State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

Ken McQueen
Cabinet Secretary

Matthias Sayer
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 3160-3 APD form.

Operator Signature Date: 2/14/2018
Well information;
Operator Juniper, Well Name and Number Cool Creek 2411 23D 1H

API# 30-045-35872, Section 23, Township 24 (N)/S, Range 11 E/(W)

Conditions of Approval: (See the below checked and handwritten conditions)

- ☒ Notify Aztec OCD 24hrs prior to casing & cement.
- ☒ Hold C-104 for directional survey & "As Drilled" Plat
- ☒ Hold C-104 for NSL, NSP, DHC
- o Spacing rule violation. Operator must follow up with change of status notification on other well to be shut in or abandoned
- o Regarding the use of a pit, closed loop system or below grade tank, the operator must comply with the following as applicable:
  - A pit requires a complete C-144 be submitted and approved prior to the construction or use of the pit, pursuant to 19.15.17.8.A
  - A closed loop system requires notification prior to use, pursuant to 19.15.17.9.A
  - A below grade tank requires a registration be filed prior to the construction or use of the below grade tank, pursuant to 19.15.17.8.C
- o Once the well is spud, to prevent ground water contamination through whole or partial conduits from the surface, the operator shall drill without interruption through the fresh water zone or zones and shall immediately set in cement the water protection string
- o Submit Gas Capture Plan form prior to spudding or initiating recompletion operations
- ✓ 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.

Charles Henderson — 4-19-2018

NMOCD Approved by Signature — Date

1220 South St. Francis Drive • Santa Fe, New Mexico 87505
Phone (505) 476-3441 • Fax (505) 476-3462 • www.emnrd.state.nm.us/ocd

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NMOCD

APR 18 2018

DISTRICT III

Form 3160-3
(March 2012)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

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

5. Lease Serial No.
NMNM104609

6. If Indian, Allotee or Tribe Name

1a. Type of work: ☑ DRILL ☐ REENTER

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

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

8. Lease Name and Well No.
COAL CREEK 2411 23D 1H

2. Name of Operator
JUNIPER RESOURCES EXPLORATION COMPANY

9. API Well No.
30-045-35872

3a. Address
3624 Oak Lawn Avenue Dallas TX 75219

3b. Phone No. *(include area code)*
(505)466-8120

10. Field and Pool, or Exploratory
GALLUP / BASIN MANCOS GAS POOL

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*
At surface D NWNW / 250 FNL / 274 FWL / LAT 36.3054509 / LONG -107.9803515
At proposed prod. zone N SESW / 350 FSL / 1620 FWL / LAT 36.2925647 / LONG -107.9579495

11. Sec., T. R. M. or Blk. and Survey or Area
SEC 23 / T24N / R11W / NMP

14. Distance in miles and direction from nearest town or post office*

12. County or Parish
SAN JUAN

13. State
NM

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

16. No. of acres in lease
1120

17. Spacing Unit dedicated to this well
960

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.
2400 feet

19. Proposed Depth
4696 feet / 12568 feet

20. BLM/BIA Bond No. on file
FED: NMB001434

21. Elevations (Show whether DF, KDB, RT, GL, etc.)
6432 feet

22. Approximate date work will start*
02/28/2018

23. Estimated duration
30 days

KRP

24. Attachments

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

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

25. Signature
(Electronic Submission)

Name *(Printed/Typed)*
Brian Wood / Ph: (505)466-8120

Date
02/14/2018

Title
President

Approved by *(Signature)*
Matthew Kade
AFM

Name *(Printed/Typed)*

Date
4/17/18

Title

Office
FARMINGTON

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.
Conditions of approval, if any, are attached.

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Continued on page 2)

*(Instructions on page 2)

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

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

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

NMOCD

DISTRICT I
1625 N. French Dr., Hobbs, N.M. 88240
Phone: (575) 393-6161 Fax: (575) 393-0720

DISTRICT II
811 S. First St., Artesia, N.M. 88210
Phone: (575) 748-1283 Fax: (575) 748-9720

DISTRICT III
1000 Rio Brazos Rd., Aztec, N.M. 87410
Phone: (505) 334-6178 Fax: (505) 334-6170

DISTRICT IV
1220 S. St. Francis Dr., Santa Fe, N.M. 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, N.M. 87505

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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

[1] API Number	[2] Pool Code	[3] Pool Name
30-045-35872	97232	BASIN MANCOS GAS

[4] Property Code	[5] Property Name	[6] Well Number
321213	COAL CREEK 2411 23D	1H

[7] OGRID No.	[8] Operator Name	[9] Elevation
371634 / 5	JUNIPER RESOURCES EXPLORATION COMPANY, LLC	6432

[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
D	23	24 N	11 W		250	NORTH	274	WEST	SAN JUAN

[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
N	24	24 N	11 W		350	SOUTH	1620	WEST	SAN JUAN

[12] Dedicated Acres	[13] Joint or Infill	[14] Consolidation Code	[15] Order No.
ALL SEC. 23 & S2 SEC. 24 T24N, R11W (960 ACRES)			

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

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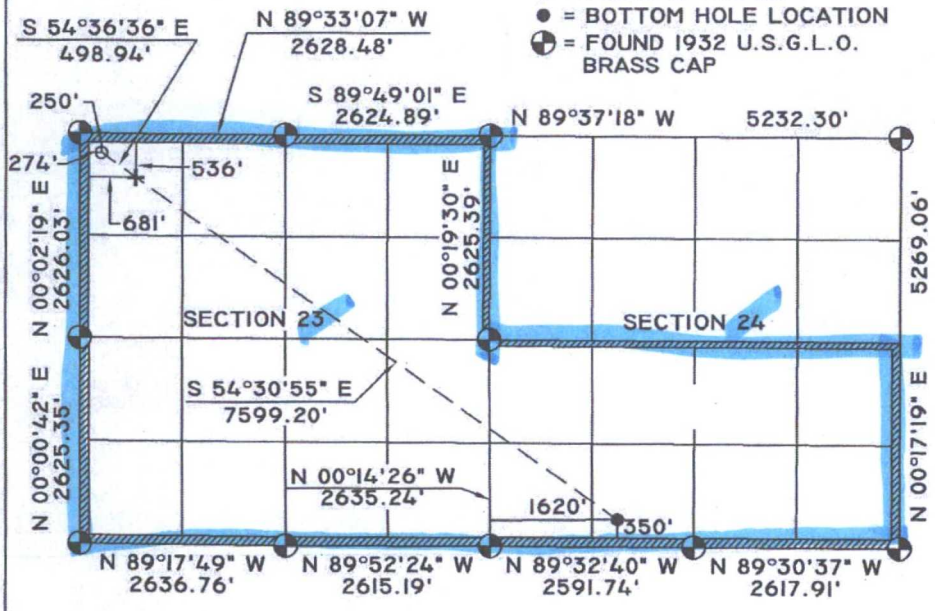


SURFACE
SEC. 23, T24N, R11W
250' FNL, 274' FWL
LAT: 36.3054509° N
LONG: 107.9803515° W
NAD 83
LAT: 36.3054403° N
LONG: 107.9797301° W
NAD 27

POINT OF ENTRY
SEC. 23, T24N, R11W
536' FNL, 681' FWL
LAT: 36.3046588° N
LONG: 107.9789696° W
NAD 83
LAT: 36.3046482° N
LONG: 107.9783482° W
NAD 27

BOTTOM HOLE
SEC. 24, T24N, R11W
350' FSL, 1620' FWL
LAT: 36.2925647° N
LONG: 107.9579495° W
NAD 83
LAT: 36.2925539° N
LONG: 107.9573288° W
NAD 27

[17] OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Signature — Date: 2/20/2018

Mike Deutsch
Printed Name

mike@permitswest.com
E-mail Address

[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 belief.

02/10/17
Date of Survey

Signature and Seal of Professional Surveyor:

MARSHALL W. LINDEEN
NEW MEXICO
17078
2-20-18
PROFESSIONAL SURVEYOR

17078
Certificate Number

Surface = Federal

- Pea Gravel or other material shall not be used to fill up around the surface casing in the event cement fall back occurs.

- The surface casing shall in all cases be cemented back to surface. In the event cement does not circulate to surface or fall back of the cement column occurs, remedial cementing shall be done to cement the casing back to surface. No more than the top 100' will be remediated with 1" line if fall back occurs. Anything more than 100' will require plan approval to remediate.

- If returns are lost and/or cement is not brought to surface and no fallback occurs, a cement bond log (CBL) will be required to determine the quality of the job prior to drilling ahead (see OO2).

- Top plugs shall be used to reduce contamination of cement by displacement fluid. A bottom plug or other acceptable technique, such as a pre-flush fluid, inner string cement method, etc. shall be utilized to help isolate the cement from contamination by the mud fluid being displaced ahead of the cement slurry.

- Production liner will be cemented.

5. DRILLING FLUIDS PROGRAM

Interval (MD)	Hole Section	Hole Size	Type	MW	VIS	FL	PV	YP	PH
0' - 320'	Conductor	17-1/2"	Spud Mud	8.4-8.8	30-42	NC	2-8	2-12	NC
0'- 2000'	Surface	12-1/4"	LSND	8.8-9.1	32-40	<15	6-12	6-8	9-9.5
2000'-4143'	Vertical to KOP	8-3/4"	LSND	8.8-9.1	32-40	<15	6-12	6-8	9-9.5
4143'-5023'	Curve	8-3/4"	LSND	8.8-9.1	32-40	<15	6-12	6-8	9-9.5
5523'-13396'	Horizontal	6-1/8"	LSND	8.8-9.1	34-38	<8	4-10	5-8	9-9.8

Sufficient weighting material will be on hand to weight mud up to 10.5 PPG, if required.

The formula for weight up with barite is listed below:
Sacks of Barite per 100 bbl of mud = 1470 x (W2 – W1) ÷ (35 – W2)

Where; W1 = current mud weight

W2 = new mud weight

Sacks = 1470 x (10.5 – 8.4)/ (35-10.5) = 126 sx * 5 (500bbls minimum) = 630sx

Pason Pit Volume Totalizer (PVT) equipment (or equilvant) will be on each pit to monitor pit levels. A trip tank equipped with a Pason PVT will be used to monitor trip volumes.

A closed-loop system will be used to recover drilling fluid and dry cuttings in both phases of the well and on all hole intervals, including fresh water and oil-based operations. Above-ground tanks will be utilized to hold cuttings and fluids for rig operations. A frac tank will be on location to store fresh water. Waste will be disposed of properly at an EPA-approved hazardous waste facility. Fresh water cuttings will be disposed of as outlined is surface use plane location will be lined in accordance with the Surface Use Plan of Operations.

6. TESTING, LOGGING AND CORING

a) Drill stem testing – none anticipated
b) Coring – none anticipated
c) Mud Logging – Mud loggers will be operational from 3,000' of the pilot hole to TD of the horizontal hole.

a. Gas detecting equipment will be installed and operational and hydrocarbon gas will be monitored for pore pressure changes from base of surface casing to TD.
b. Visual mud monitoring equipment shall be in place to detect volume changes indicating loss or gain of circulating fluid volume.

d) Logging – see below:

Open hole (pilot hole)

Triple Combo (surface casing to TD – GR to surface)
DiPole Sonic (Top Mancos Sh. To TD)
MRIL (contingent – Top Mancos Sh. To TD)

Minimum logging requirements for the entire well shall consist of a calibrated gamma ray (GR) log scaled in API units from total measured depth to surface, with a repeat section. Maximum logging speed 3,600 feet/hour in open hole and 2,000 feet/hour in cased hole. An MWD GR log is sufficient for this requirement in the curved and lateral portions of the well.

Minimum logging requirements above the kick off point (KOP) shall consist of:

1. Multiple depth-of-investigation resistivity log from surface casing to the KOP, and
2. Compensated density-neutron logs over potential hydrocarbon producing zones or,
3. A cased hole pulsed neutron log if there are open hole compensated density-neutron, gamma ray, and multiple depth-of-investigation resistivity logs (such as medium and deep induction and shallow laterlog, or array induction logs) suitable for calibration within one-half mile. The pulsed neutron log should be run from KOP to the base of surface casing no faster than 1,800 feet/hour.

BLM shall be provided with a directional survey to establish the location of the horizontal lateral and bottom of the well including the surface reference, inclination, horizontal angle, reference, and direction turned. If reduced data are provided, the algorithm, datum, and projection should also be provided.

Submission of digital logging data shall be in Log ASCII Standard (LAS) file format.

7. ABNORMAL PRESSURES & HYDROGEN SULFIDE

Normal to subnormal pressure gradient to TD.

MASP and casing design parameters determined using 0.38 psi/ft.

Bottom Hole pressure = 5026' TVD x 0.38 psi/ft = 1909 psi (based on measured offset bottom hole pressures).

Maximum expected BHP @ 450' below Carlile at 5026' TVD: 1909 psi

Maximum expected BHT @ 5023' TVD: ~158^{o} F

No hydrogen sulfide gas is anticipated, however, if H_2S is encountered, the guidelines in Onshore Order No. 6 will be followed.

8. OTHER FACETS OF PROPOSED OPERATION & ANTICIPATED START DATE

Directional Plans: Horizontal directional well, directional plans attached.

Completion: Completion design will be dependent on open-hole log evaluation from the pilot hole and the actual horizontal section drilled. Generally, the completion will consist of a plug and perf hydraulic fracturing operation consistent with best practices in the same area of the San Juan Basin. The frac job will likely consist of between 30 and 40 stages. Each stage will consist of approximately 330,000 lbs of 20/40 sand and 1,300 bbls of water. Pumping rates will be dependent on surface treating pressures but should be around 50 bpm down 4 ½" casing. All fracturing fluids will be water based and contain nitrogen foam. After the frac job, plugs will be drilled out within 10 days and production tubing will be run. Production tubing is expected to be 2 3/8" or 2 7/8".

Drill 17 1/2" hole to 320' and then set 13 3/8" conductor. Conductor may be preset before moving in the drilling rig. Drill 12 1/4" hole with low solids non-dispersed (LSND) water based mud system from 320' MD to approximately 2,000' (Bottom of Lewis Shale). Drill 8 ¾" Pilot Hole to 5,026' MD/TVD. Logs will be run to determine exact landing point for the horizontal wellbore.

The wellbore will be plugged back with cement to above kick off point (KOP) #1 approximately 4143' MD/TVD. The plug will be dressed off and an 8 ¾" kick off assembly will be run to build the curve at 10 degrees per 100' to 7" casing point at 90.0 degrees and 125.39 azimuth, 5043' MD/4716'TVD.

7" casing will be set in a legal position 578' FNL & 740' FWL in Section 23.

The 7" casing will be drilled out with a 6 1/8" drilling assembly holding angle to 90.15° inclination and 125.39° azimuth. The hole will be drilled to a total depth at 12,568' MD / 4,696' TVD. Adjustments may be made to the directional program based on geology.

The Bottom hole location will be in a legal location at 12,568' MD / 4,696' TVD at 350' FSL & 1620' FWL of section 24.
A total of 8098' of horizontal hole will be drilled.

2. ESTIMATED DEPTHS OF POTENTIAL WATER, OIL, GAS & OTHER MINERAL BEARING ZONES

Depths are referenced to GL of 6432 ft			
Formation	**TVD (ft)**	**MD (ft)**	**Substance**
Nacimiento Fn.	0	0	Water
Ojo Alamo	100	100	Water
Kirtland Shale	170	170	None
Fruitland Coal	776	776	Water/Gas
Pictured Cliffs	976	976	Oil/Gas
Lewis Shale	1,136	1,136	Gas
CliffHouse	1,974	1,974	Oil/Gas
Menefee Fn.	2,370	2,370	Water/Gas
Point Lookout	3,401	3,401	Oil/Gas
Mancos	3,516	3,516	Oil/Gas
Mancos A Fn.	4,356	4,356	Oil/Gas
Mancos B Fn.	4,381	4,381	Oil/Gas
Mancos C Fn.	4,511	4,511	Oil/Gas
Gllp Target	4,716	4,716	Oil/Gas
Juana Lopez	4,926	4,926	Oil/Gas
Pilot TD	5,026	5,026	Oil/Gas

Possible Aquifers: <220'

Oil Shale: None Expected.

Oil & Gas: Primary objective is the Mancos and Gallup formation encountered first at 3516' TVD. Landing point will be in the Gallup at 4716'TVD.

Protection of oil, gas, water, or other mineral bearing formations: Protection shall be accomplished by setting surface casing below base of possible aquifer and cementing surface casing to surface.

Intermediate casing will be set at 4716' TVD and cemented to surface.

3. PRESSURE CONTROL

The Operator's minimum specifications for blowout prevention equipment and diverter systems to be used, including size, pressure rating, configuration and the testing procedure and frequency. Blowout prevention equipment must meet the minimum standards outlined in Order 2.

BOP equipment and accessories will meet or exceed BLM requirements outlined in 43 CFR Part 3160.

The working pressure of all BOPE shall exceed the anticipated surface pressure to which it may be subjected, assuming a partially evacuated hole with a pressure gradient of 0.22 psi/ft.

Bottom Hole pressure = 5026' TVD x 0.38 psi/ft = 1909 psi (based on measured offset bottom hole pressures).

Maximum Surface Pressure = 1909 psi - (5026' TVD x .22 psi/ft) = 1909 psi – 1106 psi = 803 psi less than 2000 psi working pressure.

Therefore 2000 psi BOPE system required.

A 2000 psig double ram hydraulic BOP will be used (see attached diagram) accessories to the BOP will meet BLM requirements for a 2000 psig system, in accordance with Onshore Order #2 (111.A well requirements).

The accumulator system capacity will be sufficient to close all BOPE with a 50% safety factor. Fill line, kill line and line to the choke manifold will be 2".

BOPs will be function tested every 24 hours and will be recorded on an IADC log. Accessories to the BOPE will include upper and lower Kelly cocks with handles with a stabbing valve to fit drill pipe on the floor at all times, string float at bit, 3000 psig choke manifold with 2" adjustable and 2" positive chokes, and pressure gauge.

All BOP equipment will be hydraulically operated with controls accessible both on the rig floor.

The wellhead BOP equipment will be nippled-up on the 9-5/8" x 11" 2,000 psi WP casing head prior to drilling out from under surface casing. A diverter will be used when drilling surface hole. All ram preventers and related equipment will be tested to 2,000 psi for 10 minutes. Annular preventers will be tested to 50% of rated working pressure for 10 minutes. Surface casing will be tested to 70% of internal yield pressure. All preventers and surface casing will be tested before drilling out of surface casing. BOP equipment will be tested every 14 days, after any repairs are made to the BOP equipment, and after the BOP equipment is subjected to pressure. Annular preventers will be functionally operated at least once per week. Pipe rams will be activated daily and blind rams shall be activated each trip or at least weekly. The New Mexico Oil & Gas Conservation Commission and the BLM will be notified 24 hours in advance of testing of BOPE.

4. CASING AND CEMENTING PROGRAM

The proposed casing and cementing program has been designed to protect and/or isolate all usable water zones, potentially productive zones, lost circulation zones, abnormally pressured zones and any prospectively valuable mineral deposits. Any isolating medium other than cement shall receive approval prior to use. Casing setting depth shall be calculated to position the casing seat opposite a competent formation which will contain the maximum pressure to which it will be exposed during drilling operations.

Included below is the Operator's proposed casing program which includes size, grade, weight, type of threading and coupling and setting depth for each string and its condition. Minimum design criteria and hole sizes are also included herein.

Casing	Depth (MD)	Hole Size	Csg Size	Weight	Grade	Coupling	Condition
Conductor	0' – 320'	17 1/2"	13 3/8"	54.5 ppf	J or K55	STC	New
Surface	0' – 2,000'	12 1/4"	9 5/8"	36 ppf	J or K55	STC	New
Intermediate	0' - 5,043'	8 3/4"	7"	23 ppf	J or K55	LTC	New

Production Liner	4,893' – 12,568'	6 1/8"	4 1/2"	11.6 ppf	P-110	LTC	New

Casing String				Casing Strength Properties			Minimum Design Factors		
Size	Weight	Grade	Coupling	Collapse (psi)	Burst (psi)	Tensile (klbs)	Collapse	Burst	Tension
13 3/8"	54.4 ppf	J55	STC	1,130	2,730	514	1.125	1.0	1.2
9 5/8"	36 ppf	J55	STC	2,020	3,520	394	1.125	1.0	1.2
7"	23 ppf	J55	LTC	3,270	4,360	313	1.125	1.0	1.2
4 1/2"	11.6 ppf	P110	LTC	7,560	10,690	279	1.125	1.0	1.2

Casing strings below the conductor casing will be tested to .22 psi per foot of casing string length or 1500 psi, whichever is greater, but not to exceed 70% of the minimum internal yield.

Surface casing shall have a minimum of 1 centralizer per joint on the bottom three (3) joints, then +/- 1 centralizer / 4jts thereafter.

The intermediate casing will be centralized using 1 centralizer the first 6 jts and spaced appropriately through the curve section of the well-bore and then spaced +/- 1 centralizer / 4 jts through the remainder of the cement column, using approximately 40 centralizers.

*conductor maybe preset with a preset rig (MOTE).

The proposed cementing program is as follows:

Conductor Single Stage Job – (0-320'MD/TVD):

Excess – 100% over gauge hole – 17-1/2" hole and 13-3/8" casing (0.868ft3/ft)
Top of Cement – Surface

Lead #1 - (0' – 320'): 380 sx (444.57 ft3) – 15.8 ppg, conventional cement containing:
HALCEM ™ CEMENT – PREMIUM CEMENT
Calcium Chloride Pellet – Accelerates Thickening Time – 2.0%
Poly-E-Flake – Lost Circulation Control Agent – 0.125 lbs/sx
Yield – 1.175ft3/sx [multiply by 380 sx (see above) for total cu. Ft yield]
Water requirement – 5.15 gal/sx.
Compressive strength: 24 hr – 2000 psi+
Total sacks of cement pumped = 380

Surface Casing Single Stage Job – (0-1500'MD/TVD):

Excess – 100% over gauge hole – 12-1/4" hole and 9-5/8" casing (0.3132ft3/ft)
Top of Cement – Surface

Lead #1 - (0' – 1500'): 380 sx (907.92 ft3) – 12.3 ppg, conventional cement containing:
VARICEM ™ CEMENT –
Kol-Seal – Lost Circulation Control Agent – 5 lbs/sx
Poly-E-Flake – Lost Circulation Control Agent – 0.125 lbs/sx
Yield – 2.397ft3/sx
Water requirement – 13.32 gal/sx.
Compressive strength: 24 hr – 500 psi+

Tail #1 - (1500' – 2000') – 500': 180 sx (313.19 ft3) – 13.5 ppg, conventional cement containing:
VARICEM ™ CEMENT –
Kol-Seal – Lost Circulation Control Agent – 5 lbs/sx
Poly-E-Flake – Lost Circulation Control Agent – 0.125 lbs/sx
Yield – 1.852ft3/sx
Water requirement – 9.25 gal/sx.
Compressive strength: 24 hr – 1000 psi+

Total sacks of cement pumped = 560
Cement volumes are minimums and may be adjusted based on hole conditions.

Intermediate Casing Single Job - (0-5043'MD/4716'TVD):

Excess – 70% over gauge hole – 8-3/4" hole and 7" casing (0.1503 ft3/ft)
Top of Cement – Surface.

Lead #1 - (0-4043'): 435 sx (855.73 ft3) – 12.3 ppg, conventional cement containing:
HALCEM ™ – Cement
Yield – 1.97 ft3/sx
Water requirement – 10.28 gal/sx.
Compressive strength: 24 hr – 500 psi+

Tail #1 - (4043'-5043') - 1000': 204sx (255.56 ft3) – 13.5 ppg, conventional cement containing:
VARICEM ™ – Cement
Kol-Seal – Lost Circulation Control Agent – 5 lbs/sx
Poly-E-Flake – Lost Circulation Control Agent – 0.125 lbs/sx
Yield – 1.32 ft3/sx
Water requirement – 13.5 gal/sx.
Compressive strength: 24 hr – 1000 psi+

Total sacks of cement pumped = 639
Cement volumes are minimums and may be adjusted based on hole conditions.

Production Casing (Liner) Single Stage Job – (4893'MD - 12568'MD/ 4698'-4696'TVD):

Excess – 30% over gauge hole – 6-1/8" hole and 4-1/2" casing (0.0942 ft3/ft)
Top of Cement – Top of liner.

Lead #1 - (4893' – 12568') – 7675': 695 sx (936.87 ft3) – 13.3 ppg, conventional cement containing:
EXTENDACEM ™ – Cement
Yield – 1.35 ft3/sx
Water requirement – 5.94 gal/sx.
Compressive strength: 24 hr – 1000 psi+
Total sacks of cement pumped = 699
Cement volumes are minimums and may be adjusted based on hole conditions.

Plug Back Cement – (4000'-5026'MD/TVD):

Excess – 70% over gauge hole – 8-3/4" hole (0.4176 ft3/ft)
Top of Cement – 400' above KOP
Cement will be place in 2 equal plugs approximately 550' in length (350 sx each)

Lead #1 - (4000' – 5026') -1026': 700 sx (822.50 ft3) – 15.8 ppg, conventional cement containing:
HALCEM ™ CEMENT – PREMIUM CEMENT
Poly-E-Flake – Lost Circulation Control Agent – 0.125 lbs/sx
Yield – 1.175ft3/sx
Water requirement – 5.14 gal/sx.
Compressive strength: 24 hr – 2000 psi+
Total sacks of cement pumped = 624

Actual volumes will be calculated and determined by conditions onsite. All cement slurries will meet or exceed minimum BLM and New Mexico Oil Conservation Division requirements. Slurries used will be the slurries listed above or equivalent slurries depending on service provider selected. Cement yields may change depending on slurries selected.

All waiting on cement times shall be a minimum of 8 hours or adequate to achieve a minimum of 500 psi compressive strength at the casing shoe prior to drilling out.

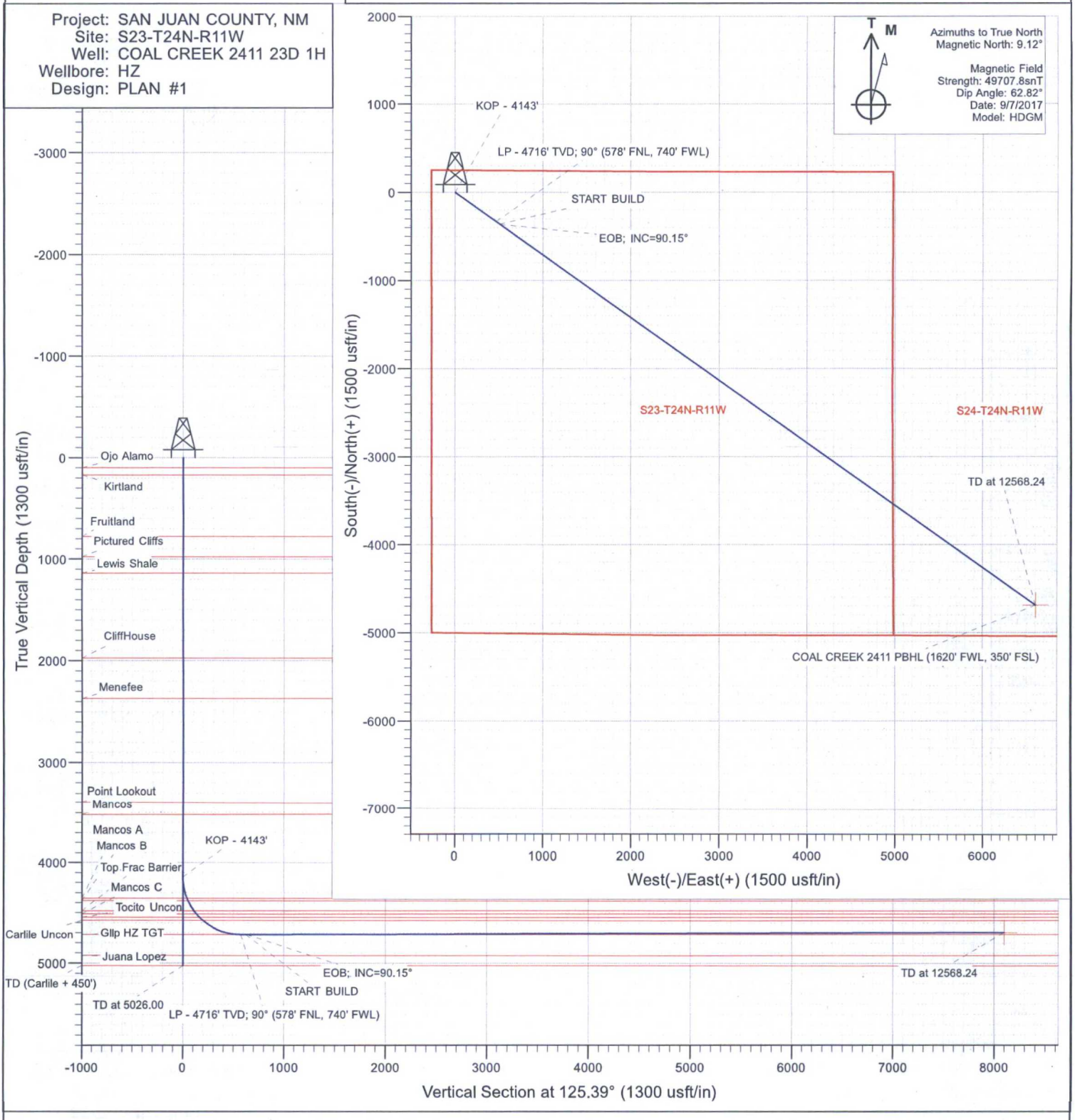
Other Cementing Notes:

JUNIPER RESOURCES

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	4143.04	0.00	0.00	4143.04	0.00	0.00	0.00	0.00	0.00
3	5043.04	90.00	125.39	4716.00	-331.82	467.09	10.00	125.39	572.96
4	5093.04	90.00	125.39	4716.00	-360.78	507.85	0.00	0.00	622.96
5	5100.69	90.15	125.39	4715.99	-365.21	514.09	2.00	0.74	630.61
6	12568.24	90.15	125.39	4696.05	-4690.15	6601.68	0.00	0.00	8098.13

Project: SAN JUAN COUNTY, NM
Site: S23-T24N-R11W
Well: COAL CREEK 2411 23D 1H
Wellbore: HZ
Design: PLAN #1

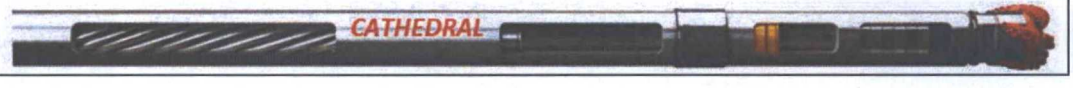


WELL DETAILS: COAL CREEK 2411 23D 1H

+N/-S	+E/-W	Northing	Easting	Latittude	Longitude
0.00	0.00	1930516.91	2679773.85	36.305451	-107.980352

6432.00

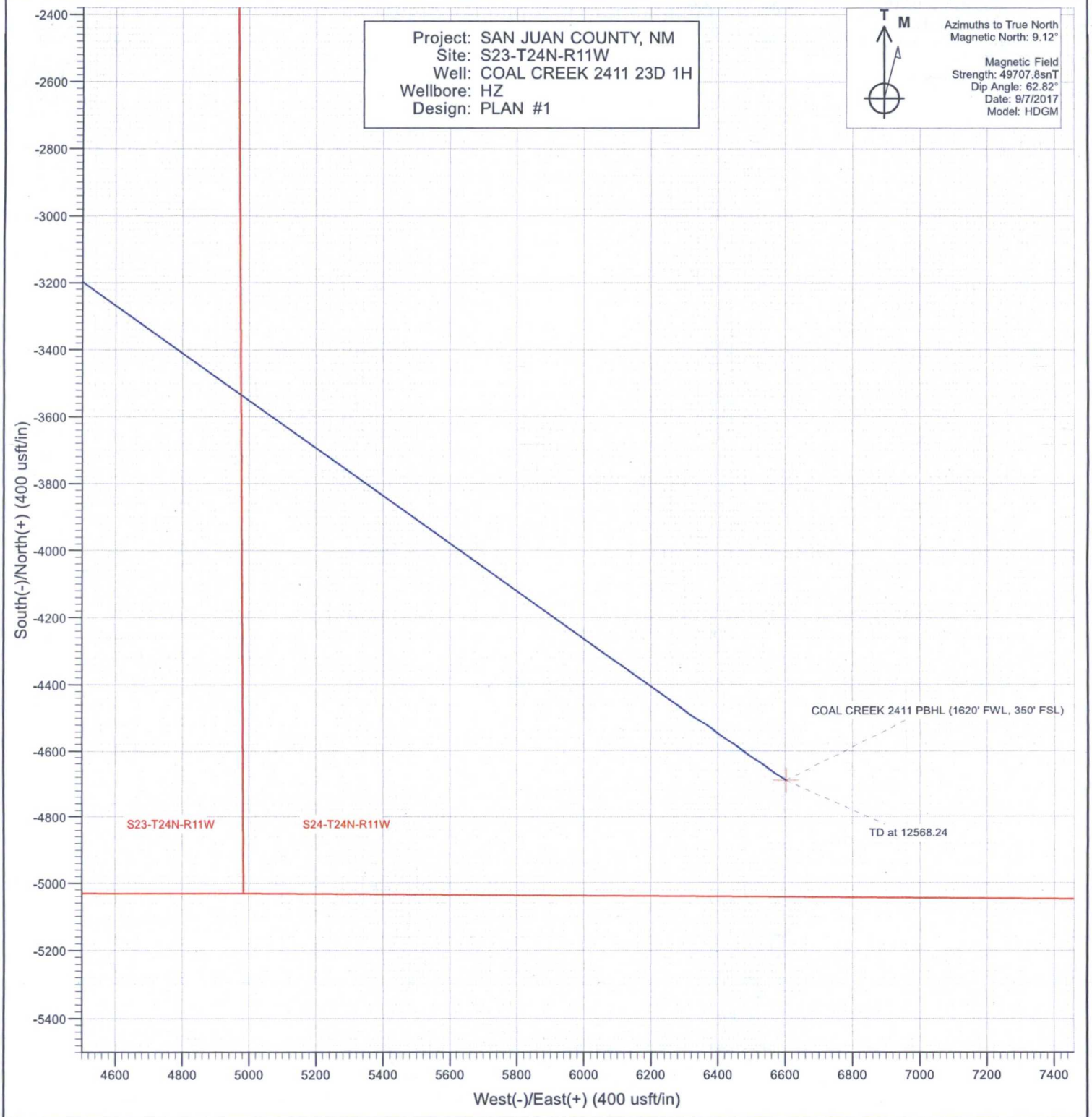
CATHEDRAL



JUNIPER RESOURCES

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	4143.04	0.00	0.00	4143.04	0.00	0.00	0.00	0.00	0.00
3	5043.04	90.00	125.39	4716.00	-331.82	467.09	10.00	125.39	572.96
4	5093.04	90.00	125.39	4716.00	-360.78	507.85	0.00	0.00	622.96
5	5100.69	90.15	125.39	4715.99	-365.21	514.09	2.00	0.74	630.61
6	12568.24	90.15	125.39	4696.05	-4690.15	6601.68	0.00	0.00	8098.13



CATHEDRAL

WELL DETAILS: COAL CREEK 2411 23D 1H

6432.00

+N/-S	+E/-W	Northing	Easting	Latittude	Longitude
0.00	0.00	1930516.91	2679773.85	36.305451	-107.980352

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well COAL CREEK 2411 23D 1H
Company:	Juniper Resources Exploration CO	**TVD Reference:**	14' KB @ 6446.00usft
Project:	SAN JUAN COUNTY, NM	**MD Reference:**	14' KB @ 6446.00usft
Site:	S23-T24N-R11W	**North Reference:**	True
Well:	COAL CREEK 2411 23D 1H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	HZ		
Design:	PLAN #1		

Project	SAN JUAN COUNTY, NM		
Map System:	US State Plane 1983	**System Datum:**	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Western Zone		

Site	S23-T24N-R11W				
Site Position:		**Northing:**	1,930,516.91 usft	**Latitude:**	36.305451
From:	Lat/Long	**Easting:**	2,679,773.85 usft	**Longitude:**	-107.980352
Position Uncertainty:	0.00 usft	**Slot Radius:**	13-3/16"	**Grid Convergence:**	-0.09 °

Well	COAL CREEK 2411 23D 1H					
Well Position	**+N/-S**	0.00 usft	**Northing:**	1,930,516.91 usft	**Latitude:**	36.305451
	+E/-W	0.00 usft	**Easting:**	2,679,773.85 usft	**Longitude:**	-107.980352
Position Uncertainty		0.00 usft	**Wellhead Elevation:**	usft	**Ground Level:**	6,432.00 usft

Wellbore	HZ			
Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	HDGM	9/7/2017	9.12	62.82	49,707.80000000

Design	PLAN #1			
Audit Notes:				
Version:	**Phase:**	PLAN	**Tie On Depth:**	0.00

Vertical Section:	**Depth From (TVD) (usft)**	**+N/-S (usft)**	**+E/-W (usft)**	**Direction (°)**
	0.00	0.00	0.00	125.39

Plan Sections

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,143.04	0.00	0.00	4,143.04	0.00	0.00	0.00	0.00	0.00	0.00	
5,043.04	90.00	125.39	4,716.00	-331.82	467.09	10.00	10.00	0.00	125.39	
5,093.04	90.00	125.39	4,716.00	-360.78	507.85	0.00	0.00	0.00	0.00	
5,100.69	90.15	125.39	4,715.99	-365.21	514.09	2.00	2.00	0.03	0.74	
12,568.24	90.15	125.39	4,696.05	-4,690.15	6,601.68	0.00	0.00	0.00	0.00	COAL CREEK 2411 F

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well COAL CREEK 2411 23D 1H
Company:	Juniper Resources Exploration CO	**TVD Reference:**	14' KB @ 6446.00usft
Project:	SAN JUAN COUNTY, NM	**MD Reference:**	14' KB @ 6446.00usft
Site:	S23-T24N-R11W	**North Reference:**	True
Well:	COAL CREEK 2411 23D 1H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	HZ		
Design:	PLAN #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft	Build Rate (°/100u	Comments / Formations
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	Ojo Alamo
170.00	0.00	0.00	170.00	0.00	0.00	0.00	0.00	0.00	Kirtland
200.00	0.00	0.00	200.00	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	
400.00	0.00	0.00	400.00	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	
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	
776.00	0.00	0.00	776.00	0.00	0.00	0.00	0.00	0.00	Fruitland
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	
976.00	0.00	0.00	976.00	0.00	0.00	0.00	0.00	0.00	Pictured Cliffs
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	
1,136.00	0.00	0.00	1,136.00	0.00	0.00	0.00	0.00	0.00	Lewis Shale
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	
1,974.00	0.00	0.00	1,974.00	0.00	0.00	0.00	0.00	0.00	CliffHouse
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	
2,370.00	0.00	0.00	2,370.00	0.00	0.00	0.00	0.00	0.00	Menefee
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	0.00	
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	0.00	
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	0.00	
2,900.00	0.00	0.00	2,900.00	0.00	0.00	0.00	0.00	0.00	
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00	0.00	
3,200.00	0.00	0.00	3,200.00	0.00	0.00	0.00	0.00	0.00	
3,300.00	0.00	0.00	3,300.00	0.00	0.00	0.00	0.00	0.00	
3,400.00	0.00	0.00	3,400.00	0.00	0.00	0.00	0.00	0.00	
3,401.00	0.00	0.00	3,401.00	0.00	0.00	0.00	0.00	0.00	Point Lookout
3,500.00	0.00	0.00	3,500.00	0.00	0.00	0.00	0.00	0.00	
3,516.00	0.00	0.00	3,516.00	0.00	0.00	0.00	0.00	0.00	Mancos
3,600.00	0.00	0.00	3,600.00	0.00	0.00	0.00	0.00	0.00	
3,700.00	0.00	0.00	3,700.00	0.00	0.00	0.00	0.00	0.00	
3,800.00	0.00	0.00	3,800.00	0.00	0.00	0.00	0.00	0.00	
3,900.00	0.00	0.00	3,900.00	0.00	0.00	0.00	0.00	0.00	
4,000.00	0.00	0.00	4,000.00	0.00	0.00	0.00	0.00	0.00	
4,100.00	0.00	0.00	4,100.00	0.00	0.00	0.00	0.00	0.00	
4,143.04	0.00	0.00	4,143.04	0.00	0.00	0.00	0.00	0.00	KOP - 4143'
4,200.00	5.70	125.39	4,199.91	-1.64	2.31	2.83	10.00	10.00	

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well COAL CREEK 2411 23D 1H
Company:	Juniper Resources Exploration CO	**TVD Reference:**	14' KB @ 6446.00usft
Project:	SAN JUAN COUNTY, NM	**MD Reference:**	14' KB @ 6446.00usft
Site:	S23-T24N-R11W	**North Reference:**	True
Well:	COAL CREEK 2411 23D 1H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	HZ		
Design:	PLAN #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft	Build Rate (°/100u	Comments / Formations
4,300.00	15.70	125.39	4,298.04	-12.37	17.42	21.37	10.00	10.00	
4,361.24	21.82	125.39	4,356.00	-23.77	33.46	41.05	10.00	10.00	Mancos A
4,388.43	24.54	125.39	4,381.00	-29.97	42.19	51.75	10.00	10.00	Mancos B
4,400.00	25.70	125.39	4,391.47	-32.81	46.19	56.66	10.00	10.00	
4,500.00	35.70	125.39	4,477.35	-62.34	87.76	107.64	10.00	10.00	
4,504.50	36.15	125.39	4,481.00	-63.87	89.91	110.29	10.00	10.00	Top Frac Barrier
4,542.61	39.96	125.39	4,511.00	-77.47	109.05	133.77	10.00	10.00	Mancos C (bttm frac barrier)
4,589.96	44.69	125.39	4,546.00	-95.93	135.04	165.64	10.00	10.00	Tocito Unconformity
4,600.00	45.70	125.39	4,553.07	-100.06	140.84	172.77	10.00	10.00	
4,633.87	49.08	125.39	4,576.00	-114.49	161.16	197.69	10.00	10.00	Carlile Unconformity (top Gllp SS)
4,700.00	55.70	125.39	4,616.34	-144.81	203.85	250.05	10.00	10.00	
4,800.00	65.70	125.39	4,665.22	-195.25	274.85	337.14	10.00	10.00	
4,900.00	75.70	125.39	4,698.24	-249.84	351.69	431.40	10.00	10.00	
5,000.00	85.70	125.39	4,714.38	-306.92	432.04	529.96	10.00	10.00	
5,043.04	90.00	125.39	4,716.00	-331.82	467.09	572.96	10.00	10.00	LP - 4716' TVD; 90° (578' FNL, 740' FWL) - Gll
5,093.04	90.00	125.39	4,716.00	-360.78	507.85	622.96	0.00	0.00	START BUILD
5,100.00	90.14	125.39	4,715.99	-364.81	513.53	629.92	2.00	2.00	
5,100.69	90.15	125.39	4,715.99	-365.21	514.09	630.61	2.00	2.00	EOB; INC=90.15°
5,200.00	90.15	125.39	4,715.72	-422.73	595.05	729.92	0.00	0.00	
5,300.00	90.15	125.39	4,715.46	-480.64	676.57	829.92	0.00	0.00	
5,400.00	90.15	125.39	4,715.19	-538.56	758.09	929.92	0.00	0.00	
5,500.00	90.15	125.39	4,714.92	-596.48	839.61	1,029.92	0.00	0.00	
5,600.00	90.15	125.39	4,714.65	-654.39	921.13	1,129.92	0.00	0.00	
5,700.00	90.15	125.39	4,714.39	-712.31	1,002.65	1,229.92	0.00	0.00	
5,800.00	90.15	125.39	4,714.12	-770.23	1,084.17	1,329.92	0.00	0.00	
5,900.00	90.15	125.39	4,713.85	-828.14	1,165.69	1,429.91	0.00	0.00	
6,000.00	90.15	125.39	4,713.59	-886.06	1,247.21	1,529.91	0.00	0.00	
6,100.00	90.15	125.39	4,713.32	-943.97	1,328.73	1,629.91	0.00	0.00	
6,200.00	90.15	125.39	4,713.05	-1,001.89	1,410.25	1,729.91	0.00	0.00	
6,300.00	90.15	125.39	4,712.79	-1,059.81	1,491.77	1,829.91	0.00	0.00	
6,400.00	90.15	125.39	4,712.52	-1,117.72	1,573.29	1,929.91	0.00	0.00	
6,500.00	90.15	125.39	4,712.25	-1,175.64	1,654.82	2,029.91	0.00	0.00	
6,600.00	90.15	125.39	4,711.98	-1,233.56	1,736.34	2,129.91	0.00	0.00	
6,700.00	90.15	125.39	4,711.72	-1,291.47	1,817.86	2,229.91	0.00	0.00	
6,800.00	90.15	125.39	4,711.45	-1,349.39	1,899.38	2,329.91	0.00	0.00	
6,900.00	90.15	125.39	4,711.18	-1,407.31	1,980.90	2,429.91	0.00	0.00	
7,000.00	90.15	125.39	4,710.92	-1,465.22	2,062.42	2,529.91	0.00	0.00	
7,100.00	90.15	125.39	4,710.65	-1,523.14	2,143.94	2,629.91	0.00	0.00	
7,200.00	90.15	125.39	4,710.38	-1,581.06	2,225.46	2,729.91	0.00	0.00	
7,300.00	90.15	125.39	4,710.12	-1,638.97	2,306.98	2,829.91	0.00	0.00	
7,400.00	90.15	125.39	4,709.85	-1,696.89	2,388.50	2,929.91	0.00	0.00	
7,500.00	90.15	125.39	4,709.58	-1,754.81	2,470.02	3,029.91	0.00	0.00	
7,600.00	90.15	125.39	4,709.31	-1,812.72	2,551.54	3,129.91	0.00	0.00	
7,700.00	90.15	125.39	4,709.05	-1,870.64	2,633.06	3,229.91	0.00	0.00	
7,800.00	90.15	125.39	4,708.78	-1,928.56	2,714.58	3,329.91	0.00	0.00	
7,900.00	90.15	125.39	4,708.51	-1,986.47	2,796.10	3,429.91	0.00	0.00	
8,000.00	90.15	125.39	4,708.25	-2,044.39	2,877.62	3,529.91	0.00	0.00	
8,100.00	90.15	125.39	4,707.98	-2,102.30	2,959.15	3,629.91	0.00	0.00	
8,200.00	90.15	125.39	4,707.71	-2,160.22	3,040.67	3,729.91	0.00	0.00	
8,300.00	90.15	125.39	4,707.45	-2,218.14	3,122.19	3,829.91	0.00	0.00	
8,400.00	90.15	125.39	4,707.18	-2,276.05	3,203.71	3,929.91	0.00	0.00	
8,500.00	90.15	125.39	4,706.91	-2,333.97	3,285.23	4,029.91	0.00	0.00	

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well COAL CREEK 2411 23D 1H
Company:	Juniper Resources Exploration CO	**TVD Reference:**	14' KB @ 6446.00usft
Project:	SAN JUAN COUNTY, NM	**MD Reference:**	14' KB @ 6446.00usft
Site:	S23-T24N-R11W	**North Reference:**	True
Well:	COAL CREEK 2411 23D 1H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	HZ		
Design:	PLAN #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft	Build Rate (°/100u	Comments / Formations
8,600.00	90.15	125.39	4,706.64	-2,391.89	3,366.75	4,129.91	0.00	0.00	
8,700.00	90.15	125.39	4,706.38	-2,449.80	3,448.27	4,229.90	0.00	0.00	
8,800.00	90.15	125.39	4,706.11	-2,507.72	3,529.79	4,329.90	0.00	0.00	
8,900.00	90.15	125.39	4,705.84	-2,565.64	3,611.31	4,429.90	0.00	0.00	
9,000.00	90.15	125.39	4,705.58	-2,623.55	3,692.83	4,529.90	0.00	0.00	
9,100.00	90.15	125.39	4,705.31	-2,681.47	3,774.35	4,629.90	0.00	0.00	
9,200.00	90.15	125.39	4,705.04	-2,739.39	3,855.87	4,729.90	0.00	0.00	
9,300.00	90.15	125.39	4,704.78	-2,797.30	3,937.39	4,829.90	0.00	0.00	
9,400.00	90.15	125.39	4,704.51	-2,855.22	4,018.91	4,929.90	0.00	0.00	
9,500.00	90.15	125.39	4,704.24	-2,913.14	4,100.43	5,029.90	0.00	0.00	
9,600.00	90.15	125.39	4,703.97	-2,971.05	4,181.95	5,129.90	0.00	0.00	
9,700.00	90.15	125.39	4,703.71	-3,028.97	4,263.47	5,229.90	0.00	0.00	
9,800.00	90.15	125.39	4,703.44	-3,086.89	4,345.00	5,329.90	0.00	0.00	
9,900.00	90.15	125.39	4,703.17	-3,144.80	4,426.52	5,429.90	0.00	0.00	
10,000.00	90.15	125.39	4,702.91	-3,202.72	4,508.04	5,529.90	0.00	0.00	
10,100.00	90.15	125.39	4,702.64	-3,260.63	4,589.56	5,629.90	0.00	0.00	
10,200.00	90.15	125.39	4,702.37	-3,318.55	4,671.08	5,729.90	0.00	0.00	
10,300.00	90.15	125.39	4,702.11	-3,376.47	4,752.60	5,829.90	0.00	0.00	
10,400.00	90.15	125.39	4,701.84	-3,434.38	4,834.12	5,929.90	0.00	0.00	
10,500.00	90.15	125.39	4,701.57	-3,492.30	4,915.64	6,029.90	0.00	0.00	
10,600.00	90.15	125.39	4,701.30	-3,550.22	4,997.16	6,129.90	0.00	0.00	
10,700.00	90.15	125.39	4,701.04	-3,608.13	5,078.68	6,229.90	0.00	0.00	
10,800.00	90.15	125.39	4,700.77	-3,666.05	5,160.20	6,329.90	0.00	0.00	
10,900.00	90.15	125.39	4,700.50	-3,723.97	5,241.72	6,429.90	0.00	0.00	
11,000.00	90.15	125.39	4,700.24	-3,781.88	5,323.24	6,529.90	0.00	0.00	
11,100.00	90.15	125.39	4,699.97	-3,839.80	5,404.76	6,629.90	0.00	0.00	
11,200.00	90.15	125.39	4,699.70	-3,897.72	5,486.28	6,729.90	0.00	0.00	
11,300.00	90.15	125.39	4,699.44	-3,955.63	5,567.80	6,829.90	0.00	0.00	
11,400.00	90.15	125.39	4,699.17	-4,013.55	5,649.33	6,929.90	0.00	0.00	
11,500.00	90.15	125.39	4,698.90	-4,071.47	5,730.85	7,029.89	0.00	0.00	
11,600.00	90.15	125.39	4,698.64	-4,129.38	5,812.37	7,129.89	0.00	0.00	
11,700.00	90.15	125.39	4,698.37	-4,187.30	5,893.89	7,229.89	0.00	0.00	
11,800.00	90.15	125.39	4,698.10	-4,245.21	5,975.41	7,329.89	0.00	0.00	
11,900.00	90.15	125.39	4,697.83	-4,303.13	6,056.93	7,429.89	0.00	0.00	
12,000.00	90.15	125.39	4,697.57	-4,361.05	6,138.45	7,529.89	0.00	0.00	
12,100.00	90.15	125.39	4,697.30	-4,418.96	6,219.97	7,629.89	0.00	0.00	
12,200.00	90.15	125.39	4,697.03	-4,476.88	6,301.49	7,729.89	0.00	0.00	
12,300.00	90.15	125.39	4,696.77	-4,534.80	6,383.01	7,829.89	0.00	0.00	
12,400.00	90.15	125.39	4,696.50	-4,592.71	6,464.53	7,929.89	0.00	0.00	
12,500.00	90.15	125.39	4,696.23	-4,650.63	6,546.05	8,029.89	0.00	0.00	
12,568.24	90.15	125.39	4,696.05	-4,690.15	6,601.68	8,098.13	0.00	0.00	TD at 12568.24

Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
COAL CREEK 2411 PBH - plan hits target center - Point	0.00	0.00	4,696.05	-4,690.15	6,601.68	1,925,816.73	2,686,368.39	36.292565	-107.957950

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well COAL CREEK 2411 23D 1H
Company:	Juniper Resources Exploration CO	**TVD Reference:**	14' KB @ 6446.00usft
Project:	SAN JUAN COUNTY, NM	**MD Reference:**	14' KB @ 6446.00usft
Site:	S23-T24N-R11W	**North Reference:**	True
Well:	COAL CREEK 2411 23D 1H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	HZ		
Design:	PLAN #1		

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
100.00	100.00	Ojo Alamo			
170.00	170.00	Kirtland			
776.00	776.00	Fruitland			
976.00	976.00	Pictured Cliffs			
1,136.00	1,136.00	Lewis Shale			
1,974.00	1,974.00	CliffHouse			
2,370.00	2,370.00	Menefee			
3,401.00	3,401.00	Point Lookout			
3,516.00	3,516.00	Mancos			
4,361.24	4,356.00	Mancos A			
4,388.43	4,381.00	Mancos B			
4,504.50	4,481.00	Top Frac Barrier			
4,542.61	4,511.00	Mancos C (bttm frac barrier)			
4,589.96	4,546.00	Tocito Unconformity			
4,633.87	4,576.00	Carlile Unconformity (top Gllp SS)			
5,043.04	4,716.00	Gllp HZ Landing Target			

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
4,143.04	4,143.04	0.00	0.00	KOP - 4143'
5,043.04	4,716.00	-331.82	467.09	LP - 4716' TVD; 90° (578' FNL, 740' FWL)
5,093.04	4,716.00	-360.78	507.85	START BUILD
5,100.69	4,715.99	-365.21	514.09	EOB; INC=90.15°
12,568.24	4,696.05	-4,690.15	6,601.68	TD at 12568.24

Drilling Program

JUNIPER RESOURCES EXPLORATION CO. LLC.
3624 Oak Lawn Avenue
Suite 222
Dallas, TX 75219

COAL CREEK 2411 23D 1H

Surface Location: 250' FNL & 274' FWL
Section 23, T24N, R11W
Proposed GL Elev = 6432'
Lat. = 36.3054509° N
Long. = 107.9803515° W
NAD83
San Juan County, New Mexico

Proposed Top of Production Location: 250' FNL & 274' FWL
Section 23, T24N, R11W
Proposed Bottom Hole Location (Pilot Hole): 250' FNL & 274' FWL
Section 23, T24N, R11W
Proposed Bottom Hole Location (7" Casing Landing Pt.): 578' FNL & 740' FWL
Section 23, T24N, R11W
Proposed Bottom Hole Location (Lateral #1): 350' FSL & 1620' FWL
Section 24, T24N, R11W
San Juan County, New Mexico

Drilling program written in compliance with onshore Oil and Gas Order No. 1
(III.D.3, effective May 2007) and Onshore Order No. 2 Dated November 18, 1988

1. ESTIMATED TOPS OF GEOLOGICAL MARKERS IN PILOT HOLE

Depths are referenced to GL of 6432 ft			
Formation	**TVD (ft)**	**MD (ft)**	**Subsea (ft)**
Nacimiento Fn.	0	0	
Ojo Alamo	100	100	6,346
Kirtland Shale	170	170	6,276
Fruitland Coal	776	776	5,670
Pictured Cliffs	976	976	5,470
Lewis Shale	1,136	1,136	5,310
CliffHouse Sandstone	1,974	1,974	4,472
Menefee Fn.	2,370	2,370	4,076
Point Lookout	3,401	3,401	3,045
Mancos	3,516	3,516	2,930
Mancos A Fn.	4,356	4,356	2,090
Mancos B Fn.	4,381	4,381	2,065
Mancos C Fn.	4,511	4,511	1,935
Gllp Target	4,716	4,716	1,730
Juana Lopez	4,926	4,926	1,520
Pilot TD	5,026	5,026	1,420

Note: Geologic markers will be updated based on drilling and geology operations

Drilling Plan

Timing: Drilling is estimated to commence in late February depending on rig availability. The drilling rig has been identified and timing will depend on current operations for other Operators. It is anticipated that the drilling of this well will take 14-20 days and completion operations will begin within 30 days of rig release depending on fracture treatment schedules with various pumping service companies.

CLOSED-LOOP SYSTEM DESIGN PLAN

The closed-loop system will consist of a series of temporary above-ground storage tanks and/or haul-off bins suitable for holding the cuttings and fluids from drilling operations. The closed- loop system will not entail temporary pits, below-grade storage tanks, below-grade sumps, or drying pads.

Design considerations include:

- The closed-loop system will be signed in accordance with 19.15.17.11 NMAC
- The closed-loop system storage tanks will be of adequate volume to ensure confinement of all fluids and provide sufficient freeboard to prevent uncontrolled releases.
- Topsoil will be salvaged and stored for use in reclamation activities
- The closed-loop system storage tanks will be placed in bermed secondary containment sized to contain a minimum of 110% of the volume of the largest storage tank.

CLOSED-LOOP SYSTEM OPERATING & MAINTENANCE PLAN

The closed-loop system will be operated and maintained to contain liquids and solids; minimize the amount of drilling fluids and cuttings that require disposal; maximize the amount of drilling fluid recycled and reused in the drilling process; isolate drilling wastes from the environment; prevent contamination of fresh water; and protect public health and the environment.

Operation and maintenance considerations include:

- Fluid levels will be maintained to provide sufficient freeboard to prevent over-topping.
- Visual inspections will be conducted on a daily basis to identify any potential leaks and to ensure that the closed-loop system storage tanks have sufficient freeboard to prevent over-topping.
- Only drilling fluids or cuttings intrinsic to, used by, or generated from, drilling operations will be stored in the closed-loop system storage tanks. Hazardous waste, miscellaneous solid waste, and/or debris will not be stored in the storage tanks.
- The OCD District Office will be notified within 48 hours of discovery of a leak in the closed-loop drilling system. If a leak is discovered, all liquid will be removed within 48 hours and the damage repaired.

CLOSED-LOOP SYSTEM CLOSURE PLAN

The closed-loop system will be closed in accordance with 19.15.17.13 NMAC. Closure considerations include:

- Drilling fluids will be recycled and transferred to other permitted closed-loop systems or returned to the vendor for reuse, as practical.
- Residual fluids will be pulled from the storage tanks, mixed with saw dust or similar absorbent material, and disposed of at Industrial Ecosystem, Inc. waste disposal facilities.
- Remaining cuttings or sludges will be vacuumed from the storage tanks and disposed of at the Envirotech, Inc and/or Industrial Ecosystem, Inc. waste disposal facilities.
- Storage tanks will be removed from the well location during the rig move.
- The well pad will be reclaimed and seeded in accordance with subsections G, Hand I of 19.15.17.13 NMAC.

Well Control Equipment Schematic for 2M Service

Attachment to Drilling Technical Program

Exhibit #1
Typical BOP setup

Location: San Juan Basin, New Mexcio

Date: August 24, 2004
By: John Thompson (Walsh E&P)