

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or reenter an abandoned well. Use Form 3160-3 (APD) for such proposals.

RCVD OCT 24 06
OIL CONS. DIV.
DIST. 3

FORM APPROVED
OMB No. 1004-0135
Expires July 31, 1996

SUBMIT IN TRIPLICATE - Other instructions on reverse side

| | | |
|---|---|--|
| 1. Type of Well <input type="checkbox"/> Oil Well <input checked="" type="checkbox"/> Gas Well <input type="checkbox"/> Other | | 5. Lease Serial No. Jicarilla Contract 464 |
| 2. Name of Operator Black Hills Gas Resources, Inc. c/o Mike Pippin LLC (Agent) | | 6. If Indian, Allottee or Tribe Name Jicarilla Apache Tribe |
| 3a. Address 3104 N. Sullivan, Farmington, NM 87401 | 3b. Phone No. (include area code) 505-327-4573 | 7. If Unit or CA/Agreement, Name and/or No. 3 II |
| 4. Location of Well (Footage, Sec., T., R., M., or Survey Description) 665' FNL & 2400' FWL (NENW) Unit C Sec. 29, T30N, R03W | | 8. Well Name and No. Jicarilla 464-29 #716 |
| | | 9. API Well No. 30-039-29888 |
| | | 10. Field and Pool, or Exploratory Area WC Basin Mancos |
| | | AND Rio Arriba County, New Mexico |

12. CHECK 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"/> Fracture Treat <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 Change Well Number _____ |
| | <input checked="" type="checkbox"/> Change Plans <input type="checkbox"/> Plug and Abandon <input type="checkbox"/> Temporarily Abandon |
| | <input type="checkbox"/> Convert to Injection <input type="checkbox"/> Plug Back <input type="checkbox"/> Water Disposal |

13. Describe Proposed or Completed Operations (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 shall 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 shall be filed once Testing has been completed. Final Abandonment Notices shall be filed only after all requirements, including reclamation, have been completed, and the operator has determined that the site is ready for final inspection.)

Black Hills Gas Resources would like to change the prospective interval to the WC Basin Mancos (from the Dakota).

The casing program will also be changed to:

Drill 12-1/4" hole to ~275'. Run & cmt 9-5/8" 36# J-55 csg to ~275'.

Drill 8-3/4" hole to ~6710'. Run & cmt 7" 23# N-80 csg to ~6710'. A 7" DV Tool will be set @ ~3911'.

Drill 6-1/4" hole to ~8130'. Run 4-1/2" 10.5# J-55 liner from ~6610' to ~8130'. Liner will not be cemented.

The new cementing programs and other drilling details are in the attached revised drilling plan along with a C-102 for the WC Basin Mancos pool.

Black Hills Gas Resources would also like to change the well number to #716 (from #16R).

Maximum total depth allowed: 8119'

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

| | |
|-------------------------------------|------------------------------|
| Name (Printed/Typed) Mike Pippin | Title Petr. Engr. (Agent) |
| Signature <i>Mike Pippin</i> | Date October 16, 2006 |

THIS SPACE FOR FEDERAL OR STATE USE

| | | |
|---|---------------------|------------------|
| Approved by <i>Ann Lovato</i> | Title Petr. Eng. | Date 10/23/06 |
| 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. | | |

Title 18 U.S.C. Section 1001, makes 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 reverse)

NMOCD

District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W. Grand Avenue, Artesia, NM 88210
District III
1000 Rio Brazos Rd., Aztec, NM 87410
District IV
1220 S. 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 30-039-29888 | | ² Pool Code 97232 | | ³ Pool Name WC Basin Mancos | |
| ⁴ Property Code 22184 | | ⁵ Property Name Jicarilla 464-29 | | | ⁶ Well Number 716 |
| ⁷ OGRID No. 013925 | | ⁸ Operator Name Black Hills Gas Resources, Inc. | | | ⁹ Elevation 7263' GL |

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 |
|---------------|---------|----------|-------|---------|---------------|------------------|---------------|----------------|------------|
| C | 29 | 30-N | 3-W | | 665' | North | 2400' | West | Rio Arriba |

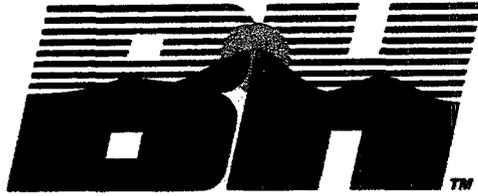
¹¹ Bottom Hole Location If Different From Surface

| UL or lot no. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|---------------|---------|----------|-------|---------|---------------|------------------|---------------|----------------|--------|
| | | | | | | | | | |

| | | | |
|---|-------------------------------|----------------------------------|-------------------------|
| ¹² Dedicated Acres 160 - NW/4 | 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.

| | |
|--|--|
| | <p>¹⁷ OPERATOR CERTIFICATION</p> <p><i>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.</i></p> <p>Signature: <u>Mike Pippin</u> Date: <u>10-16-06</u></p> <p>Printed Name: <u>Mike Pippin</u></p> |
| | <p>¹⁸ SURVEYOR CERTIFICATION</p> <p><i>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.</i></p> <p>Date of Survey</p> <p>Signature and Seal of Professional Surveyor:</p> <p>Certificate Number</p> |



Black Hills Exploration & Production

A Black Hills Corporation Enterprise

DRILLING PROGNOSIS

JICARILLA 464-29 #716

SECTION 29, T30N-R03W

RIO ARRIBA CO. NM

API # 30-039-29888

Location:

| | |
|------------------------|----------------------------------|
| Well Spot Location | 665' FNL & 2400' FWL (NE/4 NW/4) |
| Latitude & Longitude | 36° 47' 21" N – 107° 10' 30" W |
| Elevation Ground Level | 7263' |
| Kelly Bushing | 7276' |

Directions to location: From Bloomfield, New Mexico, travel approximately 45 miles east on Highway 64 to J-10 Road (Jicarilla border). Turn left (North) on J-10 Road and travel north for approximately 1.9± miles. Turn right (East) and travel northeasterly for approximately 0.4± miles to existing pad. LOCATION HAS EXISTING WELL ON PAD, A RETRIEVABLE DOWNHOLE PLUG WILL BE SET IN EXISTING WELLBORE AND SURFACE EQUIPMENT WILL BE REMOVED. THE SURFACE WELLHEAD SHALL BE PROTECTED ON ALL FOUR SIDES WITH CONCRETE BARRIERS.

Geologic Markers (Measured Depths):

| | |
|--------------------|---------------------------------------|
| San Jose | 13' |
| Nacimiento | 2054' |
| Ojo Alamo | 3281' |
| Kirkland | 3543' |
| Fruitland | 3708' |
| Pictured Cliffs | 3826' |
| Lewis | 3911' |
| Cliffhouse | 5796' |
| Menefee | 5992' |
| Point Lookout | 6183' |
| Mancos | 6610' |
| Gallup | 7463' |
| Mancos/Shale | 7780' |
| Greenhorn | 8160' |
| Total Depth | 8130' TD 30' ± above Greenhorn |

PLEASE NOTE: SMOKING WILL NOT BE TOLERATED WITHIN 30 FEET OF THE RIG PERIMETER. HARD-HATS, SAFETY TOE SHOES & SAFETY GLASSES WILL BE WORN AT ALL TIMES.
COMPLETED WELL CASING CONFIGURATION

| | | |
|---------------------------|--|------------------------------|
| Surface: | Surface to 275' | 9 5/8" J-55 ST&C 36.00#/ft. |
| Intermediate: | 6710' ± MD to surface.(DV tool @ ±3911') | 7.0" N-80 LT&C 23.00#/ft. |
| Retrievable Liner: | 6610' ± MD to TD @ 8130' | 4-1/2" J-55 ST&C 10.50#/ft., |

PHYSICAL DATA

9 5/8" 36#/ft J-55 ST&C

| | |
|---------------|------------------------|
| Collapse | 2020 psi |
| Burst | 3520 psi |
| Tube ID | 8.921 in. |
| Drift | 8.765 in. |
| Capacity | 0.07731 bbls./ft. |
| Displacement | 0.43405 cuft/linft. |
| Makeup Torque | 4530/3398/5663 ft lbs. |

7.0" 23.00 LB/FT N-80 LT&C

| | |
|----------------|------------------------|
| Collapse | 3830 psi |
| Burst | 6340 psi |
| Tube I.D. | 6.366 in. |
| Drift Diameter | 6.241 in. |
| Joint O.D. | 7.656 in. |
| Capacity | 0.03937 bbls/ft. |
| Displacement | 0.22103 bbls/ft. |
| Makeup Torque | 4420/3315/5525 ft lbs. |

4-1/2" 10.50 LB/FT J-55 RETRIEVABLE LINER

| | |
|----------------|-----------------------|
| Collapse | 4010 psi |
| Burst | 4790 psi |
| Tube I.D. | 4.052 in. |
| Drift Diameter | 3.927 in. |
| Joint O.D. | 5.000 in. |
| Capacity | 0.01590 bbls/ft. |
| Displacement | 0.08726 bbls/ft. |
| Makeup Torque | 1660/1215/2025 ft lbs |

ANNULAR VOLUMES AND CAPACITIES

| | |
|--|-----------------------|
| Surface to 275': 9 5/8" by 7" csg. | 0.02037 bbls/ft. |
| | 0.11437 cu.ft/lin.ft |
| 275' to 6710' MD: 8 3/4" OH. by 7" csg. | 0.02677 bbls/ft. |
| | 0.15033 cu ft/lin ft. |
| 6610' to 8290' MD: 6-1/4" OH. by 4 1/2" csg. | 0.01677 bbls/ft. |
| | 0.09417 cu ft/lin ft. |

DRILL PIPE & DRILL COLLAR CAPACITIES & Spec's

| | |
|---|---|
| 4 1/2" 16.60#/ft Grade "E" w/3.826" ID. | 0.01422 bbls./ft. (Cap) 0.00545 bbls./ft (Displ) |
| 7 7/8" by 4 1/2" Annulus | 0.03988 bbls./ft. 8100 ft.# torque (Makeup) |
| 6 1/4" 85#/ft, H-90 w/2 1/4" ID | 0.0061 bbls./ft. (Cap) 0.0318 bbls./ft. (Displ) |
| 7 7/8" by 6 1/4" Annulus | 0.0216 bbls./ft. 16,500 ft# torque (Makeup) |

Notify Jicarilla & BLM 24 hrs. in advance of intent to spud.

PROCEDURE FOR 12-1/4" HOLE & 9-5/8" CSG.

Set Anchors, MIRU, Strap all DC's & DP. Record OD & ID of DC's as run.

On-site Supervisor to complete IADC Rig Safety Inspection Report w/Rig Toolpusher prior to spud-in.

Drill Rathole, Mousehole and 11" Pilot hole. **(It is important to make sure this first 30' of hole is drilled straight.)**

Drill 12 1/4" hole to +or - 275' or based upon strap of 9 5/8" casing string. Run single shot Totco survey at 12 1/4" TD.

Change out handling tools, changeout handling equipment to run 9 5/8" casing.

Run 9 5/8" casing as follows:

- A. Joint #1 or shoe jt. install shoe on btm. while joint is on rack, baffle plate in collar of top of joint & centralizer in middle of this joint. Thread lock shoe & collar of first & second joints.
- B. Joints #2 & #3 equipped with centralizers on each csg. collar, run remainder of casing.
- C. Using a 16' landing joint, land permanent casing string at ground level, pull slips & tie down Rig Brake handle. (Make sure casing centered in Rotary table).
- D. Tie down casing string w/approved strength chains or cables to Rig sub base.

CEMENTING 9 5/8" CASING

- A. Telephone Jicarilla Agency 6 hrs. in advance to witness cementing operation.
- B. Circulate at least 30 minutes @ 4 bpm w/spud mud used to drill surface hole.
- C. Rig Cementers, conduct Safety Meeting (includes all personnel on location) regarding cementing operation, pressure test Cementers lines to cement head to 1,000 psi.
- D. Do not exceed 100 psi while cementing or bumping plug. Have a Cement company person assigned to continuously test the returns & record volume of excess cement discharged into the reserve pit during cementing operations.
- E. Mix & pump 10 bbl. 9.0 ppg. mud flush, followed w/200 sks. Class "B" cement, 2% CACL2 plus 0.25#/sk. of Cello Flake, mixed to a 15.6 lbs/gal and 1.18 ft³/sk. yield. Water 5.2 gal/sk.
- F. Total volume of fresh water required is 10 bbls. for mixing, 13 bbls. displacement & 15 bbls. wash-up.

| Fluid | Fluid Type | Fluid Name | Weight (lbm/gal) | Avg Rate (bbl/min) | Volume (bbls) |
|-------|--------------|------------|------------------|--------------------|---------------|
| 1 | Spacer | Water | 8.3 | 4.0 | 10 |
| 2 | Cement | Class B | 15.6 | 4.0 | 42 |
| 3 | Displacement | Water | 8.3 | 4.0 | 18 |

- G. Pump only the calculated volume. Stop pumping **do not** pressure up, close valve on cement head. Record all cement properties including , but not limited to all types of cmt, yield, percentages of additives, etc and all volumes circulated to surface on daily report & on Csg. & Cmt. report.
- H. Wait on cement 8 hrs. Notify BLM of pending BOPE testing. Rig/Pump repair could be scheduled during this time period. If verbal approval is received: The following will be documented in the morning report ,the time, date, topic of discussion and any information relevant shall be recorded.

Install 2,000 psi BOE & Choke Manifolds.

- A. A Kelly cock will be kept in the drill string at all times.
- B. Inside BOP or full opening stab-in valve available on rig floor.
- C. After 4 hr. WOC, remove Cmt. Head & 9 5/8" Landing jt.
- D. Install 9 5/8" by 7" FMC 5,000# "A" section w/male 8rd thread into 9 5/8" casing collar. Bolt on BOPE.
- E. Test all hydraulic lines from remote Accumulator for leaks. Tie the choke manifold to the 2" outlet on 9 5/8" by 7" FMC, 5,000# "A" section casing head equipped with 1-2" ball valves on opposite side of tie in for choke manifold.
- F. Pickup 8 3/4" PDC bit (HTC type: See attachment for proper GPM, RPM & WOB) with 3-12's, bit sub w/float, 6-6 1/4" DC's & Kelly. Pressure test all equipment to the specified requirements on the APD w/rig pump. Hold pressure for 15 minutes, Record all items tested on tour sheet. If verbal approval is received: The following will be documented in the morning report ,the time, date, topic of discussion and any information relevant shall be recorded.

Procedure to Drill 8 3/4" hole to Intermediate Depth.

- A. Drill out baffle & cement in shoe joint at 275' ± .
- B) BHA will be 8 3/4" bit, bit sub w/float, 20-6 1/4" DC's, 4 1/2" 16.60#/ft. DP.
- C) Lowering any pipe string into the hole should not exceed 30'/minute.
- D) 8 3/4" PDC bit operating procedures:
- RPM: 80 – 90
 - WOB: 8K – 30K
 - Circulation Volume: 300 gpm.
 - Don't exceed 2°/100' (two degrees per 100 ft.)
- E) Cleaning the formation from beneath the bit require maximum jet impact force and maximum hydraulic horsepower.

- F). All parameters depicting the recommended mud weight, viscosity, water loss, annular velocity, ECD's, circulating pressures/rate, etc. are written on the Daily Mud Summary Reports.
- G) Begin use of MA-1 after drilling out surface casing shoe.
- H) Directional surveys to be taken at 500' intervals from Surface to TD.
- I) Derrick shaker to have 175 mesh screens installed.
- J) At TD. circulate and condition mud (bottoms up twice at minimum), Basin Fluids representative to indicate when hole & mud are conditioned properly.
- K) At 6710' (Mancos Shale):
 - a. Condition mud (bottoms up twice at minimum)
 - b. Strap out, laying down DP & DC's.
 - c. Rig Casers.
 - d. Conduct Safety Meeting on casing operation.
- L) Intermediate Casing to be on location 36 hours prior TD, allow time to do required thread cleaning, drifting & strapping.
- M) Run 7" intermediate casing.
- N). Wait on Cement.

RUNNING & CEMENTING 7" CASING

Notify Jicarilla oil & gas Inspector 6 hrs. in advance of cementing. If verbal approval is received: The following will be documented in the morning report, the time, date, topic of discussion and any information relevant shall be recorded. Record all cement properties including, but not limited to all types of cmt, yield, percentages of additives, etc and all volumes circulated to surface on daily report & on Csg. & Cmt. report.

- A. Install 7" rams in BOP during Well Logging, rig Casers. Conduct Safety Meeting on casing operations relaying specific job assignments and responsibilities. Indicate thread torque requirements, number of joints to be run, marker jts. location, TD of well and lowering pipe speed.
- B. Install, while joint is on the pipe rack, 7" Guide shoe using thread lock. Pickup joint, centralize at mid point, pickup jt. #2, thread lock, install automatic fill up on top of this jt. run in remainder of casing w/centralizer on csg. collar at every second joint. Total of 13 centralizers. Run stage tool @ ± 3911' (Top of Lewis). API Bul 5A2 thread compound to be applied over entire surface of each collar.
- C. Install Plug container head w/30'-2" 1000 psi WP hose, break circulation at very low pump rate (2 bbls./min.), once established, increase pump rate slowly to 3-4 bpm while reciprocating (15' minimum) casing string.
- D. At TD, **drop ball**, using a Landing joint, measure distance (+- 132") required to land string in slips, immediately above 7" casing collar.
- E. Pump at least 2 complete circulations while **continuously** reciprocating csg. string. It is very important to make sure the mud weight is consistent throughout the system before cementing w/15 yield point, 45-50 viscosity. **FINAL CEMENT VOLUMES TO BE DETERMINED FROM CALIPER LOG.**

- F. Rig Cementers, conduct Safety Meeting, pressure test all lines to 2,500 psi to the Plug Container. Cementers to install bypass line to the Pit to allow lines from the cement truck to the Plug container to be flushed clean before second plug is dropped.
- G. Have a Cement company person assigned to continuously test the returns & record volume of excess cement discharged into the reserve pit during cementing operations.
- H. Stage #1, mix & pump 20 bbls. 8.4#/gal. Mud flush , followed by lead slurry consisting of 190 sks. Premium Cement w/ 3% Econolite, 10#/sk Pheno Seal. Mixed at 11.50#/gal, 2.89ft3/sk with a tail slurry consisting of 210sks. 50/50 Poz w/ 6.0#/sk. Pheno Seal, 0.8% Halad @-9, 0.1% CFR-3 & 1% bentonite. Mixed at 13.1#/gal, 1.49 ft3/sk, displace w/264 bbls of 8.33#/gal.
- I. Stage #2, mix & pump 20 bbls. 8.34#/gal. Mud flush , followed by lead slurry consisting of 360 sks. Premium Cement w/ 3% Econolite, 10#/sk Pheno Seal. Mixed at 11.50#/gal, 2.89ft3/sk with a tail slurry consisting of 50sks. Premium Cement. Mixed at 15.6#/gal, 1.18 ft3/sk, displace w/154 bbls of 8.33#/gal.
- J. Flush surface lines w/water until clean, release Plug #2 15 # sugar, displace w/calculated volume of water (+- 95 bbls) at 5-6 bpm rate, slowing to 2 bpm prior to bumping the plug. Bump plug w/1,500 psi. Do not exceed calculated displacement volume by more than 3 bbls. Close in Plug container, release Cementers.
- K. Strip BOE, secure to sub base, land 7" casing in slips, remove Landing jt. Remove BOE, wash clean & make necessary changes to accommodate slimhole tools.

NOTE: If hole conditions dictate a two-stage cement job is required, reciprocate casing while circulating at least bottoms up twice. Land casing 8" above 9 5/8" btm. flange. Pump required cement volumes, drop top plug, **displace cement w/mud**. Drop dart, (wait 20 minutes) begin circulating w/rig pump. Continue to circulate 4-6 hrs. depending upon cement pumping time & surface samples. Pump 2nd stage using same procedures as stated in step "E".

Detailed Pumping Schedule

| Fluid # | Fluid Type | Fluid Name | Surface Density lbm/gal | Estimated Avg Rate bbl/min | Downhole Volume |
|----------------|------------|-------------------------------|-------------------------|----------------------------|-----------------|
| Stage 1 | | | | | |
| 1 | Spacer | MUD FLUSH | 8.4 | | 20 bbl |
| 2 | Cement | First Stage Lead Cement | 11.5 | | 190 sks |
| 3 | Cement | First Stage 50/50 Tail Cement | 13.1 | | 210 sks |
| 4 | Mud | Water Displacement | 8.3 | | 264.16 bbl |
| Stage 2 | | | | | |
| 1 | Spacer | Water Spacer | 8.3 | | 20 bbl |
| 2 | Cement | Second Stage Lead | 11.5 | | 360 sks |
| 3 | Cement | Second Stage Tail Cement | 15.6 | | 50 sks |
| 4 | Mud | Water Displacement | 8.3 | | 153.97 bbl |

Install 2,000 psi BOE & Choke Manifolds.

Pressure test all equipment to the specified requirements on the APD w/rig pump. Hold pressure for 15 minutes, Record all items tested on tour sheet. If verbal approval is received: The following will be documented in the morning report ,the time, date, person representing agency, topic of discussion and any information deemed relevant shall be recorded.

- A. A Kelly cock will be kept in the drill string at all times.
- B. Inside BOP or full opening stab-in valve available on rig floor.
- C. After 4 hr. WOC, remove Cmt. Head & 7" Landing jt.
- D. Install 7" by 7" FMC 5,000# "A" section w/male 8rd thread into 7" casing collar. Bolt on BOE.
- E. Test all hydraulic lines from remote Accumulator for leaks. Tie the choke manifold to the 2" outlet on 9" by 7" FMC, 5,000# "A" section casing head equipped with 1-2" ball valves on opposite side of tie in for choke manifold.
- F. RU all compression equipment, blooie line and all related equipment.
- G. Pickup all necessary handling tools for the 4-1/2" drill collars & 3-1/2 drill pipe.
- H. Pickup 6-1/8" Diamond hammer bit (HTC type: See attachment for proper (GPM, RPM & WOB), bit sub w/float, 4-1/2" DC's & Kelly. Pressure test all to 1000-psi w/compressor. Hold pressure for 15 minutes, Record all items tested on tour sheet.

PROCEDURE TO DRILL 6 1/4" HOLE TO LINER POINT

- A. BHA will be 6 1/4" hammer bit, bit sub w/float, 10-4 3/4" DC's, 3 1/2" 13.30#/ft. DP and 210 micron DP screen. Pressure test all to 1500-psi w/air package. Hold pressure for 15 minutes.
- B. Lowering any pipe string into the hole should not exceed 1 joint/minute.
- C. Stage in the hole unloading well, continue in the hole until tag up cement. Unload well again, leaving enough fluid to drill out.
- D. Drill out baffle & cement in shoe joint. Once thru shoe blow well dry.
- E. 6 1/4" hammer bit operating procedures:
 - e. RPM: 30 – 45
 - f. WOB: 4K – 8K
 - g. Circulation pressures: 350 – 380 psi
 - h. Don't exceed 3 degrees per 100' in vertical section
- F. Cleaning the formation from beneath the bit requires maximum jet impact force and maximum hydraulic horsepower.
- G. All parameters depicting the recommended operating ranges are to be depicted on the Daily Summary Reports.
- H. RU Air Package & N2 unit. (6710'- 8130')
- I. Drill with compressed nitrogen from 6710' to TD
- J. At TD prep for loggers.
- K. Well Logging requirements and Black Hills Personnel contacts under *Well Data Distribution*
- L. Liner delivered to location requires thread cleaning, drift & strapped.

RUNNING 4-1/2" RETRIEVABLE LINER

Notify BLM/State Inspector 24 hours in advance. If verbal approval is received: The following will be documented in the morning report, the time, date, person representing agency, topic of discussion and any information relevant shall be recorded. **THE LINER WILL NOT BE CEMENTED IN PLACE.**

- A. Rig up casing crew.
- B. Conduct Safety Meeting on casing operations relaying specific job assignments and responsibilities. Indicate thread torque requirements, number of joints to be run, marker jts. location, TD of well and lowering pipe speed.
- C. On 1st jt. of 4-1/2" J-55 attach guide shoe using thread lock, install while jt is on the pipe rack.
- D. Run in remainder of casing as per recommendation.
- E. API Bul 5A2 thread compound to be applied over entire surface of each collar.
- F. PU hanger and prep to install.
- G. TIH with 4 1/2" liner on end of DP, land 4 1/2" liner in casing hanger & hang off..

MUD PROGRAM

| | | | |
|-------|---|-------|---|
| 0' | - | 250' | Fresh water – M.W. 8.5 ppg, Vis 30-33 |
| 250' | - | 6710' | Klean Faze- Low solids non-dispersed M.W. 8.5 – 9.2 ppg Vis – 28 – 50 sec W.L. 15cc or less |
| 6710' | - | TD | Air & N2 unit – Deliver ± 2400 SCFM (Air) @ 1700 psi & 35 gpm fluid.. Drill with compressed nitrogen. |

Sufficient mud materials & chemicals shall be on hand in case earlier mud up is required sufficient quantities shall be inventoried to control mud properties, lost circulation and to contain "the event of a kick" will be available at wellsite.

CASING PROGRAM

| Depth | Hole Diameter | Casing Diameter | Casing Weight and Grade | Cement |
|----------|---------------|-----------------|-------------------------|--|
| 0'-275' | 12-1/4" | 9 5/8" | J-55 36# ST&C | +/-140 sxs Standard Type II cement |
| 0'-6710" | 8-3/4" | 7" | N_80 23# LT&C | +/- 410 sxs lite or 65:35 poz and +/- 300 sxs 50:50 poz |
| 6710'-TD | 6-1/4" | 4-1/2" | J-55 10.5# LT&C | Uncemented Retrievable Liner |

* Actual cement volume to be determined by caliper log.

EVALUATION PROGRAM

Mud Log:

Type of unit: FID/gas chromatograph; 2-man

Logging Company: Choquette Well Logging

Depth interval: Base surface casing - TD

Log scale: 5 inches / 100 feet

Special format: Note on strip log - drilling parameters, operations and dates, lag times, deviation surveys, logging equipment downtime, lost circulation zones and data, and sample quality and shows.

Morning Reports & Logs (e-mail): Richard White – Geology
Allen Parrent – Drilling Superintendent

Number of sets (washed and sacked): 1

Sample interval:* Every 30 feet from base surf. csg. to TD

*If drilling rate allows. If not, 10-foot intervals may be doubled to 20 feet.

Final destination of dry samples:

Black Hills E&P

350 Indiana St. Suite 400

Golden, CO 80401

Attn: Richard White

OPEN-HOLE LOGGING SPECIFICATIONS - TIGHT HOLE

Operator: Black Hills Gas Resources

Well name/number: Jicarilla 464-29 #716

Location: 665' FNL & 2400' FWL Sec 29, T30N – R03W

API Number: 30-039-29888

Logging company: Halliburton

Logging system: Tipple Combo

Responsibility for service company

notification and coordination: Drilling Consultant

Run #1 – TD to Intermediate Casing

| Log type | Depth interval | Depth scale |
|--------------|----------------------------|---------------------|
| GR/SP/CAL | 1 TD – Intermediate Casing | 2 inches / 100 feet |
| | 1 TD – Intermediate Casing | 5 inches / 100 feet |
| Resistivity/ | 1 TD – Intermediate Casing | 2 inches / 100 feet |
| Conductivity | 1 TD – Intermediate Casing | 5 inches / 100 feet |
| Density/ | 1 TD – Intermediate Casing | 2 inches / 100 feet |
| Rwa | 1 TD – Intermediate Casing | 5 inches / 100 feet |

| Curve | Scale | Track(s) | Line | Parameters |
|--------------|------------------------------------|----------|--------|---------------------------|
| GR | 0 – 200 API units | 1 | solid | |
| SP | 20 mV per division | 1 | dashed | |
| CAL | 6 – 16 inches | 1 | dotted | |
| Rwa | 0 – 10 ohm-m | 1 | dashed | (TLD□, a =1.0, m =1.7) |
| Resistivity | 0.2 – 2,000 ohm-m (Logarithmic) | 2 | dashed | (90-inch investigation) |
| | | | dotted | (60-inch investigation) |
| | | | solid | (20-inch investigation) |
| Conductivity | 400 – 0 mmho | 2–3 | solid | (60-inch investigation) |
| Neutron | +0.3 – -0.1 | 2–3 | dashed | (Sandstone) |
| Density | +0.3 – -0.1 | 2–3 | solid | (2.65 gm/cc w/cross-over) |
| Bulk Den. | 2.0 – 3.0 gm/cc | 2–3 | solid | |

Special log format (final prints only):

Attach Bulk Density / GR / CAL to base of 5-inch/100'
 CNL Porosity / TLD Porosity / GR / Rwa / CAL log.

Additional logging parameters:

Be sure that correct mud, mud filtrate, and mud cake resistivities, salinities, and fluid densities are used — verify with mud sample taken from flowline just prior to logging.
Pay particular attention that correct fluid properties are used in density porosity calculation.

Logging priority:

If logging tools are run separately in the hole, run porosity tools first, unless otherwise directed by Operator.

First pass (repeat) section length: 300 feet, unless otherwise directed by Operator.

LAS file: Make available to Operator for downloading immediately upon job completion as per Log Requirements section of Well Data Distribution List.

Log folded-paper final prints: Deliver black & white folded-paper final prints to Operator and Partners within 24 hours of job completion. Number of copies and delivery locations as per Well Data Distribution List (no colored prints).

Well Data Distribution - TIGHT HOLE

| Company | Address | Contact | Mud logs | Morning Reports | Openhole Log Copies | | | |
|---|---|--|----------|-----------------|--|-----|-------|-------|
| | | | Daily | Daily | Fax | LAS | Field | Final |
| Black Hills Exploration & Production | | | | | | | | |
| BHEP | 350 Indiana St, Suite 400 Golden, CO 80401 | Main: 720.210.1300 Fax: 720.210.1363 | | | | | | |
| | | | 1 | 1 | | 1 | 3 | 1 |
| | | | 1 | 1 | | 1 | 1 | 3 |
| Black Hills Gas Resources | | | | | | | | |
| BHGR | PO Box 249 3200 N 1 st Street Bloomfield, NM 87413 | Main: 505.634.1111 Fax: 505.634.1116 | | | | | | |
| Agatha Snell | | | | | | | 1 | 1 |
| | | | | | | | | |
| Company | Address | Contact | Mud logs | Morning Reports | Openhole Log Copies | | | |
| | | | Daily | Daily | Fax | LAS | Field | Final |
| Deep Gas LLC | | | | | | | | |
| Deep Gas LLC | 457 Clayton Street Denver, CO 80206 | George - Main: 303.393.6387 Fax: 303.393.6417 | | | Trey - Main: 303.722.3300 Fax: 303.388.0779 | | | |
| George Mallon | | | 1 | 1 | | 1 | 3 | 1 |
| Trey Mallon | | | 1 | 1 | | 1 | 1 | 3 |

Contacts

| Contact | Name | Office | Cell | Sat. Phone | Fax |
|-----------|---------------|-------------------------|--------------|--------------|--------------|
| Wellsite | Daryl Baxter | 505.320.4504 | 505.486.0328 | 505.559.4175 | |
| Wellsite | Dale Petty | | 505.486.0328 | 505.559.4175 | |
| Primary | Allen Parrent | 720.210.1310 | 505.486.0323 | | 720.210.1363 |
| Secondary | | | | | |
| Geology | Richard White | 720.210.1341 | 303.204.8102 | | 720.210.1363 |
| BLM | Bryce Hammond | 505.759.3485 ext. 28 | 505.320.9741 | | |