

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB NO. 1004-0137
Expires: January 31, 2018

SUNDRY NOTICES AND REPORTS ON WELLS
Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.

SUBMIT IN TRIPLICATE - Other instructions on page 2

1. Type of Well <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other		5. Lease Serial No. N0G01011426
2. Name of Operator JUNIPER RESRC EXPLRN CO LLC Contact: VANESSA CAMERON E-Mail: vcameron@seidelttech.com		6. If Indian, Allottee or Tribe Name EASTERN NAVAJO
3a. Address 3624 OAK LAWN AVE STE 222 DALLAS, TX 75219	3b. Phone No. (include area code) Ph: 303-945-1049	7. If Unit or CA/Agreement, Name and/or No. NMNM133481X
4. Location of Well (Footage, Sec., T., R., M., or Survey Description) Sec 16 T24N R10W SWSW 1277FSL 0288FWL		8. Well Name and No. PINON UNIT 305H
		9. API Well No. 30-045-35637-00-X1
		10. Field and Pool or Exploratory Area PINON UNIT HZ
		11. County or Parish, State SAN JUAN COUNTY, NM

12. CHECK THE APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
<input checked="" type="checkbox"/> Notice of Intent	<input type="checkbox"/> Acidize	<input type="checkbox"/> Deepen	<input type="checkbox"/> Production (Start/Resume)	<input type="checkbox"/> Water Shut-Off
<input type="checkbox"/> Subsequent Report	<input type="checkbox"/> Alter Casing	<input type="checkbox"/> Hydraulic Fracturing	<input type="checkbox"/> Reclamation	<input type="checkbox"/> Well Integrity
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Casing Repair	<input type="checkbox"/> New Construction	<input type="checkbox"/> Recomplete	<input checked="" type="checkbox"/> Other
	<input type="checkbox"/> Change Plans	<input type="checkbox"/> Plug and Abandon	<input type="checkbox"/> Temporarily Abandon	Change to Original A PD
	<input type="checkbox"/> Convert to Injection	<input type="checkbox"/> Plug Back	<input type="checkbox"/> Water Disposal	

13. Describe Proposed or Completed Operation: Clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports must be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 must be filed once testing has been completed. Final Abandonment Notices must be filed only after all requirements, including reclamation, have been completed and the operator has determined that the site is ready for final inspection.

Juniper Resources Exploration Co. LLC respectfully requests review and approval by the Farmington BLM of the revised drill plan, geoprognosis, directional plan and plan view for the above-referenced well. If additional information is required, please advise. Thank you for your consideration of this request.

OIL CONS. DIV DIST. 3

MAY 02 2017

Please be advised that Item 5 did not provide enough space for the entire company name. It should read Juniper Resources Exploration Co. LLC

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

CONDITIONS OF APPROVAL

Adhere to previously issued stipulations

14. I hereby certify that the foregoing is true and correct. Electronic Submission #372407 verified by the BLM Well Information System For JUNIPER RESRC EXPLRN CO LLC, sent to the Farmington Committed to AFMSS for processing by JACK SAVAGE on 05/02/2017 (17JWS0080SE)	
Name (Printed/Typed) MATT STRICKLER	Title VICE PRESIDENT-LAND
Signature (Electronic Submission)	Date 04/07/2017

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By <u>JACK SAVAGE</u>	Title PETROLEUM ENGINEER	Date 05/02/2017
Conditions of approval, if any, are attached. Approval of this notice 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.		Office Farmington

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

(Instructions on page 2)

**** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ****

NMOCD

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Sundry Drilling Program

JUNIPER RESOURCES EXPLORATION CO. LLC.

3624 Oak Lawn Avenue
Suite 222
Dallas, TX 75219

PINON UNIT 305H

Surface Location: 1277' FSL & 288' FWL
Section 16, T24N, R10W
Proposed GL Elev = 6734'
Lat. = 36.309413° N
Long. = 107.908842° W
NAD83
San Juan County, New Mexico

Proposed Top of Production Location: 1277' FSL & 288' FWL
Section 16, T24N, R10W
Proposed Bottom Hole Location (Pilot Hole): 1277' FSL & 288' FWL
Section 16, T24N, R10W
Proposed Bottom Hole Location (7" Casing Landing Pt.): 732' FSL & 629' FWL
Section 16, T24N, R10W
Proposed Bottom Hole Location (Lateral #1): 1277' FNL & 350' FEL
Section 28, T24N, R10W
San Juan County, New Mexico

PREVIOUSLY APPROVED PERMIT AS ENCANA PINION UNIT M16-2410 3H
API NO. 30-045-35637

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

Depths are referenced to GL of 6734 ft			
Formation	TVD (ft)	MD (ft)	Subsea (ft)
Nacimiento Fn.	0	0	
Ojo Alamo Ss.	239	239	6,509
Kirtland Shale	363	363	6,385
Fruitland Coal	916	916	5,832
Pictured Cliffs Ss.	1,352	1,352	5,396
Lewis Shale	1,579	1,579	5,169
CliffHouse Ss.	2,094	2,094	4,654
Menefee Fn.	2,690	2,690	4,058
Point Lookout Ss.	3,773	3,773	2,975
Mancos Shale	3,990	3,990	2,758
Mancos A Fn.	4,786	4,786	1,962
Gallup Fn.	5,010	5,010	1,738
Juana Lopez	5,369	5,369	1,379
Pilot Hole TD	5,510	5,510	1,238
Lateral TD	5,068	13,396	1,680

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

Drilling Plan

Drill 12 ¼" hole to 320' then set 9 5/8" casing. Surface casing may be preset before moving in the drilling rig. Drill 8 3/4" Pilot hole with fresh water potassium sulfate mud from 320' MD to approximately 5510' (500' below top of Carlile). 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 4516' MD/TVD. The plug will be dressed off and an 8 ¾" kick off assembly will be run to build the curve at 9 degrees per 100' to 7" casing point at 90.62 degrees and 148.59 azimuth, 5523' MD/5153'TVD.

7" casing will be set in a legal position 732' FSL & 629' FWL in Section 16.

The 7" casing will be drilled out with a 6 1/8" drilling assembly holding angle to 90.62° inclination and 148.59° azimuth. The hole will be drilled to a total depth at 13396' MD / 5068' TVD. Adjustments may be made to the directional program based on geology.

The Bottom hole location will be in a legal location at 13396' MD / 5068' TVD at 1277' FNL & 350' FEL of section 28. A total of 8516' of horizontal hole will be drilled.

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

Depths are referenced to GL of 6734 ft			
Formation	TVD (ft)	MD (ft)	Substance
Nacimiento	0	0	
Ojo Alamo Ss.	239	239	Water
Kirtland Shale	363	363	
Fruitland Coal	916	916	Water/Gas
Pictured Cliffs Ss.	1,352	1,352	Oil/Gas
Lewis Shale	1,579	1,579	Gas
CliffHouse Ss.	2,094	2,094	Oil/Gas
Menefee Fn.	2,690	2,690	Water/Gas
Point Lookout Ss.	3,773	3,773	Oil/Gas
Mancos Shale	3,990	3,990	Oil/Gas
Mancos A Fn.	4,786	4,786	Oil/Gas
Gallup Fn.	5,010	5,010	Oil/Gas
Juana Lopez	5,369	5,369	Oil/Gas
Pilot Hole TD	5,510	5,510	
Lateral TD	5,086	13,396	Oil/Gas

Possible Aquifers: <220'

Oil Shale: None Expected.

Oil & Gas: Primary objective is the Mancos and Gallup formation encountered first at 4786' TVD. Landing point will be in the Gallup at 5153'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 5153' 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 = 5010' TVD x 0.38 psi/ft = 1904 psi (based on measured offset bottom hole pressures).

Maximum Surface Pressure = 1904 psi - (5010' TVD x .22 psi/ft) = 1904psi - 1102 psi = 802 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 nipped-up on the 9-5/8" x 11" 2,000 psi WP casing head prior to drilling out from under surface casing. 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
Surface	0' - 320'	12 1/4"	9 5/8"	36 ppf	J or K55	STC	New
Intermediate	0' - 5,523'	8 3/4"	7"	23 ppf	J or K55	LTC	New
Production Liner	5,373' - 13,396'	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
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, starting with the shoe joint for a total of (4) minimum centralizers. Centralizers will be placed 10' above the shoe on the shoe joint, on the 1st, 2nd and 3rd casing collars.

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.

*Surface casing maybe preset with a preset rig (MOTE).

The proposed cementing program is as follows:

Surface Casing Single Stage Job – (0-320'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' – 320'): 170 sx – 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
Water requirement – 5.14 gal/sx.
Compressive strength: 24 hr – 2000 psi+
Total sacks of cement pumped = 170

Intermediate Casing Single Job - (0-5523'MD/5153'TVD):

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

Lead #1 - (0-3475'): 435 sx – 12.3 ppg, conventional cement containing:
HALCEM™ – Cement
Yield – 1.98 ft3/sx
Water requirement – 10.14 gal/sx.
Compressive strength: 24 hr – 500 psi+

Tail #1 - (3475'-5523') - 1000': 415 sx – 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 – 1.30 ft3/sx
Water requirement – 5.64 gal/sx.
Compressive strength: 24 hr – 1000 psi+

Total sacks of cement pumped = 850

Cement volumes are minimums and may be adjusted based on hole conditions.

Production Casing (Liner) Single Stage Job – (5373’MD - 13396’MD/ 5075’-4999’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 - (5373’ – 13396’) – 8023’: 730 sx – 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 = 730
Cement volumes are minimums and may be adjusted based on hole conditions.

Plug Back Cement – (4000’-5549’MD/TVD):

Excess – 70% over gauge hole – 8-3/4” hole (0.4176 ft3/ft)
Top of Cement – 500’ above KOP
Cement will be place in 3 equal plugs approximately 500’ in length (312 sx each)

Lead #1 - (4000’ – 5510’) -1510’: 935 sx – 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 = 935

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:

- 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'	Surface	12-1/4"	FW/Gel	8.4-9.0	32-44	NC	8	12	9
320'-4516'	Vertical to KOP	8-3/4"	Potassium Sulfate	9.0-9.5	38-42	6	14	14	9.5

4516'-5523'	Curve	8-3/4"	Potassium Sulfate	9.0-9.6	38-42	6	14	14	9.5
5523'-13396'	Horizontal	6-1/8"	Potassium Sulfate	8.3-9.0	34-40	6	8	8	9.5

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:

$$\text{Sacks of Barite per 100 bbl of mud} = 1470 \times (W2 - W1) \div (35 - W2)$$

Where; W1 = current mud weight

W2 = new mud weight

$$\text{Sacks} = 1470 \times (10.5 - 8.4) / (35 - 10.5) = 126 \text{ sx} * 5 \text{ (500bbls minimum)} = 630 \text{sx}$$

Pason Pit Volume Totalizer (PVT) equipment (or equivalent) 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 in surface use plan 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.

Cased Hole

CBL/CCL/GR will be run after the drilling of the well has been completed and as the start of the completion process. The CBL will confirm the quality of the cement bond and the actual TOC. If either of these two data points were not satisfactory per BLM, State and standard procedure, remedial cement work, if required, will be performed after consultation and approval of a plan from both the BLM and State agencies.

A cement bond log shall be run if the well is cased for production, injection, or disposal. The logged interval should extend from at least 50 feet below the KOP, if practical, to 200 feet above the top of cement. In no case shall the cement bond log begin above the KOP.

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 = 5010' TVD x 0.38 psi/ft = 1904 psi (based on measured offset bottom hole pressures).

Maximum expected BHP @ top of Gallup at 5010' TVD: 1904 psi

Maximum expected BHT @ 5510' TVD: ~168° F

No hydrogen sulfide gas is anticipated, however, if H₂S 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 dependant 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 withing 10 days and production tubing will be run. Production tubing is expected to be 2 3/8" or 2 7/8".

Timing: Drilling is estimated to commence in late June, or early July 2017 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

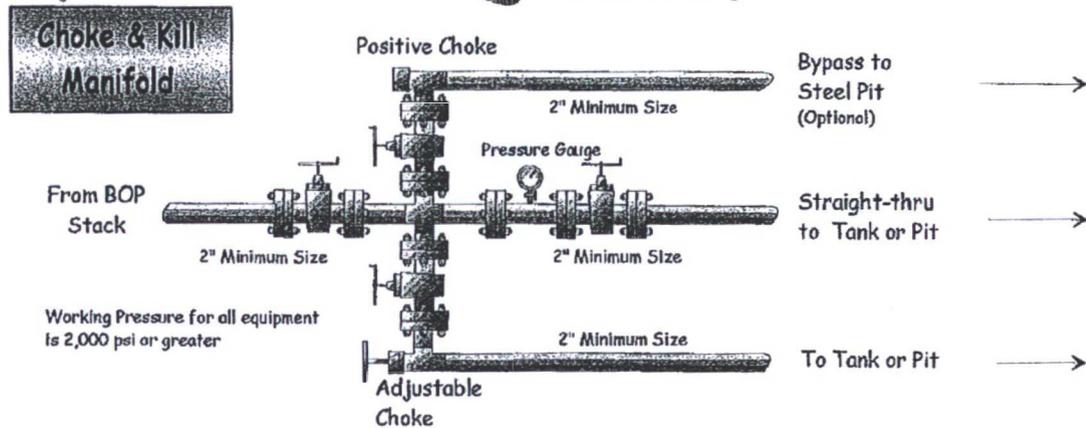
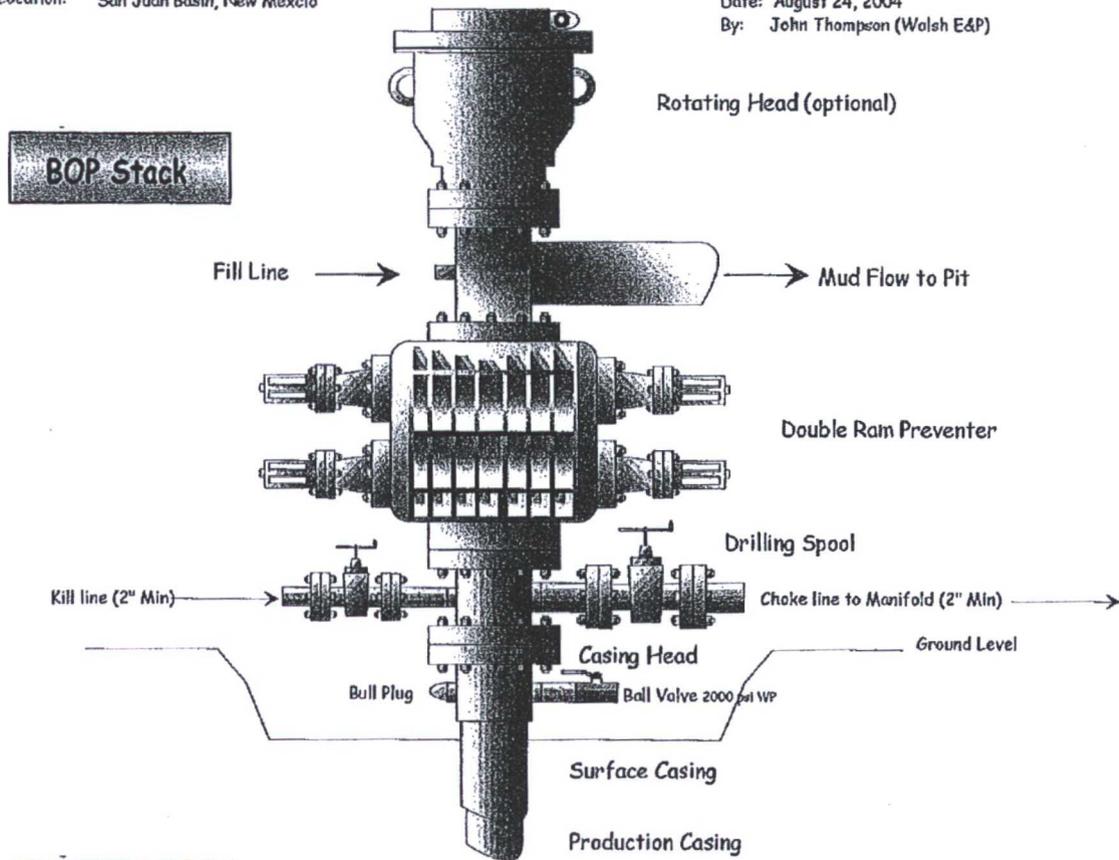
Attachment to Drilling Technical Program

Exhibit #1 Typical BOP setup

Location: San Juan Basin, New Mexico

Date: August 24, 2004

By: John Thompson (Walsh E&P)



Company: Juniper Resources Exploration CO Date: 3/14/2017

Well No.: Pinon Unit M16-2410 305H Lease No.: NM 109404 API: 30045356370000

Wireline Logging Co.: TBD
 Surf Loc: 1277 FSL 288 FWL Sec 16, 24N10W BHL: 1277 FNL 350 FEL, Sec 28, 24N10W Operations Geologist: Steve Thibodeaux
 Initial Perf: 650 FSL 580 FWL, Sec 16, 24N10W Final perf: 5032 FSL 377 FEL, Sec 28, 24N10W Email: steve.thibodeaux@jnpresources.com
 County: San Juan State: NM Phone: Office - 970-828-4450 Cell - 970-769-0689

Field: Mancos Oil Wildcat - Gallup SS Horizontal objective

Elevation: GL: 6734 KB: 6748 Field Prints of all logs left on location: 2
 Wellsite Supervisors: TBD Final Prints of all wireline and mudlogs: 4
 VP Drilling: TBD Wireline CD with .las curves: 1
 Rig Number: TBD Mail logs/cd's ASAP to: Sabina Kraushaar c/o Juniper Resources, LLC 900 Main Ave, Suite 201 Durango, CO 81301

Preliminary Formation Picks:	Tops		Zones			Remarks
	TVD	Subsea	H2O	Oil	Gas	
Nacimiento	Surface					
Ojo Alamo	239	6509	X			
Kirtland	363	6385				
Fruitland	916	5832	X	X		
Pictured Cliffs	1352	5396		X	X	
Levis Shale	1579	5169			X	
CliffHouse	2094	4654		X	X	
Menefee	2690	4058	X	X	X	
Point Lookout	3773	2975		X	X	NOTES on HZ Drilling:
Mancos	3990	2758		X	X	Allowed ~700' to build curve from surface location to initial perf
Mancos A	4786	1962		X	X	Lateral Section is drilled at S32degE (148deg) orientation
Mancos B	4813	1935		X	X	Lateral drilled ~85' updip from first perf to TD at 10.8' rise per 100'
Top Frac Barrier	4907	1841		X	X	BHL (TD) to be 50' past final perf
Mancos C (btm frac barrier)	4927	1821		X	X	
Tocito Unconformity	4958	1790	X	X	X	
Carlile Unconformity (top Gllp SS)	5010	1738		X	X	
Gllp HZ Landing Target	5110	1638	~100' below Carlile	X	X	
Juana Lopez	5369	1379		X	X	
TD (Carlile + 500')	5510	1238				

Fluid in Hole: TBD
 Bit Size: TBD Correlation Logs: Monument 1, SENE 17, 24N10W
 Casing: TBD

Logging Programs:	Mudlog: Coverage from Point Lookout to TD in vertical pilot and for entire Horizontal Lateral		
	30' samples to Mancos A. 10' Samples from Mancos A to TD in vertical pilot hole		
	Mudloggers to catch 30' samples while drilling horizontal lateral		
	Digital Daily report and logs to: sabina.kraushaar@jnpresources.com; steve.thibodeaux@jnpresources.com; matt.strickler@jnpresources.com; justin.davis@jnpresources.com; ian.delahunty@jnpresources.com		
	Wireline:		
TOOLS:	Depths:	Presentations:	
Triple Combo	surface csg to TD in vert pilot	1) Ind(log scale)/GR/SP/CAL 2" & 5" 2) CAL/GR/DPHI/Neutron(LINEAR) 2" & 5" (** shade den/neu x-over) 3)RHOB/GR/CAL 5" only	
DIPole Sonic in Vertical Pilot	Top Mancos to TD		
MRIL in vertical pilot	Top Mancos to TD		
GRWD	Horizontal Lateral		
CONTACTS:			
Drilling Engineer	Wireline	Wellsite Supervisors	Mudloggers: Softrock
TBD	TBD	TBD	Ron Horton/ Dan McGinn email: softrockgeological@hotmail.com office: 970-247-8868 Ron's cell: 505-320-8275
		Rig Phone: TBD	

Special wireline instructions:
 Call Steve Thibodeaux when tools are on bottom to coordinate data transfer at following numbers: Cell - 970-769-0689; Office - 970-828-4450

Email triple combo .las data from TD to Pt Lookout while still logging uphole to:
 steve.thibodeaux@jnpresources.com; sabina.kraushaar@jnpresources.com

Make 200' repeat pass
 Email all OH .las data and log images (main run and repeat) to below addresses as soon as they are complete:
 ian.delahunty@jnpresources.com ; justin.davis@jnpresources.com; steve.thibodeaux@jnpresources.com ; sabina.kraushaar@jnpresources.com

NOTE: See Juniper requirements for mudlog and wireline copies on top of prog

NOTE: See Below for NMOCD or BLM wireline and mudlog copy requirements (tight hole status)
 TBD

Cathedral Energy Services

Planning Report

Database: USA EDM 5000 Multi Users DB	Local Co-ordinate Reference: Well Pinon Unit 305H	
Company: Juniper Resources Exploration CO	TVD Reference: KB @ 6748.00usft	
Project: NEW MEXICO	MD Reference: KB @ 6748.00usft	
Site: S16-T24N-R10W	North Reference: Grid	
Well: Pinon Unit 305H	Survey Calculation Method: Minimum Curvature	
Wellbore: Pilot Hole		
Design: Pilot Hole Plan #1 (3.31.17 AT)		

Project NEW MEXICO		
Map System: US State Plane 1983	System Datum: North American Datum 1983	Mean Sea Level
Geo Datum: North American Datum 1983		
Map Zone: New Mexico Western Zone		

Site S16-T24N-R10W					
Site Position:		Northing:	1,931,934.99 usft	Latitude:	36.309413
From:	Lat/Long	Easting:	2,700,844.73 usft	Longitude:	-107.908842
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16"	Grid Convergence:	-0.04 °

Well Pinon Unit 305H						
Well Position	+N/-S	0.00 usft	Northing:	1,931,934.98 usft	Latitude:	36.309413
	+E/-W	0.00 usft	Easting:	2,700,844.73 usft	Longitude:	-107.908842
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	6,734.00 usft

Wellbore Pilot Hole					
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	3/31/2017	9.10	62.90	49,769

Design Pilot Hole Plan #1 (3.31.17 AT)					
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	148.60	

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	0.00
5,510.00	0.00	360.00	5,510.00	0.00	0.00	0.00	0.00	0.00	360.00	

Cathedral Energy Services

Planning Report

Database: USA EDM 5000 Multi Users DB Company: Juniper Resources Exploration CO Project: NEW MEXICO Site: S16-T24N-R10W Well: Piñon Unit 305H Wellbore: Pilot Hole Design: Pilot Hole Plan #1 (3.31.17 AT)	Local Co-ordinate Reference: TVD Reference: MD Reference: North Reference: Survey Calculation Method:	Well Piñon Unit 305H KB @ 6748.00usft KB @ 6748.00usft Grid Minimum Curvature
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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	
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	
239.00	0.00	0.00	239.00	0.00	0.00	0.00	0.00	0.00	Ojo Alamo
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	
363.00	0.00	0.00	363.00	0.00	0.00	0.00	0.00	0.00	Kirtland
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	
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	
916.00	0.00	0.00	916.00	0.00	0.00	0.00	0.00	0.00	Fruitland
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	
1,200.00	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	
1,352.00	0.00	0.00	1,352.00	0.00	0.00	0.00	0.00	0.00	Pictured Cliffs
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	
1,579.00	0.00	0.00	1,579.00	0.00	0.00	0.00	0.00	0.00	Lewis Shale
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	
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	
2,094.00	0.00	0.00	2,094.00	0.00	0.00	0.00	0.00	0.00	CliffHouse
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	
2,400.00	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	
2,690.00	0.00	0.00	2,690.00	0.00	0.00	0.00	0.00	0.00	Menefee
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	
3,500.00	0.00	0.00	3,500.00	0.00	0.00	0.00	0.00	0.00	
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	
3,773.00	0.00	0.00	3,773.00	0.00	0.00	0.00	0.00	0.00	Point Lookout
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	
3,990.00	0.00	0.00	3,990.00	0.00	0.00	0.00	0.00	0.00	Mancos
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	
4,200.00	0.00	0.00	4,200.00	0.00	0.00	0.00	0.00	0.00	

Cathedral Energy Services

Planning Report

Database: USA EDM 5000 Multi Users DB Company: Juniper Resources Exploration CO Project: NEW MEXICO Site: S16-T24N-R10W Well: Pinon Unit 305H Wellbore: Pilot Hole Design: Pilot Hole Plan #1 (3.31.17 AT)	Local Co-ordinate Reference: TVD Reference: MD Reference: North Reference: Survey Calculation Method:	Well Pinon Unit 305H KB @ 6748.00usft KB @ 6748.00usft Grid Minimum Curvature
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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	0.00	0.00	4,300.00	0.00	0.00	0.00	0.00	0.00	
4,400.00	0.00	0.00	4,400.00	0.00	0.00	0.00	0.00	0.00	
4,500.00	0.00	0.00	4,500.00	0.00	0.00	0.00	0.00	0.00	
4,600.00	0.00	0.00	4,600.00	0.00	0.00	0.00	0.00	0.00	
4,700.00	0.00	0.00	4,700.00	0.00	0.00	0.00	0.00	0.00	
4,786.00	0.00	0.00	4,786.00	0.00	0.00	0.00	0.00	0.00	Mancos A
4,800.00	0.00	0.00	4,800.00	0.00	0.00	0.00	0.00	0.00	
4,813.00	0.00	0.00	4,813.00	0.00	0.00	0.00	0.00	0.00	Mancos B
4,900.00	0.00	0.00	4,900.00	0.00	0.00	0.00	0.00	0.00	
4,907.00	0.00	0.00	4,907.00	0.00	0.00	0.00	0.00	0.00	Top Frac Barrier
4,927.00	0.00	0.00	4,927.00	0.00	0.00	0.00	0.00	0.00	Mancos C (bttm frac barrier)
4,958.00	0.00	0.00	4,958.00	0.00	0.00	0.00	0.00	0.00	Tocito Unconformity
5,000.00	0.00	0.00	5,000.00	0.00	0.00	0.00	0.00	0.00	
5,010.00	0.00	0.00	5,010.00	0.00	0.00	0.00	0.00	0.00	Carlile Unconformity (top Gllp SS)
5,100.00	0.00	0.00	5,100.00	0.00	0.00	0.00	0.00	0.00	
5,160.00	0.00	0.00	5,160.00	0.00	0.00	0.00	0.00	0.00	Gllp HZ Landing Target
5,200.00	0.00	0.00	5,200.00	0.00	0.00	0.00	0.00	0.00	
5,300.00	0.00	0.00	5,300.00	0.00	0.00	0.00	0.00	0.00	
5,369.00	0.00	0.00	5,369.00	0.00	0.00	0.00	0.00	0.00	Juana Lopez
5,400.00	0.00	0.00	5,400.00	0.00	0.00	0.00	0.00	0.00	
5,500.00	0.00	0.00	5,500.00	0.00	0.00	0.00	0.00	0.00	
5,510.00	0.00	0.00	5,510.00	0.00	0.00	0.00	0.00	0.00	Pilot Hole TD @ 5510' MD - TD (Carlile + 500')

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
239.00	239.00	Ojo Alamo		-0.62	148.60	
363.00	363.00	Kirtland		-0.62	148.60	
916.00	916.00	Fruitland		-0.62	148.60	
1,352.00	1,352.00	Pictured Cliffs		-0.62	148.60	
1,579.00	1,579.00	Lewis Shale		-0.62	148.60	
2,094.00	2,094.00	CliffHouse		-0.62	148.60	
2,690.00	2,690.00	Menefee		-0.62	148.60	
3,773.00	3,773.00	Point Lookout		-0.62	148.60	
3,990.00	3,990.00	Mancos		-0.62	148.60	
4,786.00	4,786.00	Mancos A		-0.62	148.60	
4,813.00	4,813.00	Mancos B		-0.62	148.60	
4,907.00	4,907.00	Top Frac Barrier		-0.62	148.60	
4,927.00	4,927.00	Mancos C (bttm frac barrier)		-0.62	148.60	
4,958.00	4,958.00	Tocito Unconformity		-0.62	148.60	
5,010.00	5,010.00	Carlile Unconformity (top Gllp SS)		-0.62	148.60	
5,160.00	5,160.00	Gllp HZ Landing Target		-0.62	148.60	
5,369.00	5,369.00	Juana Lopez		-0.62	148.60	
5,510.00	5,510.00	TD (Carlile + 500')		-0.62	148.60	

Cathedral Energy Services

Planning Report

Database: USA EDM 5000 Multi Users DB Company: Juniper Resources Exploration CO Project: NEW MEXICO Site: S16-T24N-R10W Well: Pinon Unit 305H Wellbore: Pilot Hole Design: Pilot Hole Plan #1 (3.31.17 AT)	Local Co-ordinate Reference: TVD Reference: MD Reference: North Reference: Survey Calculation Method:	Well Pinon Unit 305H KB @ 6748.00usft KB @ 6748.00usft Grid Minimum Curvature
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Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
5,510.00	5,510.00	0.00	0.00	Pilot Hole TD @ 5510' MD



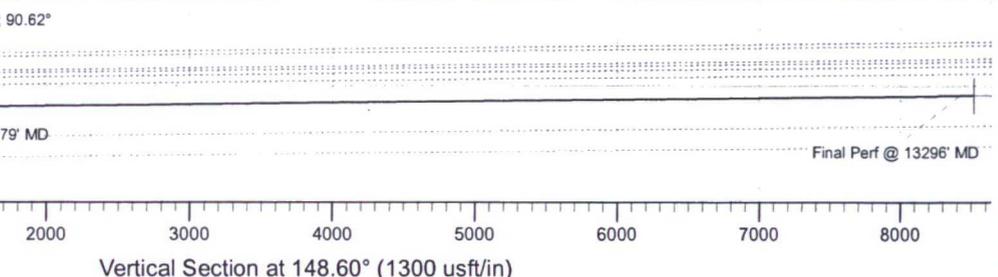
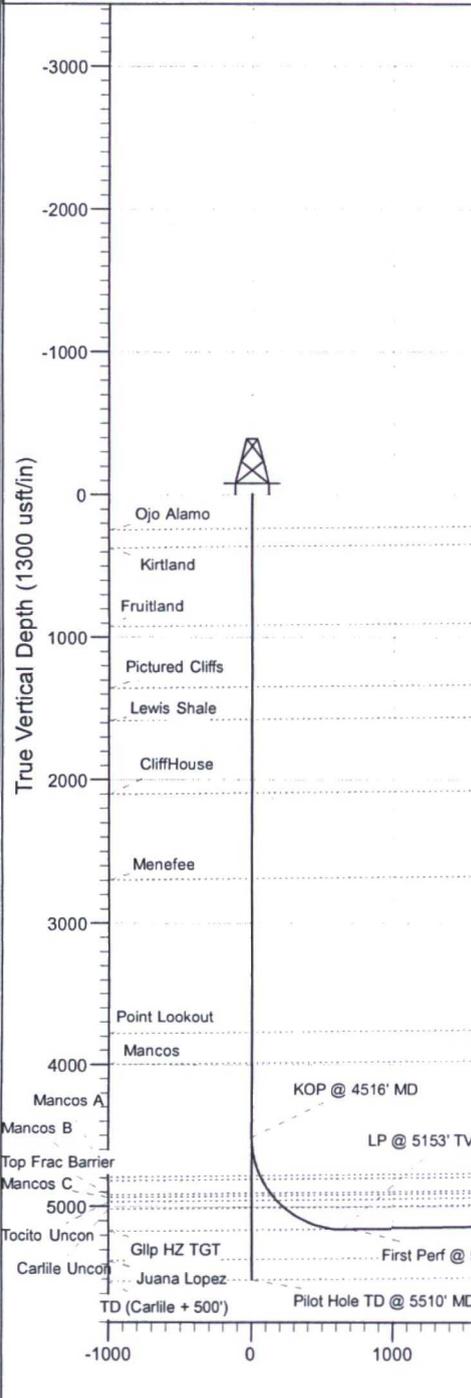
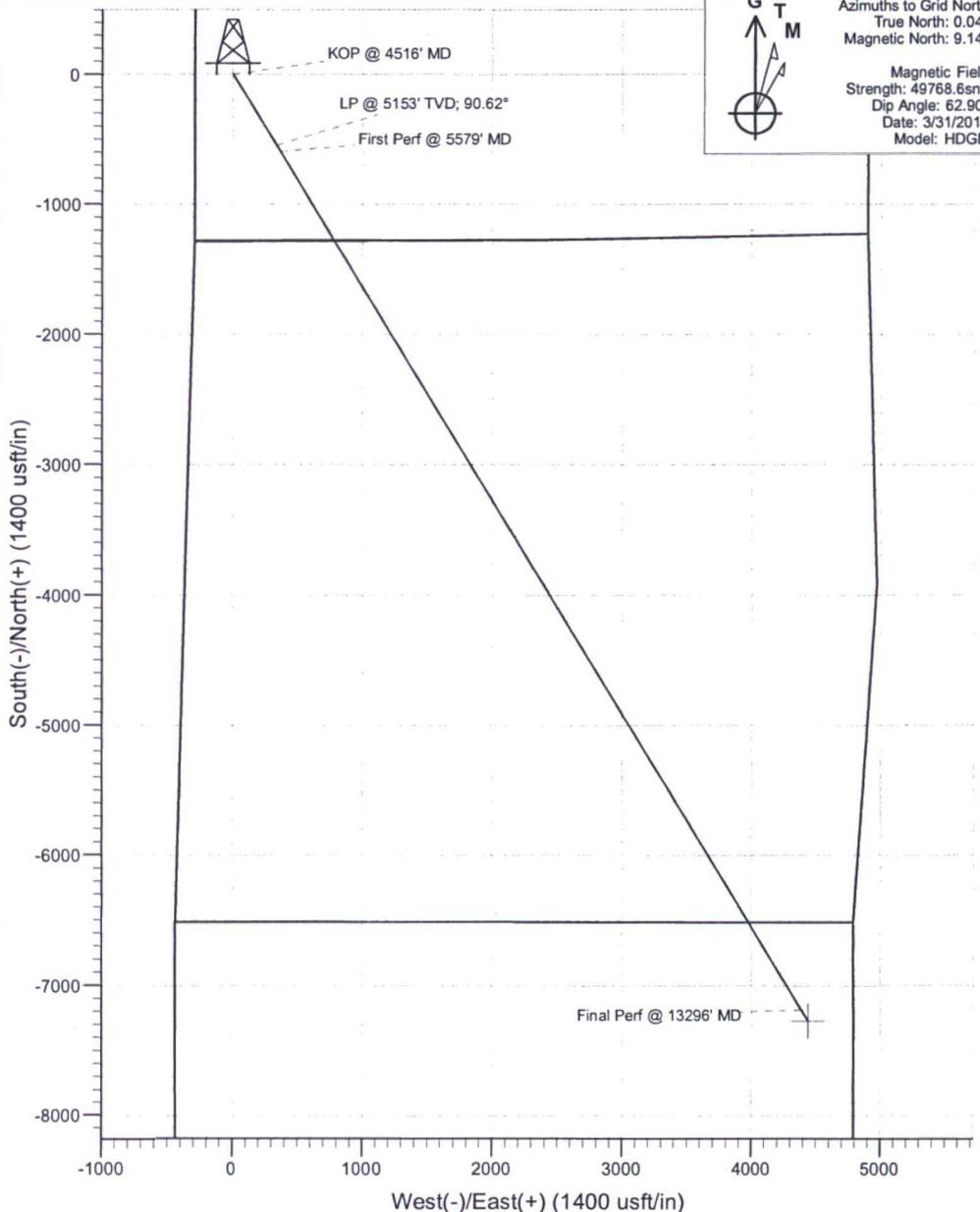
SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	4516.61	0.00	0.00	4516.61	0.00	0.00	0.00	0.00	0.00	
3	5523.50	90.62	148.59	5153.19	-549.24	335.32	9.00	148.59	643.51	
4	13396.73	90.62	148.59	5068.00	-7268.68	4437.70	0.00	0.00	8516.28	305H PBHL

Project: NEW MEXICO
 Site: S16-T24N-R10W
 Well: Pinon Unit 305H
 Wellbore: HZ
 Design: Plan #1 (3.31.17 AT)



Azimuths to Grid North
 True North: 0.04°
 Magnetic North: 9.14°
 Magnetic Field
 Strength: 49768.6snT
 Dip Angle: 62.90°
 Date: 3/31/2017
 Model: HDGM



WELL DETAILS: Pinon Unit 305H

+N/-S	+E/-W	Northing	Ground Level:	6734.00	Latitude	Longitude
0.00	0.00	1931934.98	Easting	2700844.73	36.309413	-107.908842



Cathedral Energy Services

Planning Report

Database: USA EDM 5000 Multi Users DB	Local Co-ordinate Reference: Well Pinon Unit 305H	
Company: Juniper Resources Exploration CO	TVD Reference: KB @ 6748.00usft	
Project: NEW MEXICO	MD Reference: KB @ 6748.00usft	
Site: S16-T24N-R10W	North Reference: Grid	
Well: Pinon Unit 305H	Survey Calculation Method: Minimum Curvature	
Wellbore: HZ		
Design: Plan #1 (3.31.17 AT)		

Project NEW MEXICO		
Map System: US State Plane 1983	System Datum: North American Datum 1983	Mean Sea Level
Geo Datum: North American Datum 1983		
Map Zone: New Mexico Western Zone		

Site S16-T24N-R10W					
Site Position:		Northing: 1,931,934.99 usft	Latitude: 36.309413		
From: Lat/Long		Easting: 2,700,844.73 usft	Longitude: -107.908842		
Position Uncertainty: 0.00 usft		Slot Radius: 13-3/16"	Grid Convergence: -0.04 °		

Well Pinon Unit 305H					
Well Position	+N/-S 0.00 usft	Northing: 1,931,934.98 usft	Latitude: 36.309413		
	+E/-W 0.00 usft	Easting: 2,700,844.73 usft	Longitude: -107.908842		
Position Uncertainty	0.00 usft	Wellhead Elevation: 0.00 usft	Ground Level: 6,734.00 usft		

Wellbore HZ					
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	3/31/2017	9.10	62.90	49,769

Design Plan #1 (3.31.17 AT)				
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	148.60

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	
4,516.61	0.00	0.00	4,516.61	0.00	0.00	0.00	0.00	0.00	0.00	
5,523.50	90.62	148.59	5,153.19	-549.24	335.32	9.00	9.00	0.00	148.59	
13,396.73	90.62	148.59	5,068.00	-7,268.68	4,437.70	0.00	0.00	0.00	0.00	305H PBHL

Cathedral Energy Services

Planning Report

Database: USA EDM 5000 Multi Users DB Company: Juniper Resources Exploration CO Project: NEW MEXICO Site: S16-T24N-R10W Well: Pinon Unit 305H Wellbore: HZ Design: Plan #1 (3.31.17 AT)	Local Co-ordinate Reference: TVD Reference: MD Reference: North Reference: Survey Calculation Method:	Well Pinon Unit 305H KB @ 6748.00usft KB @ 6748.00usft Grid Minimum Curvature
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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	
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	
239.00	0.00	0.00	239.00	0.00	0.00	0.00	0.00	0.00	Ojo Alamo
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	
363.00	0.00	0.00	363.00	0.00	0.00	0.00	0.00	0.00	Kirtland
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	
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	
916.00	0.00	0.00	916.00	0.00	0.00	0.00	0.00	0.00	Fruitland
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	
1,200.00	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	
1,352.00	0.00	0.00	1,352.00	0.00	0.00	0.00	0.00	0.00	Pictured Cliffs
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	
1,579.00	0.00	0.00	1,579.00	0.00	0.00	0.00	0.00	0.00	Lewis Shale
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	
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	
2,094.00	0.00	0.00	2,094.00	0.00	0.00	0.00	0.00	0.00	CliffHouse
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	
2,400.00	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	
2,690.00	0.00	0.00	2,690.00	0.00	0.00	0.00	0.00	0.00	Menefee
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	
3,500.00	0.00	0.00	3,500.00	0.00	0.00	0.00	0.00	0.00	
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	
3,773.00	0.00	0.00	3,773.00	0.00	0.00	0.00	0.00	0.00	Point Lookout
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	
3,990.00	0.00	0.00	3,990.00	0.00	0.00	0.00	0.00	0.00	Mancos
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	
4,200.00	0.00	0.00	4,200.00	0.00	0.00	0.00	0.00	0.00	

Cathedral Energy Services

Planning Report

Database: USA EDM 5000 Multi Users DB Company: Juniper Resources Exploration CO Project: NEW MEXICO Site: S16-T24N-R10W Well: Pinon Unit 305H Wellbore: HZ Design: Plan #1 (3.31.17 AT)	Local Co-ordinate Reference: TVD Reference: MD Reference: North Reference: Survey Calculation Method:	Well Pinon Unit 305H KB @ 6748.00usft KB @ 6748.00usft Grid Minimum Curvature
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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	0.00	0.00	4,300.00	0.00	0.00	0.00	0.00	0.00	
4,400.00	0.00	0.00	4,400.00	0.00	0.00	0.00	0.00	0.00	
4,500.00	0.00	0.00	4,500.00	0.00	0.00	0.00	0.00	0.00	
4,516.61	0.00	0.00	4,516.61	0.00	0.00	0.00	0.00	0.00	KOP @ 4516' MD
4,600.00	7.50	148.59	4,599.76	-4.65	2.84	5.45	9.00	9.00	
4,700.00	16.50	148.59	4,697.47	-22.39	13.67	26.23	9.00	9.00	
4,794.06	24.97	148.59	4,785.36	-50.79	31.01	59.50	9.00	9.00	Mancos A
4,800.00	25.50	148.59	4,790.73	-52.95	32.33	62.04	9.00	9.00	
4,824.02	27.67	148.59	4,812.21	-62.13	37.93	72.79	9.00	9.00	Mancos B
4,900.00	34.50	148.59	4,877.24	-95.59	58.36	112.00	9.00	9.00	
4,935.05	37.66	148.59	4,905.56	-113.20	69.11	132.63	9.00	9.00	Top Frac Barrier
4,960.49	39.95	148.59	4,925.39	-126.81	77.42	148.58	9.00	9.00	Mancos C (btm frac barrier)
5,000.00	43.50	148.59	4,954.87	-149.25	91.12	174.87	9.00	9.00	
5,001.69	43.66	148.59	4,956.10	-150.25	91.73	176.03	9.00	9.00	Tocito Unconformity
5,077.18	50.45	148.59	5,007.50	-197.38	120.51	231.26	9.00	9.00	Carlile Unconformity (top Gllp SS)
5,100.00	52.50	148.59	5,021.71	-212.62	129.81	249.11	9.00	9.00	
5,200.00	61.50	148.59	5,076.11	-284.13	173.47	332.90	9.00	9.00	
5,300.00	70.50	148.59	5,116.73	-362.03	221.02	424.16	9.00	9.00	
5,400.00	79.50	148.59	5,142.58	-444.38	271.31	520.66	9.00	9.00	
5,500.00	88.50	148.59	5,153.02	-529.18	323.08	620.01	9.00	9.00	
5,509.29	89.34	148.59	5,153.19	-537.11	327.92	629.30	9.00	9.00	Gllp HZ Landing Target
5,523.50	90.62	148.59	5,153.19	-549.24	335.32	643.51	9.00	9.00	LP @ 5153' TVD; 90.62°
5,579.99	90.62	148.59	5,152.58	-597.45	364.76	699.99	0.00	0.00	First Perf @ 5579' MD
5,600.00	90.62	148.59	5,152.37	-614.53	375.18	720.00	0.00	0.00	
5,700.00	90.62	148.59	5,151.28	-699.87	427.29	820.00	0.00	0.00	
5,800.00	90.62	148.59	5,150.20	-785.22	479.39	919.99	0.00	0.00	
5,900.00	90.62	148.59	5,149.12	-870.56	531.50	1,019.99	0.00	0.00	
6,000.00	90.62	148.59	5,148.04	-955.91	583.60	1,119.98	0.00	0.00	
6,100.00	90.62	148.59	5,146.96	-1,041.25	635.71	1,219.97	0.00	0.00	
6,200.00	90.62	148.59	5,145.87	-1,126.60	687.81	1,319.97	0.00	0.00	
6,300.00	90.62	148.59	5,144.79	-1,211.94	739.92	1,419.96	0.00	0.00	
6,400.00	90.62	148.59	5,143.71	-1,297.29	792.03	1,519.96	0.00	0.00	
6,500.00	90.62	148.59	5,142.63	-1,382.64	844.13	1,619.95	0.00	0.00	
6,600.00	90.62	148.59	5,141.55	-1,467.98	896.24	1,719.94	0.00	0.00	
6,700.00	90.62	148.59	5,140.46	-1,553.33	948.34	1,819.94	0.00	0.00	
6,800.00	90.62	148.59	5,139.38	-1,638.67	1,000.45	1,919.93	0.00	0.00	
6,900.00	90.62	148.59	5,138.30	-1,724.02	1,052.55	2,019.93	0.00	0.00	
7,000.00	90.62	148.59	5,137.22	-1,809.36	1,104.66	2,119.92	0.00	0.00	
7,100.00	90.62	148.59	5,136.14	-1,894.71	1,156.76	2,219.91	0.00	0.00	
7,200.00	90.62	148.59	5,135.05	-1,980.05	1,208.87	2,319.91	0.00	0.00	
7,300.00	90.62	148.59	5,133.97	-2,065.40	1,260.97	2,419.90	0.00	0.00	
7,400.00	90.62	148.59	5,132.89	-2,150.75	1,313.08	2,519.90	0.00	0.00	
7,500.00	90.62	148.59	5,131.81	-2,236.09	1,365.19	2,619.89	0.00	0.00	
7,600.00	90.62	148.59	5,130.73	-2,321.44	1,417.29	2,719.89	0.00	0.00	
7,700.00	90.62	148.59	5,129.64	-2,406.78	1,469.40	2,819.88	0.00	0.00	
7,800.00	90.62	148.59	5,128.56	-2,492.13	1,521.50	2,919.87	0.00	0.00	
7,900.00	90.62	148.59	5,127.48	-2,577.47	1,573.61	3,019.87	0.00	0.00	
8,000.00	90.62	148.59	5,126.40	-2,662.82	1,625.71	3,119.86	0.00	0.00	
8,100.00	90.62	148.59	5,125.32	-2,748.16	1,677.82	3,219.86	0.00	0.00	
8,200.00	90.62	148.59	5,124.23	-2,833.51	1,729.92	3,319.85	0.00	0.00	
8,300.00	90.62	148.59	5,123.15	-2,918.85	1,782.03	3,419.84	0.00	0.00	
8,400.00	90.62	148.59	5,122.07	-3,004.20	1,834.13	3,519.84	0.00	0.00	

Cathedral Energy Services Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Pinon Unit 305H
Company:	Juniper Resources Exploration CO	TVD Reference:	KB @ 6748.00usft
Project:	NEW MEXICO	MD Reference:	KB @ 6748.00usft
Site:	S16-T24N-R10W	North Reference:	Grid
Well:	Pinon Unit 305H	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #1 (3.31.17 AT)		

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
8,500.00	90.62	148.59	5,120.99	-3,089.55	1,886.24	3,619.83	0.00	0.00	
8,600.00	90.62	148.59	5,119.90	-3,174.89	1,938.34	3,719.83	0.00	0.00	
8,700.00	90.62	148.59	5,118.82	-3,260.24	1,990.45	3,819.82	0.00	0.00	
8,800.00	90.62	148.59	5,117.74	-3,345.58	2,042.56	3,919.82	0.00	0.00	
8,900.00	90.62	148.59	5,116.66	-3,430.93	2,094.66	4,019.81	0.00	0.00	
9,000.00	90.62	148.59	5,115.58	-3,516.27	2,146.77	4,119.80	0.00	0.00	
9,100.00	90.62	148.59	5,114.49	-3,601.62	2,198.87	4,219.80	0.00	0.00	
9,200.00	90.62	148.59	5,113.41	-3,686.96	2,250.98	4,319.79	0.00	0.00	
9,300.00	90.62	148.59	5,112.33	-3,772.31	2,303.08	4,419.79	0.00	0.00	
9,400.00	90.62	148.59	5,111.25	-3,857.66	2,355.19	4,519.78	0.00	0.00	
9,500.00	90.62	148.59	5,110.17	-3,943.00	2,407.29	4,619.77	0.00	0.00	
9,600.00	90.62	148.59	5,109.08	-4,028.35	2,459.40	4,719.77	0.00	0.00	
9,700.00	90.62	148.59	5,108.00	-4,113.69	2,511.50	4,819.76	0.00	0.00	
9,800.00	90.62	148.59	5,106.92	-4,199.04	2,563.61	4,919.76	0.00	0.00	
9,900.00	90.62	148.59	5,105.84	-4,284.38	2,615.72	5,019.75	0.00	0.00	
10,000.00	90.62	148.59	5,104.76	-4,369.73	2,667.82	5,119.75	0.00	0.00	
10,100.00	90.62	148.59	5,103.67	-4,455.07	2,719.93	5,219.74	0.00	0.00	
10,200.00	90.62	148.59	5,102.59	-4,540.42	2,772.03	5,319.73	0.00	0.00	
10,300.00	90.62	148.59	5,101.51	-4,625.76	2,824.14	5,419.73	0.00	0.00	
10,400.00	90.62	148.59	5,100.43	-4,711.11	2,876.24	5,519.72	0.00	0.00	
10,500.00	90.62	148.59	5,099.35	-4,796.46	2,928.35	5,619.72	0.00	0.00	
10,600.00	90.62	148.59	5,098.26	-4,881.80	2,980.45	5,719.71	0.00	0.00	
10,700.00	90.62	148.59	5,097.18	-4,967.15	3,032.56	5,819.70	0.00	0.00	
10,800.00	90.62	148.59	5,096.10	-5,052.49	3,084.66	5,919.70	0.00	0.00	
10,900.00	90.62	148.59	5,095.02	-5,137.84	3,136.77	6,019.69	0.00	0.00	
11,000.00	90.62	148.59	5,093.93	-5,223.18	3,188.87	6,119.69	0.00	0.00	
11,100.00	90.62	148.59	5,092.85	-5,308.53	3,240.98	6,219.68	0.00	0.00	
11,200.00	90.62	148.59	5,091.77	-5,393.87	3,293.09	6,319.67	0.00	0.00	
11,300.00	90.62	148.59	5,090.69	-5,479.22	3,345.19	6,419.67	0.00	0.00	
11,400.00	90.62	148.59	5,089.61	-5,564.57	3,397.30	6,519.66	0.00	0.00	
11,500.00	90.62	148.59	5,088.52	-5,649.91	3,449.40	6,619.66	0.00	0.00	
11,600.00	90.62	148.59	5,087.44	-5,735.26	3,501.51	6,719.65	0.00	0.00	
11,700.00	90.62	148.59	5,086.36	-5,820.60	3,553.61	6,819.65	0.00	0.00	
11,800.00	90.62	148.59	5,085.28	-5,905.95	3,605.72	6,919.64	0.00	0.00	
11,900.00	90.62	148.59	5,084.20	-5,991.29	3,657.82	7,019.63	0.00	0.00	
12,000.00	90.62	148.59	5,083.11	-6,076.64	3,709.93	7,119.63	0.00	0.00	
12,100.00	90.62	148.59	5,082.03	-6,161.98	3,762.03	7,219.62	0.00	0.00	
12,200.00	90.62	148.59	5,080.95	-6,247.33	3,814.14	7,319.62	0.00	0.00	
12,300.00	90.62	148.59	5,079.87	-6,332.67	3,866.25	7,419.61	0.00	0.00	
12,400.00	90.62	148.59	5,078.79	-6,418.02	3,918.35	7,519.60	0.00	0.00	
12,500.00	90.62	148.59	5,077.70	-6,503.37	3,970.46	7,619.60	0.00	0.00	
12,600.00	90.62	148.59	5,076.62	-6,588.71	4,022.56	7,719.59	0.00	0.00	
12,700.00	90.62	148.59	5,075.54	-6,674.06	4,074.67	7,819.59	0.00	0.00	
12,800.00	90.62	148.59	5,074.46	-6,759.40	4,126.77	7,919.58	0.00	0.00	
12,900.00	90.62	148.59	5,073.38	-6,844.75	4,178.88	8,019.58	0.00	0.00	
13,000.00	90.62	148.59	5,072.29	-6,930.09	4,230.98	8,119.57	0.00	0.00	
13,100.00	90.62	148.59	5,071.21	-7,015.44	4,283.09	8,219.56	0.00	0.00	
13,200.00	90.62	148.59	5,070.13	-7,100.78	4,335.19	8,319.56	0.00	0.00	
13,296.74	90.62	148.59	5,069.08	-7,183.35	4,385.60	8,416.29	0.00	0.00	Final Perf @ 13296' MD
13,300.00	90.62	148.59	5,069.05	-7,186.13	4,387.30	8,419.55	0.00	0.00	
13,396.73	90.62	148.59	5,068.00	-7,268.68	4,437.70	8,516.28	0.00	0.00	PBHL @ 13396' MD

Cathedral Energy Services

Planning Report

Database: USA EDM 5000 Multi Users DB Company: Juniper Resources Exploration CO Project: NEW MEXICO Site: S16-T24N-R10W Well: Pinon Unit 305H Wellbore: HZ Design: Plan #1 (3.31.17 AT)	Local Co-ordinate Reference: TVD Reference: MD Reference: North Reference: Survey Calculation Method:	Well Pinon Unit 305H KB @ 6748.00usft KB @ 6748.00usft Grid Minimum Curvature
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Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
305H PBHL	0.00	360.00	5,068.00	-7,268.68	4,437.70	1,924,666.29	2,705,282.43	36.289454	-107.893765
- plan hits target center									
- Point									

Formations						
Measured Depth	Vertical Depth	Name	Lithology	Dip	Dip Direction	
(usft)	(usft)			(°)	(°)	
239.00	239.00	Ojo Alamo		-0.62	148.60	
363.00	363.00	Kirtland		-0.62	148.60	
916.00	916.00	Fruitland		-0.62	148.60	
1,352.00	1,352.00	Pictured Cliffs		-0.62	148.60	
1,579.00	1,579.00	Lewis Shale		-0.62	148.60	
2,094.00	2,094.00	CliffHouse		-0.62	148.60	
2,690.00	2,690.00	Menefee		-0.62	148.60	
3,773.00	3,773.00	Point Lookout		-0.62	148.60	
3,990.00	3,990.00	Mancos		-0.62	148.60	
4,794.06	4,786.00	Mancos A		-0.62	148.60	
4,824.02	4,813.00	Mancos B		-0.62	148.60	
4,935.05	4,907.00	Top Frac Barrier		-0.62	148.60	
4,960.49	4,927.00	Mancos C (bttm frac barrier)		-0.62	148.60	
5,001.69	4,958.00	Tocile Unconformity		-0.62	148.60	
5,077.18	5,010.00	Carlile Unconformity (top Gllp SS)		-0.62	148.60	
5,509.29	5,160.00	Gllp HZ Landing Target		-0.62	148.60	

Plan Annotations				
Measured Depth	Vertical Depth	Local Coordinates		Comment
(usft)	(usft)	+N/-S	+E/-W	
		(usft)	(usft)	
4,516.61	4,516.61	0.00	0.00	KOP @ 4516' MD
5,523.50	5,153.19	-549.24	335.32	LP @ 5153' TVD; 90.62°
5,579.99	5,152.58	-597.45	364.76	First Perf @ 5579' MD
13,296.74	5,069.08	-7,183.35	4,385.60	Final Perf @ 13296' MD
13,396.73	5,068.00	-7,268.68	4,437.70	PBHL @ 13396' MD