depth

Formation Objective

Formation Tops

Formation Name	Depth (TVD ft.)		
SAN JOSE	Surface		
NACIMIENTO	2148		
OJO_ALAMO	3400		
KIRTLAND	3528		
FRUITLAND	3811		
FRUITLAND_COAL_TOP	3964		
FRUITLAND_COAL_BASE	3977		
PICTURED CLIFFS	4062		

Drilling

Please see below for mud system.

Projected KOP is 3000' TVD with 5.86°/100' doglegs.

Blowout Control Specifications:

A 3000 psi minimum double ram or annulus BOP stack will be used following nipple up of casing head. A 2" nominal, 2000 psi minimum choke manifold will also be used. An upper Kelly Cock valve handle and drill string valve should be available to fit each drill string and be available on the rig floor during drilling operations. Pressure test BOP to 250 psi for 15 min and 2000 psi for 15 min.



Logging Program

		Тор	Base			
ین Log Type	Hole	Depth	Depth	n N	otes	
I-PZIG	Production	:	•			

Casing, Tubing and Casing Equipment

	Start	End				
String	Depth	Depth	Wellbore	Size	Weight	Grade
Casing-Surface	. 0	200	12.250000"	9.625"	32.3 lb/ft	H-40
Casing-Intermediate	. 0	4550	8.750000"	7"	23.0 lb/ft	J-55
Casing-Production	4500	9460	6.250000"	4.5"	11.6 lb/ft	J-55
Casing-Surface						. ,
Casing-Intermediate	1					
Casing-Production	-					

Cementing	Notes
Casing-Surface	107 sks Type V with 2.0 % CaCl2 and ¼ #/sk Flocele (15.6 ppg, 1.18 ft3/sk 126 ft3 of slurry, 100% excess to circulate to surface). WOC 12 hours. Pressure test surface casing to 750 psi for 30 min.
Casing-Intermediate	Depending on wellbore conditions, cement may consist of 270 sks PRB II with 5 #/sk Gilsonite, and ¼ #/sk Flocele (12.3 ppg, 2.24 ft3/sk) and a tail of 100 sks PRB II with 5 #/sk Gilsonite and ¼ #/sk Flocele (13.5 ppg, 1.81 ft3/sk). (785 ft3 of slurry, 20% open hole excess to circulate to surface). WOC 12 hours. Test casing to 1500 psi for 30 min.
Casing-Production	Open hole completion, no cement.

Other Information

- 1) Open hole completion, no cement.
- 2) If lost circulation is encountered, sufficient LCM will be added to the mud system to maintain well control. The intermediate string may need to be cemented in multiple stages with a slurry design deviated from that listed above.
- 3) If high reservoir pressures or water flows are encountered slurry design may need to be deviated to from those listed above to satisfy wellbore and formation conditions.
- 4) Primary Objective formation has an Est BHP of: psi
- 5) This gas is dedicated.

Mud System

Surface: 12 1/4" wellbore will be drilled with a fresh water mud system (spud mud).

Intermediate: 8 3/4" wellbore will be drilled with a LSND mud system. Weighting materials will be drill cuttings and if needed barite. Mud density is expected to range from 8.4 ppg to 9.3 ppg.

Production: $6\ 1/4"$ wellbore will be drilled with a fresh water or brine water system depending on reservoir characteristics. Anticipated BHP can be as high as 1,100 psi.

Run Time: 3/31/2011 3:00:23 PM

Created by Upstream Professionals, Inc.

Energen

APD Report

Company: Energen Resources Project: Carson National Forest Site: 27B; Sec 27 T32N R4W Well: Carracas 27B #16H Wellbore: Wellbore #1 Design: Design #1		Local Co-ordinate Reference: Site 27B; Sec 27 T32N R4W TVD Reference: WELL @ 7072.0usft (Original Well Elev MD Reference: WELL @ 7072 0usft (Original Well Elev North Reference: True Survey Calculation Method: Minimum Curvature Database: EDM 5000.1 Single User Db					
Project Carson National Fore	st	• •• • • •	• =				
Map System: US State Plane 1983 Geo Datum: North American Datum 1983 Map Zone: New Mexico Central Zone		System Datum:	Mean Sea Level				
Site	W		The state of the s				
Site Position: From: Lat/Long Position Uncertainty: 0.0 usft	Northing: Easting: Slot Radius:	2,167,826.53 usft 1,353,955.45 usft 13-3/16 "	Latitude: Longitude: Grid Convergence:	36° 57' 12 456 N 107° 13' 49.476 W -0.59 °			
Well Carracas 27B #16H	the second of th			, ,			
Well Position +N/-S 0.0 usft +E/-W 0.0 usft Position Uncertainty 0.0 usft	Northing: Easting: Wellhead Elevation:	2,167,826.53 usft 1,353,955.45 usft usft	Latitude: Longitude: Ground Level;	36° 57' 12.456 N 107° 13' 49.476 W 7,058.0 usft			
Wellbore Wellbore #1 Magnetics Model Name IGRF200510	Sample Date Declination 3/28/2011 9.70	Dip Angle Field Stre (°) (hT)	ngth 50,979				
Design #1 Audit Notes:							
Version:	Phase: PROTOTYPE Tie On De	epth: 0.0	1				
	om (TVD) +N/-S (usft) (usft) (usft) 0.0 0.0	Direction (9) 269.60					
Survey Tool Program Date 3/29/2011	たらない。 and a best of a more of the control of the 元素製造作のできる。 Performance (Table) (Table) (Table) (Table)	SOUND TO CAST CONTRACT AND A FEW PARTS OF THE PARTS OF TH		AND MITTER STATE OF THE STATE OF			

Energen APD Report

Company: Project: Site: 🐫

Energen Resources Carson National Forest 27B; Sec 27 T32N R4W

Carracas 27B #16H

Wellbore: ∛Wellbore #1 Design: Design #1

Local Co-ordinate Reference:

TVD Reference:

MD Reference: North Reference:

Survey Calculation Method: Database:

Site 27B; Sec 27 T32N R4W

WELL @ 7072.0usft (Original Well Elev) WELL @ 7072.0usft (Original Well Elev)

True

Minimum Curvature EDM 5000.1 Single User Db

Well:

esign: Design #	1					Database:
mined Survey MD (usft)		i (azimuth)	V. Sec (usft)	N/S (usft)	E/W (usft) (°)	DLeg 100usft)
0.0	0.00	0.00	0.0	00	0.0	0.00
200.0	0 00	0 00	0 0	0 0	0.0	0.00
9 5/8"						
2,148.0	0.00	0.00	0.0	0.0	0.0	0.00
Nacimiento						
3,000.0	0.00	0.00	0.0	0.0	0.0	0 00
3,100.0	5.86	269 60	5.1	0 0	-5 1	5 86
3,200.0	11.73	269.60	20.4	-0.1	-20.4	5.86
3,300.0	17.59	269.60	45 7	-0 3	-45 7	5.86
3,400.0	23.46	269 60	80.7	-0.6	-80.7	5.86
3,412.1	24.17	269.60	85.6	-0.6	-85.6	5.86
Ojo Alamo 3,500.0	29.32	269.60	. 125.2	-0 9	-125.2	5.86
3,557.8	32.71	269.60	155.0	-1.1	-155.0	5.86
Kirtland						
3,600.0	35.19	269.60	178.5	-1.2	-178.5	5.86
3,700.0	41.05	269.60	240.2	-1 7	-240 2	5.86
3,800.0	46.92	269.60	309.6	-2.2	-309.6	5.86
3,900.0	52.78	269.60	386.0	-2 7	-386.0	5.86
3,956.7	56.11	269.60	432 2	-3 0	-432 2	5.86
Fruitland						
4,000.0	58 64	269.60	468.6	-3.3	-468.6	5.86
4,100.0	64.51	269.60	556.5	-3.9	-556.5	5.86
4,200 0	70.37	269.60	648.8	-4.5	-648.8	5.86
4,300 0	76.24	269.60	744.6	-5.2	-744.6	5.86
4,375 1	80.64	269.60	818 1	-5 7	-818 1	5.86
Fruitland Coal						
4,400.0	82.10	269.60	842.8	-5.9	-842.7	5.86

Energen APD Report

Company: Project:

Energen Resources Carson National Forest

Site:

27B; Sec 27 T32N R4W

:Well:

Carracas 27B #16H

.Wellbore:

*Design:

Wellbore #1 Design #1

Local Co-ordinate Reference:

TVD Reference:

MD Reference:

North Reference: Survey Calculation Method:

Database:

Site 27B; Sec 27 T32N R4W

WELL @ 7072.0usft (Original Well Elev)

WELL @ 7072.0usft (Original Well Elev)

True

Minimum Curvature

EDM 5000.1 Single User Db

Planned Survey

4,406.1	82.46	269.60	848.8	-5.9	-848.7	5.86		
27B16 Entry pt	07.07	000.00						
4,500.0	87 97	269.60	942.3	-6.6	-942 3	5 86		
4,537.2	90.15	269.60	979.6	-6.8	-979.5	5 86		
4,550.0	90.15	269.60	992.3	-6 9	-992.3	0.00		
7"				•				
4,600.0	90 15	269.60	1,042.3	-7.3	-1,042 3	0 00		
4,700.0	90.15	269.60	1,142.3	-8 0	-1,142.3	0.00		
4,800.0	90.15	269 60	1,242.3	-8 7	-1,242.3	0.00		
4,900.0	90 15	269.60	1,342 3	-9.4	-1,342.3	0 00	1	
5,000.0	90.15	269.60	1,442.3	-10.1	-1,442.3	0.00	1	
5,100.0	90 15	269 60	1,542 3	-10.8	-1,542 3	0.00	•	
5,200.0	90.15	269.60	1,642.3	-11.5	-1,642.3	0.00		
5,300.0	90.15	269.60	1,742.3	-12.2	-1,742.3	0.00		
5,400.0	90.15	269 60	1,842.3	-12.9	-1,842 3	0 00		
5,500.0	90.15	269 60	1,942.3	-13.6	-1,942.3	0.00	İ	
5,600.0	90.15	269.60	2,042 3	-14 3	-2,042.3	0.00		
5,700.0	90.15	269.60	2,142 3	-15 0	-2,142 3	0.00		
5,800.0	90.15	269.60	2,242.3	-15.7	-2,242.3	0.00		
5,900.0	90.15	269 60	2,342.3	-16.4	-2,342.3	0.00		
6,000.0	90.15	269 60	2,442.3	-17.1	-2,442.3	0.00		
6,100.0	90.15	269.60	2,542.3	-17.7	-2,542.3	0.00		
6,200.0	90.15	269.60	2,642.3	-18.4	-2,642.3	0.00		
6,300.0	90.15	269.60	2,742.3	-19.1	-2,742.3	0.00		
6,400.0	90 15	269.60	2,842 3	-19.8	-2,842.3	0.00		
6,500.0	90.15	269.60	2,942.3	-20.5	-2,942.3	0 00		
6,600.0	90.15	269.60	3,042 3	-21.2	-3,042 2	0.00		

Energen APD Report

Company: Project:

Energen Resources Carson National Forest - 27B; Sec 27 T32N R4W

Site: Well: 4 Wellbore:

Carracas 27B #16H Wellbore #1 Design #1

Local Co-ordinate Reference:

TVD Reference: "

MD Reference:

North Reference: Survey Calculation Method: Database:

Site 27B; Sec 27 T32N R4W

WELL @ 7072.0usft (Original Well Elev) WELL @ 7072 Ousft (Original Well Elev)

· True

Minimum Curvature

EDM 5000.1 Single User Db

2.00	
Design:	
Dealgh.,	
7.2.	
整ち変化さい	
Planned Surve	۷

1	Planned Survey		Sand - E			And the second			į	
	MD	Inc.	Azi (azimuth)	V. Sec	N/S	E/W	DLeg (100usft)			
1	्रिक्ति (üsft) 6,700.0	90.15	(°) 269.60	(usft) 3,142 3	-21.9	-(usft) (° -3,142.2	(100usft) (100us			
ļ	6,800.0	90.15	269 60	3,242.3	-22 6	-3,242.2	0.00			
	6,900.0	90.15	269.60	3,342 3	-23.3	-3,342.2	0.00			
1	7,000.0	90.15	269.60							
ĺ	7,000.0 7,100 0	90.15	269.60	3,442.3	-24 0	-3,442 2	0.00			
1	7,100 0	90.15	269.60	3,542.3 3,642.3	-24.7 -25 4	-3,542.2	0.00			
	7,300.0	90.15	269 60	3,742.3	-26.1	-3,642 2 -3,742 2	0 00 0.00			
	7,400.0	90.15	269 60	3,842.3	-26.8	-3,842.2	0.00			
İ										
1	7,500.0	90.15	269.60	3,942.3	-27 5	-3,942.2	0.00			
	7,600.0	90 15	269 60	4,042.3	-28.2	-4,042.2	0.00			
Ì	7,700.0	90.15	269.60	4,142.3	-28 9	-4,142 2	0.00			
	7,800.0	90 15	269 60	4,242 3	-29.6	-4,242.2	0 00			
	7,900.0	90.15	269.60	4,342 3	-30 3	-4,342 2	0 00			
	8,000.0	90.15	269 60	4,442.3	-31.0	-4,442.2	0.00	1		
Ì	8,100 0	90.15	269 60	4,542 3	-31.7	-4,542 2	0 00	1		
	8,200 0	90.15	269.60	4,642.3	-32.4	-4,642.2	0 00	ı		
	8,300 0	90.15	269.60	4,742.3	-33.1	-4,742.2	0.00			
İ	8,400 0	90 15	269 60	4,842.3	-33.8	-4,842.2	0 00		l	
	8,500.0	90.15	269.60	4,942.3	-34.5	-4,942.2	0.00			
Ì	8,600.0	90.15	269.60	5,042.3	-35.2	-5,042.2	0 00	i e		
	8,700 0	90.15	269.60	5,142.3	-35.9	-5,142.2	0.00			
	8,800.0	90.15	269.60	5,242.3	-36 6	-5,242 2	0 00			
	8,900 0	90.15	269 60	5,342 3	-37.3	-5,342 2	0.00		Ţ	
1	9,000.0	90.15	269.60	5,442.3	-38.0	-5,442.2	0.00			
	9,100.0	90.15	269 60	5,542.3	-38.7	-5,542.2	0 00			
Ì	9,200.0	90.15	269.60	5,642.3	-39.4	-5,642.2	0.00			
1	9,300.0	90.15	269.60	5,742 3	-40.1	-5,742.2	0 00		ļ	
ļ	,						•		1	

Energen

APD Report

Company: Energen Resources Local Co-ordinate Reference: Project: Carson National Forest TVD Reference: Site: 27B, Sec 27 T32N R4W MD Reference: Well: ... Carracas 27B #16H North Reference: Wellbore: Wellbore #1 Survey Calculation Method: Design: Design #1 Database:

Site 27B, Sec 27 T32N R4W

WELL @ 7072.0usft (Original Well Elev) WELL @ 7072 Ousft (Original Well Elev)

Minimum Curvature EDM 5000.1 Single User Db

Planned Survey

MD (usft)	Înc.	Azi (azimuth)	V: Sec (usft)	N/S (usft)	E/W (usft)	DLeg /100usft)	
9,400.0	90.15	269.60	5,842.3	-40.8	-5,842.2	0.00	ı
9,460.0	90.15	269.60	5,902 3	-41.2	-5,902.2	0 00	
4 1/2" 9,461 9	90.15	269.60	5,904.2	-41.2	-5,904.0	0.00	
27B16 BHL							:

Measured Vertical Depth Depth (usft) (usft)	Casing Diameter Name	Hole Dlameter (")
200.0 200.0 9 5/8"	9-5/8	12-1/4
4,550.0 3,977.0 7"	7	8-3/4
9,460.0 3,964.1 4 1/2"	4-1/2	6-1/4

Depth	rtical, * epth			Dip Dip Direction	
The Barrier of State of Cartines and Cartine	ısft) 🎺 🖔	Name	Lithology	(9) 李诗篇(9)是古代《美国代表》(1913)	The state of the s
4,375.1	3,964.0	Fruitland Coal	coal	0.00	
4,375.1	3,964.0	Fruitland Coal	Coal	0.00	'
3,956.7	3,8110	Fruitland	sandstone	0.00	
3,956.7	3,811.0	Fruitland	Sandstone	0.00	
2,148.0	2,148.0	Nacimiento	shale	0.00	
2,148.0	2,148 0	Nacimiento	Shale	0.00	
3,557.8	3,528 0	Kırtland	shale	0.00	
3,557.8	3,528.0	Kırtland	Shale	0.00	
3,412.1	3,400.0	Ojo Alamo	sandstone	0.00	
3,412.1	3,400.0	Ojo Alamo	Sandstone	0 00	

Charles d Dee	Approved Der	Data	
Checked By:	Approved By:	Date	•
1			



Geologic Prognosis

Company:

Energen Resources Corporation

Project:

2011 - CARRACAS

Area:

Carracas

Operator:

ENERGEN RESOURCES CORPORATION

Well Name:

Carracas 27B 16

Surface Location (T/R/S):

T32 / R4 / S26

Footage (SHL):

1044' FSL 748' FWL

Footage (BHL):

1000 FSL 100 FWL T32N / R4W / S27

County/State:

RIO ARRIBA / NM

Surveyed GL:

7058

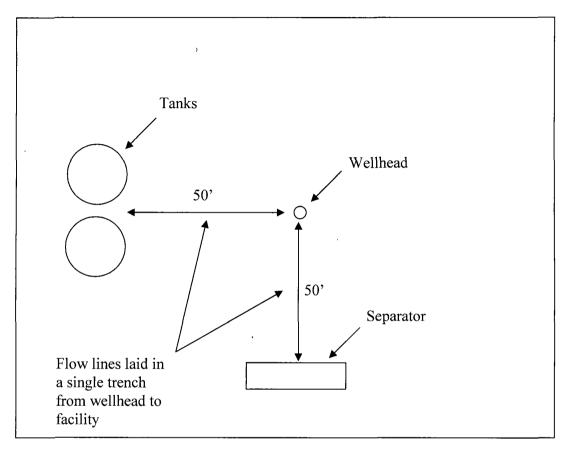
KB (est): 7074

Formation Name	Triickness 🗧	Deput(tVD(ta)	Structural Elev=(fi)==
SAN JOSE	2132	Surface	7058
NACIMIENTO	1252	2148	4926
OJO_ALAMO	128	3400	3674
KIRTLAND	283	3528	3546
FRUITLAND	251	3811	3263
FRUITLÀND_COÀL_TO	P. 13	3964	3110
FRUITLAND_COAL_BAS		3977	3097
PICTURED CLIFFS		4062	3012

EXHIBIT C

Energen Resources Corporation

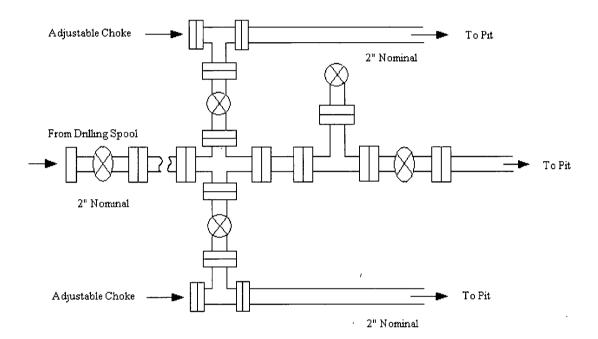
Typical well pad layout with production facilities on the Carson National Forest



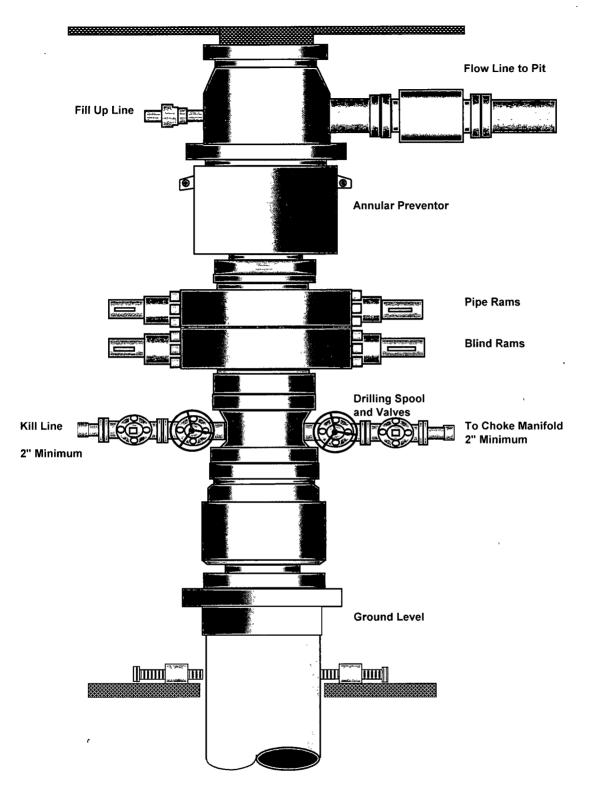
- 50 feet is a minimum offset to ensure facilities are on the outside of the drill rig anchors for work-over activity.

Energen Resources Corporation

Typical 2000 psi Choke Manifold Configuration



Choke manifold installed from surface to TD



3M Typical BOP Configuration