## State of New Mexico Energy, Minerals and Natural Resources Department

Susana Martinez Governor

David Martin Cabinet Secretary

Brett F. Woods, Ph.D. Deputy Cabinet Secretary David R. Catanach Division Director Oil Conservation Division



New Mexico Oil Conservation Division approval and conditions listed below are made in accordance with OCD Rule 19.15.7.11 and are in addition to the actions approved by BLM on the following <u>3160-3</u> APD form.

Operator Signature Date: <u>1.1(e.15</u> Well information;

Operator <u>Energen</u>, Well Name and Number <u>Chaco 23-08 15</u> #1H

API# <u>30-045-35632</u>, Section <u>14</u>, Township <u>23</u> NS, Range <u>8</u> 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 NSD, NSP, DHC
- Spacing rule violation. Operator must follow up with change of status notification on other well to be shut in or abandoned
- Regarding the use of a pit, closed loop system or below grade tank, the operator must comply with the following as applicable:
  - A pit requires a complete C-144 be submitted and approved prior to the construction or use of the pit, pursuant to 19.15.17.8.A
  - A closed loop system requires notification prior to use, pursuant to 19.15.17.9.A
  - A below grade tank requires a registration be filed prior to the construction or use of the below grade tank, pursuant to 19.15.17.8.C
- Once the well is spud, to prevent ground water contamination through whole or partial conduits from the surface, the operator shall drill without interruption through the fresh water zone or zones and shall immediately set in cement the water protection string
  - Regarding Hydraulic Fracturing, review EPA Underground Injection Control Guidance 84
  - Oil base muds are not to be used until fresh water zones are cased and cemented providing isolation from the oil or diesel. This includes synthetic oils. Oil based mud, drilling fluids and solids must be contained in a steel closed loop system.
- Well-bore communication is regulated under 19.15.29 NMAC. This requires well-bore Communication to be reported in accordance with 19.15.29.8.

NMOCD Approved by Signature

2-8-2016

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

Form 3160-3 (August 2007)		UNITED STA	ATES	RECEN	VED	FORM APPRO OMB No. 1004- Expires July 31,	0137 2010
	DEI	PARTMENT OF TH	HE INTERIOR	MAR 18	20 SMMNM	ase Serial No. -18463	
	APPLICATIO	N FOR PERMIT	TO DRILL OR RE	ENTER	6. If 1	ndian, Allotee or Tri	ibe Name
la. Type of wor	rk: 🖌 DRILL	RE	EENTER	Farmington Fi Bureau of Land N	eld Office Vanagenfiel	nit or CA Agreement	, Name and No.
lb. Type of We	ll: 🔽 Oil Well	Gas Well Other	✓ Single Z	one 🔲 Multiple Zor	8. Lea CHACO	se Name and Well N D 23-08 15 #1H	10.
2. Name of Ope	erator ENERGEN R	ESOURCES CORPO	DRATION		9. API	Well No.	7632
3a. Address 20 FA	10 AFTON PLACE	87401	3b. Phone No. (inch 505-325-6800	ude area code)	10. Field BASIN	d and Pool, or Explor MANCOS	atory
4. Location of V At surface At proposed	Well (Report location c 2173' FSL & 567' F prod. zone 2260' FS	learly and in accordance w WL, SEC 14, T23N, F L & 380' FWL, SEC 1	vith any State requirements.*) R8W 15, T23N, R8W		11. Sec., SEC 14	T. R. M. or Blk. and 4 T23N. R8W. NM	Survey or Area
14. Distance in mi Approximately	iles and direction from y (7) seven miles so	nearest town or post office outheast of the town of	e* of Nageezi, New Mexic	co	12. Cou SAN J	nty or Parish UAN COUNTY	13. State NM
15. Distance from location to near property or learning	r proposed* arest ase line, ft	567'	16. No. of acres in 2243 16 ACRES	i lease 17. S	pacing Unit dec	licated to this well	
(Also to neare	st drig. unit line, if any	')	10 December 10	160	ACRES	No. on filo	
<ol> <li>Distance from to nearest well applied for, on</li> </ol>	, drilling, completed, this lease, ft.	75'	10,232' MD 5,155' TVD	n 20. F NM NM	2707 B000747	No. on hie	
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#### Drilling Plan Energen Resources Corporation

#### Chaco 23-08 15 #001H

Surface Location: 2173 FSL, 567 FWL Legal Description: Sec 14, T23N, R8W (36.225662° N, 107.658279° W – NAD83) Bottom Hole Location: 2260 FSL, 380 FWL

Legal Description: Sec 15, T23N, R8W (36.225997° N, 107.676839° W – NAD83) San Juan County, NM

1. The elevation of the unprepared ground is 6,875 feet above sea level.

2. The geological name of the surface formation is the Nacimiento.

3. A rotary rig will be used to drill the well to a Proposed Total Depth of 5,155' TVD/10,232' MD.

4. Estimated top of important geological markers:

Formation	Depth (TVD)(ft)	Depth (MD)(ft)
Nacimiento	Surface	Surface
Ojo Alamo	770	770
Kirtland	920	920
Fruitland	1,035	1,035
Pictured Cliffs	1,490	1,490
Huerfantio Bentonite	1,859	1,859
Chacra	2,280	2,280
Cliff House	2,940	2,940
Menefee	2,990	2,990
Point Lookout	3,850	3,850
Mancos	4,300	4,300
Mancos/Niobrara "C"	5,005	5,005

5. Estimated depth at which anticipated water, oil, gas or other mineral bearing formations are expected to be encountered:

Formation	Depth (TVD)(ft)	Water/HydroCarbon
Fruitland	1,035	Gas
Pictured Cliffs	1,490	Gas
Cliffhouse	2,940	Gas
Point Lookout	3,850	Gas
Mancos	4,300	Oil/Gas

6. All proposed casing is new and the program is as follows:

Coning	Size	Dej	Depth		Depth		Weight	Connection	PSI		x1000 lbs
Casing	Size	MD	TVD	and the second			Burst	Collapse	Tension		
Surface	9-5/8"	0-500'	0-500'	J-55	36.00	STC	3520	2020	394		
Intermediate	7"	0-5,775'	0-5,155'	J-55	26.00	LTC	4980	4320	367		
Production	4-1/2"	5,525'-10,231'	5,155'-5,015'	L-80	11.60	Ultra DQX	7780	6350	267		

#### 7. Cementing Program:

- a. 12-1/4" hole x 9-5/8" casing at 500' will have cement circulated to surface with 270 sks (100% excess true hole) Class H Cement with 1.0 % CaCl<sub>2</sub>, ½ #/sk Poly-E-Flake15.8 ppg, 1.17 ft<sup>3</sup>/sk. Note: CEMENT MUST BE CIRCULATED TO SURFACE. STANDARD BOW SPRING CENTRALIZERS SHALL BE PLACED ON THE FIRST 3 (BOTTOM 3) JOINTS OF CASING (1 PER JOINT) AND 1 EVERY 3<sup>RD</sup> JOINT TO SURFACE. 20 BBLS OF WATER FOLLOWED BY 20 BBLS OF MUDFLUSH AHEAD OF CEMENT AS SPACER
- b. 8-3/4" hole x 7" casing at 5,775'. Cement will be circulated to surface with 610 sks (50% excess true hole) of HLC with 1.0 % CaCl<sub>2</sub>. ¼ #/sk Poly-E-Flake, 5 #/sk Kol-Seal (Gilsonite) 12.3 ppg, 1.95 ft<sup>3</sup>/sk followed by 115 sks (100% excess true hole) 50/50 Glass H/Poz with 0.15% Versaset, 0.30% HALAD-9, ¼ #/sk Poly-E-Flake, 5 #/sk Kol-Seal 13.5 ppg, 1.31 ft<sup>3</sup>/sk. ONE CENTRALIZER PER JOINT FOR THE FIRST 3 JOINTS, THEN EVERY 3<sup>RD</sup> JOINT TO SURFACE. 10 BBLS OF WATER FOLLOWED BY 30 BBLS OF MUDFLUSH AHEAD OF CEMENT AS SPACER.
- c. 6-1/4" hole x 4-1/2" liner at 10,231'. A fluid caliper will be run to determine base slurry cement to have TOC at 5,525'. Weighted Reactive Spacer to invert oil phase mud: 40 bbls Tuned Spacer with 0.20 gal/bbl Musol® A Solvent, 146.5 lb/bbl Barite, 0.20 gal/bbl SEM-7 Surfactant. Base slurry to consist of 400 sks 50/50 Class H/Poz with 0.10% Versaset, 1.5 gal/sk CHEM-FOAMER 760, 0.10% sa-1015, 0.20% HALAD-766 13.5 ppg, 1.27 ft<sup>3</sup>/sk, Foamed density 10.5 ppg. 50 sks of base slurry to be used as tail cement less foaming agent. CENTRALIZERS TO BE USED AT DISCRETION IN LATERAL TO ACHIEVE 70% STAND OFF. CENTRALIZERS TO BE USED TO TIE BACK DEPTH OF 6150' TO ACHIEVE 70% STAND OFF. PACKOFF SEAL ASSEMBLY TO BE USED FOR LINER TOP ISOLATION.
- 8. Pressure Control Equipment
  - a. BOPE to be installed prior to Surface Casing drillout.
  - b. Pressure control equipment will be used to meet 2,000 (2M) psi specifications.
  - c. BOPE working pressure of 3,000 psi.
  - d. Function test and visual inspection to be done at each casing size change prior to drill out.
  - e. BOP annular to be tested to 85% of working pressure.
  - f. All BOP and related equipment will be tested in accordance with the requirements outlined in Onshore Order No. 2 and Notice to Operators dated May 27, 2005.
  - g. BOP remote controls to be located on rig floor and readily accessible, master control on ground at accumulator will be able to function all preventors.
  - h. Kill line will be 2 in min and have two kill line valves, one being a check valve.
  - Choke line will be 2 in min and have two choke line valves, choke manifold with have two adjustable chokes, one manual and one remote. All choke lines will be as straight as possible. Any turns will be properly targeted using block and/or running tees. Choke line and manifold to be pressure tested to 1,500 psi.
  - j. Float sub and TIW valve will be on the rig floor at all times.
  - k. If high pressure co-flex hoses are used, they will be run as straight as possible and anchored to prevent whip.
  - 1. The main discharge line (panic line) will be at least 100' from the choke manifold and discharged into an appropriately sized discharge facility.

#### 9. Mud Program:

0' - 500'	Fresh water/Spud Mud. Paper for losses and seepage. 8.5 to 9.0 ppg, 32 to 75 vis, PV 3 to 5, YP 5 to 7, WL NC
500' - 5,775'	Fresh water/LSND. As needed LCM for losses and seepage. 8.5 to 9.5 ppg, pH 10, 28 to 60 vis, PV 1, YP 1, WL 8-15
5,775' - 10,231'	WBM with shale and clay stabilizers. As needed LCM for losses and seepage. 8.3 to 9.3 ppg, 15 to 35 vis, PV 4-6, YP 4-6, WL $< 20$

\*\*During drilling operations, all necessary products will be sufficiently stored on location for abnormal situations. The characteristics, use, testing of drilling mud and the implementation of related drilling procedures shall be designed to prevent the loss of well control. Sufficient quantities of mud materials shall be maintained or readily accessible for the purpose of assuring well control. \*\*A pH of 10 or above in the fresh water base mud system shall be maintained to control the effects corrosion has on metallurgy of equipment used.

#### Operating and Maintenance

Energen Resources Corporation will be using all above ground steel pits for fluid and cuttings while drilling. If any tank develops a leak we will have immediate visual discovery, we would then transfer the fluid to another tank then remove any contaminated soil and dispose of it in the cuttings bins for transportation. Any leaks, spills or other undesirable events will be reported in accordance with BLM NTL 3A. Rig crews will monitor the tanks at all times. A trip/surge tank will be used to monitor returns for any "kicks" of formation fluids.

#### Equipment:

2-Mongoose Shale Shakers

2-3400 High Speed Centrifuges with stands and pumps

2-Roll off bins with Tracks

2-200 bbl Open top Frac tanks

1-Mud/Gas Separator and Degasser

1-Trip/Surge Tank

Electronic or Visual monitoring system to indicate lost returns

10. Testing, Logging and Coring Program:

- a. Testing Program: No drillstem tests are anticipated
- b. Electric Logging Program: TBD
- c. LWD Program: TBD
- d. Coring Program: None.
- e. CBL's and/or Temperature Surveys Will Be Performed as Needed or Required.
- 11. Bottom Hole Pressure expected to be 2,500 +/- psi
- 12. Bottom Hole Temperature expected to be 160 deg F.

# Energen Resources Chaco Mancos Sec 15, T23N, R8W

Chaco Mancos Sec 15, T23N, R8W 23-08 15 1H Chaco 23-08-15 #001H Northern Lateral

Plan: APD Plan

# **Preliminary Design**

01 December, 2014



Company Name: Energen Resources

SECTION DETAILS											
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect		
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0		
2	4200.0	0.00	0.00	4200.0	0.0	0.0	0.00	0.00	0.0		
3	4546.7	21.04	286.87	4538.9	18.3	-60.2	6.07	286.87	60.5		
4	5698.8	90.00	270.00	5155.0	87.0	-947.0	6.07	-18.00	948.3		
5	10231.8	93.55	270.00	5014.6	87.0	-5477.1	0.08	0.00	5477.8		



## Energen Preliminary Design

# OIL CONS. DIV DIST. 3

JAN 26 2016

Company: Ener Project: Char Site: 23-0 Well: Char Wellbore: Nort Design: APD	rgen Resources co Mancos Sec 15, 8 15 1H co 23-08-15 #001H hern Lateral 9 Plan	T23N, R8W	Local Co-ord TVD Reference MD Reference North Refere Survey Calco Database:	linate Reference; ce: e: nce: ilation Method:	Site 23-08 15 1H WELL @ 0.0usft (Original Well Elev) WELL @ 0.0usft (Original Well Elev) Grid Minimum Curvature EDM 5000.1 Single User Db			
Project	Chaco Mancos Se	5 15, T23N, R8W						
Map System: U Geo Datum: N Map Zone: N	IS State Plane 198 Iorth American Date Iew Mexico Central	3 um 1983 Zone	System Dat	um:	Mean Sea Leve	1		
Site	23-08 15 1H				en laner antidise Parchiel	-		
Site Position: From: Position Uncertainty	Lat/Long /: 0.0 (	Northing: Easting: usft Slot Radius:	1,904,42 1,225,04 13	24.30 usft Latitud 19.68 usft Longiti -3/16" Grid Co	le: ude: onvergence:	10	36° 13' 32.383 N 07° 39' 29.804 W -0.83 °	
Well	Chaco 23-08-15 #0	01H		the test print of the Children	Constanting to the Statistics		and the second se	
Well Position	+N/-S 0	0.0 usft Northing: 0.0 usft Easting:	1, 1,	904,424,30 usfl 225,049.68 usfl	Latitude: Longitude:	10	36° 13' 32.383 N 07° 39' 29.804 W	
Position Uncertainty	, (	0.0 usft Wellhead	Elevation:	usfl	Ground Level:		0.0 usft	
Wellbore	Northern Lateral				and show the second second second second		Contraction of the last	
Magnetics	Model Name	Sample Date 8/13/2014	Declinati (*) 4	<b>lon</b> 9.41	Dip Angle (*) 62.96	Field Stre (nT)	ngth 50,191	
Design Audit Notes: Version:	APD Plan	Phase:	PROTOTYPE	Tie On De	pth:	0.0		
Vertical Section:	D	epth From (TVD) (usft) 0.0	+N/-S (usft) 0.0	+E/-W (usft) 0.0	<b>Di</b> 2	rection (°) 70.91		
Survey Tool Program	m Date	12/1/2014	No.			Contraction of		
From	To (usff) Surve	w (Wellbore)	Too	I Name	Description			
0.0	10,231.8 APD F	Plan (Northern Lateral)	MVV	D	MWD - Standa	rd	SPIRITUAL PROPERTY.	
Planned Survey	Decomposition	COLUMN SOLDER AND IN	NAME AND AND	-	CALIFORNIA CONTRACTOR		undarsoners.	
TVD	MD	Inc Azi	(azimuth)	N/S	EW	Build	V. Sec	
0.0	0.0	0.00	0.00	0.0	0.0	0.00	0.0	
100.0	100.0	0.00	0.00	0.0	0.0	0.00	0.0	
200.0	200.0	0.00	0.00	0.0	0.0	0.00	0.0	
300.0	300.0	0.00	0.00	0.0	0.0	0.00	0.0	
400.0	400.0	0.00	0.00	0.0	0.0	0.00	0.0	
500.0	500.0	0.00	0.00	0.0	0.0	0.00	0.0	
Surface Casi	na							
600.0	600.0	0.00	0.00	0.0	0.0	0.00	0.0	
700.0	700.0	0.00	0.00	0.0	0.0	0.00	0.0	
800.0	800.0	0.00	0.00	0.0	0.0	0.00	0.0	
900.0	900.0	0.00	0.00	0.0	0.0	0.00	0.0	
1,000.0	1.000.0	0.00	0.00	0.0	0.0	0.00	0.0	
12/1/2014 9:06:46AM			Page 2	01 00	NS DIV DIS	T. 3 COMPAS	S 5000.1 Build 65	

JAN 26 2016

## Energen

### Preliminary Design

Company: Project Site: Well: Wellbore: Design:	Energ Chace 23-08 Chace North APD	ven Resources 5 Mancos Sec 15, T 15 1H 5 23-08-15 #001H ern Lateral Plan	"23N, R8W	Local Co- TVD Refer MD Refer North Refe Survey Ca Database:	Local Co-ordinate Reference: TVD Reference: MD Reference: North Reference: Survey Calculation Method: Database;		Site 23-08 15 1H WELL @ 0.0usft (Original Well Elev) WELL @ 0.0usft (Original Well Elev) Grid Minimum Curvature EDM 5000.1 Single User Db		
Planned Surv	rey			antinuono inti huo tata	A REAL PROPERTY AND A REAL PROPERTY			-	
TVD (usft)		MD (usft)	(nc (°)	Azi (azimuth)	N/S (usft)	E/W (usft)	Build (°/100usft)	V. Sec (usft)	
1,1	0.001	1,100.0	0.00	0.00	0.0	0.0	0.00	0.0	
1,2	0.002	1,200.0	0.00	0.00	0.0	0.0	0.00	0.0	
1,3	300.0	1,300.0	0.00	0.00	0.0	0.0	0.00	0.0	
1,4	400.0	1,400.0	0.00	0.00	0.0	0.0	0.00	0.0	
1.5	500.0	1,500.0	0.00	0.00	0.0	0.0	0.00	0.0	
1.6	500.0	1,600.0	0.00	0.00	0.0	0.0	0.00	0.0	
1,7	700.0	1,700.0	0.00	0.00	0.0	0.0	0.00	0.0	
1,8	300.0	1,800.0	0.00	0.00	0.0	0.0	0.00	0.0	
1,9	0.006	1,900.0	0.00	0.00	0.0	0.0	0.00	0.0	
20	0000	2 000 0	0.00	0.00	0.0	0.0	0.00	0.0	
21	100.0	2,000.0	0.00	0.00	0.0	0.0	0.00	0.0	
2.2	200.0	2,200.0	0.00	0.00	0.0	0.0	0.00	0.0	
2.3	300.0	2,300.0	0.00	0.00	0.0	0.0	0.00	0.0	
2,4	400.0	2,400.0	0.00	0.00	0.0	0.0	0.00	0.0	
25	500.0	2 500 0	0.00	0.00	0.0	0.0	0.00	0.0	
2,5	300.0	2,500.0	0.00	0.00	0.0	0.0	0.00	0.0	
2,0	700.0	2,000.0	0.00	0.00	0.0	0.0	0.00	0.0	
2,0	800.0	2,700.0	0.00	0.00	0.0	0.0	0.00	0.0	
2.5	900.0	2,900.0	0.00	0.00	0.0	0.0	0.00	0.0	
-,-		2,000.0	0.00	0.00	0.0		0.00		
3,0	0.000	3,000.0	0.00	0.00	0.0	0.0	0.00	0.0	
3,1	100.0	3,100.0	0.00	0.00	0.0	0.0	0.00	0.0	
3,4	200.0	3,200.0	0.00	0.00	0.0	0.0	0.00	0.0	
3,0	100.0	3,300.0	0.00	0.00	0.0	0.0	0.00	0.0	
3,4	+00.0	3,400.0	0.00	0.00	0.0	0.0	0.00	0.0	
3,5	500.0	3,500.0	0.00	0.00	0.0	0.0	0.00	0.0	
3,6	500.0	3,600.0	0.00	0.00	0.0	0.0	0.00	0.0	
3,/	/00.0	3,700.0	0.00	0.00	0.0	0.0	0.00	0.0	
3,8	0.008	3,800.0	0.00	0.00	0.0	0.0	0.00	0.0	
3,8	900.0	3,900.0	0.00	0.00	0.0	0.0	0.00	0.0	
4,0	0.000	4,000.0	0.00	0.00	0.0	0.0	0.00	0.0	
4,1	100.0	4,100.0	0.00	0.00	0.0	0.0	0.00	0.0	
4,2	200.0	4,200.0	0.00	0.00	0.0	0.0	0.00	0.0	
4,2	250.0	4,250.0	3.03	286.87	0.4	-1.3	6.07	1.3	
4,2	299.8	4,300.0	6.07	286.87	1.5	-5.1	6.07	5.1	
4,3	349.4	4,350.0	9.10	286.87	3.4	-11.4	6.07	11.4	
4,3	398.5	4,400.0	12.14	286.87	6.1	-20.2	6.07	20.3	
4,4	447.1	4,450.0	15.17	286.87	9.5	-31.5	6.07	31.6	
4,4	195.0	4,500.0	18.20	286.87	13.7	-45.2	6.07	45.4	
4,5	538.9	4,546.7	21.04	286.87	18.3	-60.2	6.07	60.5	
4,5	542.0	4,550.0	21.23	286.69	18.6	-61.4	5.77	61.7	
4,5	588.2	4,600.0	24.13	284.42	23.8	-79.9	5.81	80.3	
4,6	333.3	4,650.0	27.07	282.61	28.8	-100.9	5.86	101.4	
4,6	377.2	4,700.0	30.02	281.14	33.7	-124.3	5.90	124.8	
4,7	719.8	4,750.0	32.98	279.90	38.4	-150.0	5.93	150.6	

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## Energen

#### Preliminary Design

Company: Project: Sife: Well: Wellbore: Design:	Energ Chace 23-08 Chace North APD	en Resources o Mancos Sec 15, 7 15 1H o 23-08-15 #001H ern Lateral Plan	723N, R8W	Local Co-ordinate Reference: TVD Reference: MD Reference: North Reference: Survey Calculation Method: Database:		Site 23-08 15 1H WELL @ 0.0usft (Original Well Elev) WELL @ 0.0usft (Original Well Elev) Grid Minimum Curvature EDM 5000.1 Single User Db		
Planned Surv	ey	-	Columbus in a second second	And the second second				
TVD (usft)		MD (usft)	Inc (°)	Azi (azimuth)	N/S (usft)	E/W (usft)	Build (*/100usft)	V. Sec (usft)
4,7	61.0	4,800.0	35.96	278.85	43.0	-177.9	5.95	178.6
4,8	800.7	4,850.0	38.94	277.94	47.5	-208.0	5.97	208.7
4,8	38.8	4,900.0	41.93	277.14	51.7	-240.1	5.98	240.9
4,8	75.1	4,950.0	44.92	276.42	55.8	-274.3	5.99	275.1
4,9	09.5	5,000.0	47.92	275.78	59.6	-310.3	6.00	311.2
4.9	42.1	5.050.0	50.92	275.20	63.2	-348.1	6.00	349.0
4.9	72.6	5,100.0	53.93	274.66	66.6	-387.6	6.01	388.6
5.0	00.9	5,150.0	56.93	274.17	69.8	-428.6	6.01	429.7
5,0	27.1	5,200.0	59.94	273.70	72.7	-471.1	6.02	472.2
5,0	51.0	5,250.0	62.95	273.27	75.4	-514.9	6.02	516.1
5.0	72 5	E 200 0	65.00	272.05	77.0	560.0	600	E01 1
5,0	01 7	5,300.0	69.07	272.00	77.0	-000.0	6.02	501.1
5,0	08.4	5,300.0	71.00	272.40	91.9	-000.1	6.02	654.4
5,1	22.6	5,400.0	75.00	272.00	83.4	-055.2	6.03	702.3
5,1	343	5,400.0	78.00	271.71	847	-701.1	6.03	702.3
5,1	54.5	0,000.0	70.01	271.50	04.7	-140.1	0.05	150.8
5,1	43.4	5,550.0	81.03	271.01	85.7	-798.8	6.03	800.1
5,1	49.9	5,600.0	84.04	270.67	86.4	-848.4	6.03	849.7
5,1	53.7	5,650.0	87.06	270.33	86.9	-898.2	6.03	899.5
5,1	55.0	5,698.8	90.00	270.00	87.0	-947.0	6.03	948.3
5,1	55.0	5,700.0	90.00	270.00	87.0	-948.2	0.08	949.5
5,1	55.0	5,775.0	90.06	270.00	87.0	-1,023.2	0.08	1,024.5
Interme	ediate C	asing						
5,1	54.9	5,800.0	90.08	270.00	87.0	-1,048.2	0.08	1,049.5
5,1	54.7	5,900.0	90.16	270.00	87.0	-1,148.2	0.08	1,149.5
5,1	54.4	6,000.0	90.24	270.00	87.0	-1,248.2	0.08	1,249.4
5,1	53.9	6,100.0	90.31	270.00	87.0	-1,348.2	0.08	1,349.4
5,1	53.3	6,200.0	90.39	270.00	87.0	-1,448.2	0.08	1,449.4
5,1	52.5	6,300.0	90.47	270.00	87.0	-1,548.2	0.08	1,549.4
5,1	51.6	6,400.0	90.55	270.00	87.0	-1,648.2	0.08	1,649.4
5,1	50.6	6,500.0	90.63	270.00	87.0	-1,748.2	0.08	1,749.4
5,1	49.4	6,600.0	90.71	270.00	87.0	-1,848.2	0.08	1,849.3
5.1	48.1	6,700.0	90.78	270.00	87.0	-1 948 2	0.08	19493
51	46.7	6,800.0	90.86	270.00	87.0	-2 048 2	0.08	2 049 3
5.1	45.1	6,900.0	90.94	270.00	87.0	-2 148 2	0.08	2 149 3
5.1	43.4	7.000.0	91.02	270.00	87.0	-2.248.1	0.08	2.249.2
5,1	41.6	7,100.0	91.10	270.00	87.0	-2.348.1	0.08	2.349.2
5.4	20.6	7 200 0	01 19	270.00	87.0	2 4 4 9 4	0.08	2440.2
5,1	39.0	7,200.0	91.18	270.00	87.0	-2,448.1	0.08	2,449.2
5,1	35.2	7,500.0	01.20	270.00	07.0	-2,040.1	0.08	2,049.2
5,1	33.2	7,400.0	91.55	270.00	87.0	-2,040.1	0.08	2,049.1
5,1	30.3	7,00.0	01.41	270.00	87.0	-2,740.0	0.00	2,749.1
5,1	50.5	7,000.0	31.49	270.00	07.0	-2,040.0	0.08	2,049.0
5,1	27.6	7,700.0	91.57	270.00	87.0	-2,948.0	0.08	2,949.0
5,1	24.8	7,800.0	91.65	270.00	87.0	-3,047.9	0.08	3,048.9
5,1	21.9	7,900.0	91.72	270.00	87.0	-3,147.9	0.08	3,148.9
5,1	18.8	8,000.0	91.80	270.00	87.0	-3,247.8	0.08	3,248.8

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## Energen

## Preliminary Design

Company: Project: Site: Well: Wellbore: Design:	Energen Chaco M 23-08 15 Chaco 2 Northern APD Pla	Resources lancos Sec 15, T2 1H 3-08-15 #001H Lateral n	3N, R8W	Local Co-o TVD Referen MD Referen North Refe Survey Cali Database:	Local Co-ordinate Reference: TVD Reference: MD Reference: North Reference: Survey Calculation Method: Database:		Site 23-08 15 1H WELL @ 0.0usft (Original Well Elev) WELL @ 0.0usft (Original Well Elev) Grid Minimum Curvature EDM 5000.1 Single User Db		
Planned Surve	ay and		and the second second					F	
TVD (usft)		MD (usft)	inc (")	Azi (azimuth)	N/S (usft)	E/W (usft)	Build ("/100usft)	V. Sec (usfi)	
5,1	15.6	8,100.0	91.88	270.00	87.0	-3,347.8	0.08	3,348.7	
5.1	12.2	8,200.0	91.96	270.00	87.0	-3.447.7	0.08	3,448.7	
5,10	08.8	8,300.0	92.04	270.00	87.0	-3.547.7	0.08	3,548.6	
5,10	05.1	8,400.0	92.12	270.00	87.0	-3,647.6	0.08	3,648.5	
5,10	01.4	8,500.0	92.19	270.00	87.0	-3,747.5	0.08	3,748.4	
5,09	97.5	8,600.0	92.27	270.00	87.0	-3,847.5	0.08	3,848.4	
5.0	35	8 700 0	02 35	270.00	87.0	2 047 4	0.09	2 049 2	
5,0	10.3	8,800.0	92.33	270.00	87.0	-3,547.4	0.08	4 048 2	
5,00	95.0	8,000.0	92.45	270.00	87.0	4,047.3	0.08	4,040.2	
5,0	80.5	9,000,0	92.59	270.00	87.0	-4 247 1	0.08	4 247 9	
5.0	76.0	9,100.0	92.66	270.00	87.0	-4 347.0	0.08	4 347 8	
5,0		0,000,0	00.74	070.00	07.0	1,011.0	0.00	4,017.0	
5,0	/1.2	9,200.0	92.74	270.00	87.0	-4,446.9	0.08	4,447.7	
5,00	00.4	9,300.0	92.82	270.00	87.0	-4,546.8	0.08	4,547.6	
5,00	51.4	9,400.0	92.90	270.00	87.0	-4,646.6	0.08	4,647.4	
5,0	51.0	9,500.0	92.98	270.00	87.0	-4,746.5	0.08	4,141.3	
5,00	51.0	9,600.0	93.06	270.00	87.0	-4,840.4	0.08	4,847.1	
5,04	45.6	9,700.0	93.13	270.00	87.0	-4,946.2	0.08	4,947.0	
5,04	40.1	9,800.0	93.21	270.00	87.0	-5,046.1	0.08	5,046.8	
5,03	34.4	9,900.0	93.29	270.00	87.0	-5,145.9	0.08	5,146.6	
5,02	28.6	10,000.0	93.37	270.00	87.0	-5,245.7	0.08	5,246.5	
5,02	22.7	10,100.0	93.45	270.00	87.0	-5,345.6	0.08	5,346.3	
5,0	16.6	10,200.0	93.53	270.00	87.0	-5,445.4	0.08	5,446,1	
5,0	14.7	10,231.0	93.55	270.00	87.0	-5,476.3	0.08	5,477.0	
Product 5,0°	tion Liner 14.6	10,231.8	93.55	270.00	87.0	-5,477.1	0.08	5,477.8	
Casing Points	Measur Depti (usft	ed Vertical h Depth ) (ustt)		Name		Casin Diame (')	ng Hole Iter Diameter (')		
	10,2	31.0 5,014.	7 Production	Liner			4-1/2 6-1/4		
	5,7	75.0 5,155.	0 Intermediat	e Casing			7 8-3/4		
	5	00.0 500.	0 Surface Ca	sing		1	9-5/8 12-1/4		
Checked By	r:	1. 2	,	Approved By:	4		Date:		

proposed well pad. Approximately 4.1 feet of cut and 4.7 feet of fill will be needed to create a level well pad. No additional materials will be required for construction of the proposed well pad.

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

Construction plats are provided in the APD and ROW grant permit packages.

# 9. METHODS FOR HANDLING WASTE

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

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

As stated in the Reclamation Plan (Appendix A), if drilling has not been initiated on the proposed well pad within 120 days of the well pad being constructed, Energen will submit a site-stabilization plan to the BLM-FFO.

All refuse will be placed in metal trash basket and will be hauled off site, as needed, and properly disposed in an approved landfill.

Portable toilets will be provided and maintained as needed during construction, drilling and completion operations.

# 10. ANCILLARY FACILITIES

No ancillary facilities will be associated with the proposed project.

All TUAs are depicted in Appendix C and in the construction plats provided in this APD submission. No TUAs will be needed for the well pad.

# 11. WELL SITE LAYOUT

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

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

- Production facilities will be located within a facility area measuring approximately 75-by-250 foot (0.43 acre) on the eastern end of the proposed well pad.
- The teardrop for the proposed well pad will include a looped, 20-foot-wide driving surface, totaling approximately 0.55 acre.

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

Chaco 23-08 15 #1H and #2H Project SUPO: Surface Use Plan of Operations-Amended

#### **ENERGEN RESOURCES CORPORATION**

CHACO 23-08 15 #1H 2173' FSL & 567' FWL LOCATED IN THE NW/4 SW/4 OF SECTION 14, T23N, R8W, N.M.P.M., SAN JUAN COUNTY, NEW MEXICO

### DIRECTIONS

- 1) FROM THE INTERSECTION OF HWY 64 & HWY 550 IN BLOOMFIELD, GO SOUTH ON HWY 550, 39.0 MILES TO INDIAN SERVICE ROUTE 7061.
- 2) TURN RIGHT AND GO 1.7 MILES TO A DIRT ROAD WITH CATTLE GUARD.
- 3) TURN LEFT AND GO 0.6 MILES TO "Y" INTERSECTION.
- TURN LEFT AND GO 0.9 MILES TO "T" INTERSECTION.
- 5) TURN RIGHT AND GO 1.3 MILES TO WHERE PAD IS STAKED ON RIGHT SIDE OF ROAD.

WELL FLAG LOCATED AT LAT. 36.225662° N, LONG.107.658279° W (NAD 83).



Scorpion Survey & Consulting, L.L.C. 302 S. Ash Aztec, New Mexico 87410 (505) 334-4007

## 2M Choke & Kill Manifold



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

