

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

RECEIVED

JUL 29 2008
FORM APPROVED
OMB No 1004-0137

Bureau of Land Management

5. Lease Serial No. Field Office
Contract 457

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

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

8. Well Name and No.

Jicarilla 457-04 #144

9. API Well No.

30-039-30100

10. Field and Pool, or Exploratory Area

E. Blanco/Pictured Cliffs

11. County or Parish, State

Rio Arriba, New Mexico

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 reverse side.

1. Type of Well

☐ Oil Well ☒ Gas Well ☐ Other

2. Name of Operator

Black Hills Gas Resources

3a. Address

3200 N 1st Street PO Box 249 Bloomfield, NM 87413

3b. Phone No. (include area code)

505-634-1111 ext 27

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)

Surface: 775' FSL 545' FEL SE/SE Unit P Sec 04 T30N R3W

Bottom Hole: ±775' FSL ±50' FWL SW/SW Unit M Sec 04 T30N R3W

1800' CHECK APPROPRIATE BOX(S) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION

☒ Notice of Intent

☐ Subsequent Report

☐ Final Abandonment Notice

TYPE OF ACTION

☐ Acidize

☐ Altering Casing

☐ Casing Repair

☐ Change Plans

☐ Convert to Injection

☐ Deepen

☐ Fracture Treat

☐ New Construction

☐ Plug and abandon

☐ Plug back

☐ Production (Start/ Resume)

☐ Reclamation

☐ Recomplete

☐ Temporarily Abandon

☐ Water Disposal

☐ Water Shut-off

☐ Well Integrity

☒ Other

Update Drilling Plan

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 recompleat horizontally, give subsurface locations and measured and true vertical depths or pertinent markers and sands. Attach the Bond under which the work will be performed or provide the Bond No. on file with the BLM/ BIA. Required subsequent reports shall be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompleat in a new interval, a Form 3160-4 shall be filed once testing has been completed. Final Abandonment Notice shall be filed only after all requirements, including reclamantion, have been completed, and the operator has determined that the site is ready for final inspection.)

The initial APD to drill a Pictured Cliff (PC) well was approved on August 17, 2007. The well was given API number 30-039-30100. Black Hills Gas Resources (BHGR) is submitting an updated drilling plan to change the drilling casing and drilling method. BHGR also requests that if tests of the tertiary and PC formations are favorable that we will also complete these formations and submit comingle applications if needed.

The surface location and the bottom hole will remain the same.

Surface disturbance will not change from the initial APD, therefore the Surface Use Plan will not be updated or modified.

**NOTIFY AZTEC OCD 24 HRS.
PRIOR TO CASING & CEMENT**

*If tertiary formations are completed, NSL approval is
required from NMOC (Sec 3 Not in NSL-4355)
La taval will not begin with
660 feet of Sect 3*

14. I hereby certify that the foregoing is true and correct.

Name (Printed/ Typed)

Lynn H. Benally

Title

Regulatory Specialist

Signature

for Daniel Mancoske

Date

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by

Wayne Townsend

Title

Pet. Eng.

Date

7/25/08

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.

FFO

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 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)

Hold C104

for Directional Survey
and "As Drilled" plat

NMOC

DISTRICT I
1625 N. French Dr., Hobbs, N.M. 88240

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

DISTRICT III
1000 Rio Brazos Rd., Aztec, N.M. 87410

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

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-102
Revised October 12, 2005
Submit to Appropriate District Office
State Lease - 4 Copies
Fee Lease - 3 Copies

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-039-30100	² Pool Code 72400	³ Pool Name East Blanco Pictured Cliffs
⁴ Property Code 25327	⁵ Property Name JICARILLA 457-04	⁶ Well Number 144
⁷ GRID No. 013925	⁸ Operator Name BLACK HILLS GAS RESOURCES	⁹ Elevation 7122

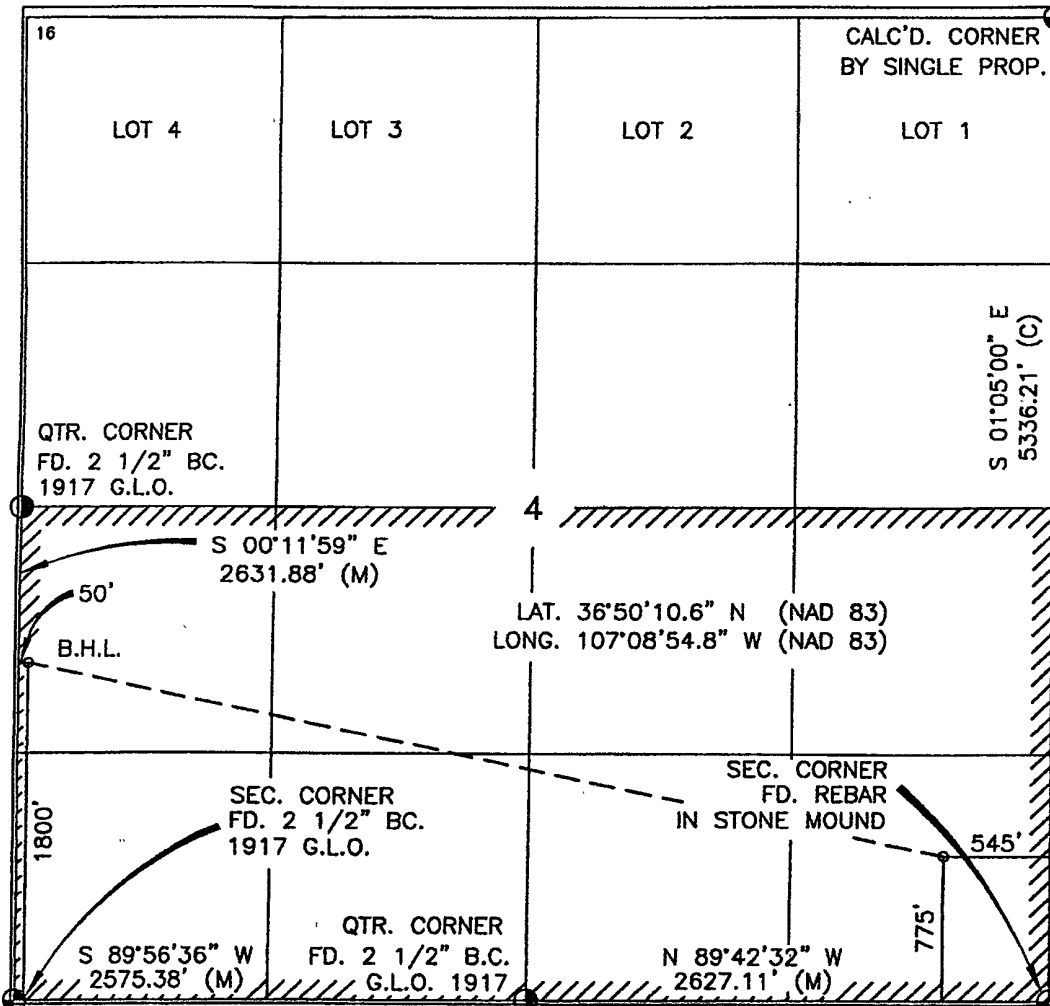
¹⁰ Surface Location

UL or lot no. P	Section 4	Township 30-N	Range 3-W	Lot Idn	Feet from the 775	North/South line SOUTH	Feet from the 545	East/West line EAST	County RIO ARRIBA
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¹¹ Bottom Hole Location If Different From Surface

UL or lot no. L	Section 4	Township 30-N	Range 3-W	Lot Idn	Feet from the 1800	North/South line SOUTH	Feet from the 50	East/West line WEST	County RIO ARRIBA
¹² Dedicated Acres 320.00	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.						

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED
OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION



¹⁷ OPERATOR CERTIFICATION

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

[Signature] 7/8/08
Signature Date
Lynn H. Benally
Printed Name

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.

MARCH 7, 2008
Date of Survey
Signature and Seal of Professional Land Surveyor
[Signature]
Professional Land Surveyor
Certificate Number



Black Hills Gas Resources

Jicarilla 457-04 #144

Surface Location: 775' FSL 545' FEL (SE/SE) Unit P

Sec.4 T30N R3W

Bottom Hole Location: \pm 775' FSL \pm 50' FWL (SW/SW) Unit M

Sec.4 T30N R3W

Rio Arriba County, New Mexico

Lease: Contract 457

DRILLING PROGRAM

(Per Rule 320)

This Application for Permit to Drill (APD) was initiated under the NOS process as stated in Onshore Order No. 1 and supporting Bureau of Land Management (BLM) documents. This APD process includes an onsite meeting which was held on February 15, 2006 as determined by Bureau of Land Management (BLM), Bureau of Indian Affairs (BIA) and Jicarilla Oil & Gas Administration (JOGA), and at which time the specific concerns of Black Hills Gas Resources (BHGR) were discussed.

This new drilling plan will modify the drilling program to include the parasite string technique for this un-drilled horizontal well. It will still be drilled into the pictured cliffs formation. Attached is the horizontal drilling plan.

SURFACE FORMATION – San Jose

GROUND ELEVATION – 7,122'

ESTIMATED FORMATION TOPS - (mineral-bearing formations)

San Jose	Surface	Surface	Sandstone, shales & siltstones
Nacimiento	1,988'M	1,988'V	Sandstone, shales & siltstones
Ojo Alamo	3,100'M	3,095'V	Sandstone, shales & siltstones
Kirtland	3,363'M	3,325'V	Sandstone, shales & siltstones
Fruitland Coal	3,697'M	3,547'V	Sandstone, shales & siltstones
Pictured Cliffs	4,184'M	3662'V	Sandstone, shales & siltstones

TOTAL DEPTH 8024' TMD 3,691' TVD

ESTIMATED DEPTHS OF ANTICIPATED FRESH WATER, OIL, OR GAS:

Estimated depths of anticipated fresh water, oil, or gas:

Nacimiento	1,988'	Gas, water, sand
Ojo Alamo	3,100'	Gas, water, sand
Kirtland	3,363'	Gas, water, sand, shale
Fruitland Coal	3,697'	Gas, water, sand
Pictured Cliffs	4,184'	Gas, water, sand

HORIZONTAL DRILLING PROGRAMKick Off Point is estimated to be $\pm 2835'$ TVD**CASING PROGRAM**

Depth	Hole Diameter	Casing Diameter	Casing Weight and Grade	Cement
250'	17-1/2"	13-3/8"	J-55 61#	To Surface (± 340 sxs premium cement containing 2% CaCl ₂ and 1/4#/sx Poly-E-Flake)
250' – 2835'	12-1/4"	7" csg +	J-55 23#	TD to surface (Lead ± 665 sxs lite standard cement, 3% Econolite, 10 #/sk Gilsonite, 1/4#/sk Poly-E-Flake. Tail ± 210 sxs 50/50 poz containing, 5#/sk Gilsonite, 1/8#/sk Poly-E-Flake & .4% Halad (R)-344
250' – 2835'		1.9" tbg	J-55 2.76#	
2835' – 4249'	8-3/4"	7" csg	J-55 23#	
4249' – 8024'	6-1/8"	Open hole**	Open hole	

* Actual cement volume to be determined by caliper log.

** If hole instability is encountered, a 4 1/2", 10.5#, J-55 uncemented liner may be run in the 6 1/8" open hole section.

All fresh water and prospectively valuable minerals encountered during drilling will be recorded by depth and protected.

PARASITE STRING

The general procedure to be utilized by Black Hills Gas Resources (BHGR) is; to run a 1-1/2" parasite string on the 7" casing production string.

The main objective of the parasite string on this well is to reduce the equivalent circulating density (ECD) of the drilling fluid system while drilling horizontally in the Pictured Cliffs Formation. It has been BHGR experience, that severe lost circulation in the Pictured Cliffs has been both costly and damaging to the productivity of these horizontal wells.

It may be argued that conventional air equipment could be utilized, but it has been BHGR experience that conventional air pumped down the drill pipe results in oxygen contamination via fracture within the Pictured Cliffs on offset wells. This result requires either the shutting in or chemical treating of offset wells.

Procedure

1. A 17-1/2" hole will be drilled to 250 ft. Then a 13-3/8" casing will be run and cemented to surface.
2. Out from underneath surface casing a 12-1/4" hole will be drilled to KOP ($\pm 2835'$) at that point we will TOH for tools, TIH, and an MWD-GR will be used to begin drilling a 8-3/4" hole directionally at a build rate of 6°/100 to TD @ 4249' MD, The directional tools will be laid down, and 7", 23# ft J-55 LT&C casing will be run in the hole setting @ 85°.
3. At approximately 2835', an Xtech Industries Air Injection collar (AIC) will be placed in the 7" casing string. This collar will be tack welded on both top and bottom.

4. Due to severe lost circulation below 3667' TVD, a 1.5" ID, 1.9" OD parasite string will be utilized on the 7" intermediate casing. This string will allow the injection of compressed air into the wellbore at a depth of $\pm 2835'$ MD. Once the AIC is made up, the parasite string will be screwed into the AIC, and the parasite string will be banded to the 7" casing with metal strips which are welded onto the 7" casing. There will be two (2) bands per joint used to hold the parasite string in place.
5. Once the 7" casing is landed, the 7" casing will be cemented as in "normal" cementing operations. Upon bumping the plug, a 20 bbl sugar water plug (1 lb/bbl of sugar) will be pumped down the parasite string to insure that any cement in the AIC is cleaned out. The sugar water will act as a retarder, and not allow the cement to set up.
6. Once the sugar water is pumped. The parasite string is cut at surface, and a tee is welded onto the stub. This is then piped to conventional air compression equipment.
7. During drilling of the production hole (6-1/8" hole size), this will effectively reduce the equivalent circulating density from 9.1 ppg to ± 6.0 ppg while drilling the production portion of the well. BOPs will then nipped up, and a 6-1/8" PDC bit and 4-3/4" directional assembly are tripped in the hole. Float equipment is drilled out and once drilling in the Pictured Cliffs begins air injection down the parasite string is began.
8. Initial air rates are 700 to 1,200 scf/min, and as drilling continues will be increased to 2,000 to 2,500 scf/min. Based on air drilling models we are expecting a reduction of 3.0 ppg in our ECD. This will hopefully allow us to minimize our lost circulation during the lateral section (losses have been as high as 10,000 bbls per well).
9. Additional advantages of the parasite string are hoped to be increased penetration rate and better indications of gas productive intervals to aid in geo-steering the lateral section of this well.
10. Also, a rotating head and gas buster will be utilized at surface while drilling the lateral section of this wellbore.

Upon reaching TD, an RBP will be place in the 7" casing below the AIC. This will eliminate any concerns of Pictured Cliffs gas being at the surface during rig down of the drilling rig.

<u>Interval</u>	<u>Weight</u>	<u>Grade</u>	<u>Cplng O.D.</u>	<u>Nom. O.D.</u>	<u>I.D.</u>	<u>Drift</u>	<u>Connection</u>
0' to 2,835'	2.76 #/ft	J-55	2.115"	1.900"	1.610"	1.516"	10 Rd Integral Joint

API RATING / SAFETY FACTOR

<u>Interval</u>	<u>Description</u>	<u>Collapse (psi)^a</u>	<u>Burst (psi)^b</u>	<u>Tension Body (M Lbs)^c</u>	<u>Tension Cplng (M Lbs)^c</u>
0' to 2,835'	1-1/2", 2.76 #/ft, J-55, IJ	7,750. / 6.13	7,350. / 2.66	55 / 1.70	55 / 1.70

- a) Based on full parasite string evacuation with 9.0 ppg formation gradient on backside
- b) Based on 9.0 ppg gradient to surface, with no fluid on backside (backside evacuated) and 1,500 psi applied surface pressure
- c) Based on tubing string weight in air (7,452 lbs) with 25,000 lbs of over-pull applied. Buoyed weight of parasite string in 9.0 ppg mud = 6,412. lbs

Yields:

Surface: Standard cement yield = 1.2 ft³/sx (mixed at 15.6 lb/gal)

Production: Lite Standard Cement yield: = 2.90 ft³/sx (mixed at 11.4 lb/gal)

50:50 poz yield = 1.41 ft³/sx (mixed at 13.1 lb/gal)

PRESSURE CONTROL

BOPs and choke manifold will be installed and pressure tested before drilling out under surface casing (subsequent pressure test will be performed whenever pressure seals are broken), and then will be checked daily as to mechanical operating condition. BOP's will be pressure tested at least once every 30 days. Ram type preventors and related pressure control equipment will be pressure tested to 1,000 psi. Annular type preventor will be pressure tested to 50% of the rated working pressure, not to exceed 1,000 psi. All casing strings will be pressure tested to 0.22 psi/ft. or 1,000 psi, whichever is greater, not to exceed 70% of internal yield.

BOP to be either double gate rams or an annular preventor as per Onshore Order No. 2.

Statement on Accumulator System and Location of Hydraulic Controls

The drilling rig has not yet been selected for this well. Selection will take place after approval of this application. Manual and/or hydraulic controls will be in compliance with Onshore Order No. 2 for 2M systems.

A remote accumulator will be used. Pressures, capacities, location of remote hydraulic and manual controls will be identified at the time of the BLM supervised BOP test.

MUD PROGRAM

0'	-	250'	Fresh water – M.W. 8.5 ppg, Vis 30-33
250'	-	TD'	Potassium Formate- Inhibitive low solids non-dispersed M.W. 6.0 – 9.2 ppg Vis – 45 – 60 sec W.L. 8cc or less

Sufficient mud materials to maintain mud properties, control lost circulation and to contain “kick” will be available at wellsite.

AUXILIARY EQUIPMENT

- A) A Kelly cock will be kept in the drill string at all times
- B) Inside BOP or stab-in valve (available on rig floor)
- C) Mud monitoring will be visually observed

LOGGING, CORING, TESTING PROGRAM

- A) Logging: GR/SP/CAL – Resistivity/Conductivity – Neutron/Density – Bulk Density/RWA
From TD to SC
- B) Coring: None
- C) Testing: Possible DST – None anticipated. Drill stem tests may be run on shows of interest

ABNORMAL CONDITIONS

- A) Pressures: No abnormal conditions are anticipated
Bottom hole pressure gradient – 0.31 psi/ft
- B) Temperatures: No abnormal conditions are anticipated
- C) H₂S: See attached H₂S plan in event H₂S is encountered.
- D) Estimated bottomhole pressure: 1,145 psi

ANTICIPATED START DATE: August 18, 2008

COMPLETION

The location pad will be of sufficient size to accommodate all completion activities and equipment. A string of 2-3/8", 4.7#, J-55 tubing will be run for a flowing string. A Sundry Notice will be submitted with a revised completion program if warranted.

Job Number: 71xxx
Company: Black Hills Gas Resources
Lease/Well: Jicarilla 457-04 #144

TRUE VERTICAL DEPTH (Ft)

