

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

COPY

FORM APPROVED  
OMB No. 1004-0137  
Expires March 31, 2007

APPLICATION FOR PERMIT TO DRILL OR DEEPEN

1a. Type of Work

☒ DRILL

☐ REENTER

1b. Type of Well

☐ Oil Well

☒ Gas Well

☐ Other

☒ Single Zone

☐ Multiple Zone

2. Name of Operator

Black Hills Gas Resources, Inc.

E-mail: lbenally@bhep.com

Contact: Lynn Benally

3a. Address

350 Indiana Street, Suite 400

Golden

CO

80401

3b. Phone No. (include area code)

505.634.1111

5. Lease Serial No.

MDA 701-98-0013, Tract 4

6. If Indian, Allottee or Tribe Name

Jicarilla Apache Nation

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

8. Lease Name and Well No.

Jicarilla 29-02-21

31

9. API Well No.

30-039-29523

10. Field and Pool, or Exploratory

East Blanco Pictured Cliffs

11. Sec., T., R., M., or Blk. and Survey or Area

Sec. 21 T 29N R 2W

4. Location of Well (Report location clearly and in accordance with any State Requirements.)

At surface

1,900' FSL 900' FWL

NW 1/4 SW 1/4

Lat: 36° 42' 28.0"

Long: 107° 03' 14.8"

At proposed production zone

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

Well is located approximately 57 miles east of Bloomfield, New Mexico.

12. County or parish

Rio Arriba

13. State

New Mexico

15. Distance from proposed location to nearest property of lease line, ft. (Also nearest Drig, unit line, if any)

Unit= n/a

Lease= ±900'

16. No. of acres in lease

9,600.0

17. Spacing Unit dedicated to this well

160

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

± 2,800'

Jicarilla  
29-02-20  
2

19. Proposed depth

4,000' TVD

20. BLM/BIA Bond No. on file

NMB000230

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

7,077' GR

22. Approximate date work will start \*

May 12, 2005

23. Estimated duration.

45-60 days drlg + completion

24. Attachments

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

1. Well plat certified by a registered surveyor.
2. A Drilling Plan.
3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO shall be filed with the appropriate Forest Service Office).

4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
5. Operator certification.
6. Such other site specific information and/or plans as may be required by the authorized officer.

25. Signature

Kathy L. Schneebeck

Name (Printed/Typed)

Kathy L. Schneebeck, 303.820.4480

Date

April 7, 2005

Title

Permit Agent for Black Hills Gas Resources, Inc.

Approved by (Signature)

Wayne Townsend  
Acting AFM

Name (Printed/Typed)

Wayne Townsend  
FFO

Date

8/31/05

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Conditions of approval, if any, are attached.

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

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

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

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 June 10, 2003

Submit to Appropriate District Office

State Lease - 4 Copies

Fee Lease - 3 Copies

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

*API Number	*Pool Code 72400	*Pool Name E. Blanco / Pictured Cliffs
*Property Code 24245 32537	*Property Name JICARILLA 29-02-21	*Well Number 31
*OGRID No. 013925	*Operator Name BLACK HILLS GAS RESOURCES	*Elevation 7077'

<sup>10</sup> Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
L	21	29-N	2-W		1900	SOUTH	900	WEST	RIO ARRIBA

<sup>11</sup> 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
*Dedicated Acres 160 acres - SW/4			*Joint or Infill		*Consolidation Code		*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

16 FD MRKD STONE W/ P+C 8894				17 OPERATOR CERTIFICATION I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief  Kathy L. Schneebeck Signature Kathy L. Schneebeck Printed Name Permit Agent for Black Hills Title April 7, 2005 Date	
N 00-26-21 W 5544.96' (M)		21		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.  NEW MEXICO REGISTERED PROFESSIONAL SURVEYOR 14891 10-2-2004 Date Signature Certificate Number	
900'		LAT. 36°42'28.0"N (NAD 83) LONG. 107°03'14.8" W (NAD 83)			
1900'		FD MRKD STONE W/ P+C 8894		FD MRKD STONE W/ P+C 8894	
		S 86-30-04 W 5273.3' (M)			

District I  
1625 N. French Dr., Hobbs, NM 88240  
District II  
1301 W. Grand Avenue, Artesia, NM 88210  
District III  
1000 Rio Brazos Road, Aztec, NM 87410  
District IV  
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico  
Energy Minerals and Natural Resources

Form C-144  
June 1, 2004

Oil Conservation Division  
1220 South St. Francis Dr.  
Santa Fe, NM 87505

For drilling and production facilities, submit to appropriate NMOCD District Office.  
For downstream facilities, submit to Santa Fe office

**Pit or Below-Grade Tank Registration or Closure**

Is pit or below-grade tank covered by a "general plan"? Yes ☒ No ☐

Type of action: Registration of a pit or below-grade tank ☒ Closure of a pit or below-grade tank ☐

Operator: Black Hills Gas Resources, Inc. Telephone: \*720-210-1300 e-mail address: lbenally@bhep.com  
Address: 300 Indiana St. Suite 400, Golden, CO 80401  
Facility or well name: Jicarilla 29-02-21 31 API #: Pending U/L or Qtr/Qtr NW SW Sec 21 T 29N R 2W  
County: Rio Arriba Latitude 36° 42' 28.0" Longitude 107° 03' 14.8" NAD: 1927 ☐ 1983 ☒ Surface Owner Federal ☐ State ☐ Private ☐ Indian ☒

<u>Pit</u>	<u>Below-grade tank</u>
Type: Drilling <input checked="" type="checkbox"/> Production <input type="checkbox"/> Disposal <input type="checkbox"/> Workover <input type="checkbox"/> Emergency <input type="checkbox"/> Lined <input type="checkbox"/> Unlined <input checked="" type="checkbox"/> Liner type: Synthetic <input type="checkbox"/> Thickness <u>    </u> mil Clay <input checked="" type="checkbox"/> Pit Volume <u>±17.811</u> bbl	Volume: <u>    </u> bbl Type of fluid: <u>    </u> Construction material: <u>    </u> Double-walled, with leak detection? Yes <input type="checkbox"/> If not, explain why not. <u>    </u>
Depth to ground water (vertical distance from bottom of pit to seasonal high water elevation of ground water.)	Less than 50 feet (20 points) 50 feet or more, but less than 100 feet (10 points) 100 feet or more (0 points)
Wellhead protection area: (Less than 200 feet from a private domestic water source, or less than 1000 feet from all other water sources.)	Yes (20 points) No (0 points)
Distance to surface water: (horizontal distance to all wetlands, playas, irrigation canals, ditches, and perennial and ephemeral watercourses.)	Less than 200 feet (20 points) 200 feet or more, but less than 1000 feet (10 points) 1000 feet or more (0 points)
	<b>Ranking Score (Total Points)</b> 0 points

**this is a pit closure:** (1) attach a diagram of the facility showing the pit's relationship to other equipment and tanks. (2) Indicate disposal location: (check the onsite box if our are burying in place) onsite ☐ offsite ☐ If offsite, name of facility     . (3) Attach a general description of remedial action taken including remediation start date and end-date. (4) Groundwater encountered: No ☐ Yes ☐ If yes, show depth below ground surface      ft. and attach sample results. (5) attach soil sample results and a diagram of sample locations and excavations.

Additional Comments:  
\* Local contact in New Mexico is Lynn Benally at 505-634-1111 Ext. 27

I hereby certify that the information above is true and complete to the best of my knowledge and belief. I further certify that the above-described pit or below-grade tank has been/will be constructed or closed according to NMOCD guidelines ☒, a general permit ☐, or an (attached) alternative OCD-approved plan ☐.

Date: 04/07/05

Printed Name/Title Kathy L. Schneebeck / Permit Agent for Black Hills Gas Resources, Inc. Signature Kathy L. Schneebeck

Your certification and NMOCD approval of this application/closure does not relieve the operator of liability should the contents of the pit or tank contaminate ground water or otherwise endanger public health or the environment. Nor does it relieve the operator of its responsibility for compliance with any other federal, state, or local laws and/or regulations.

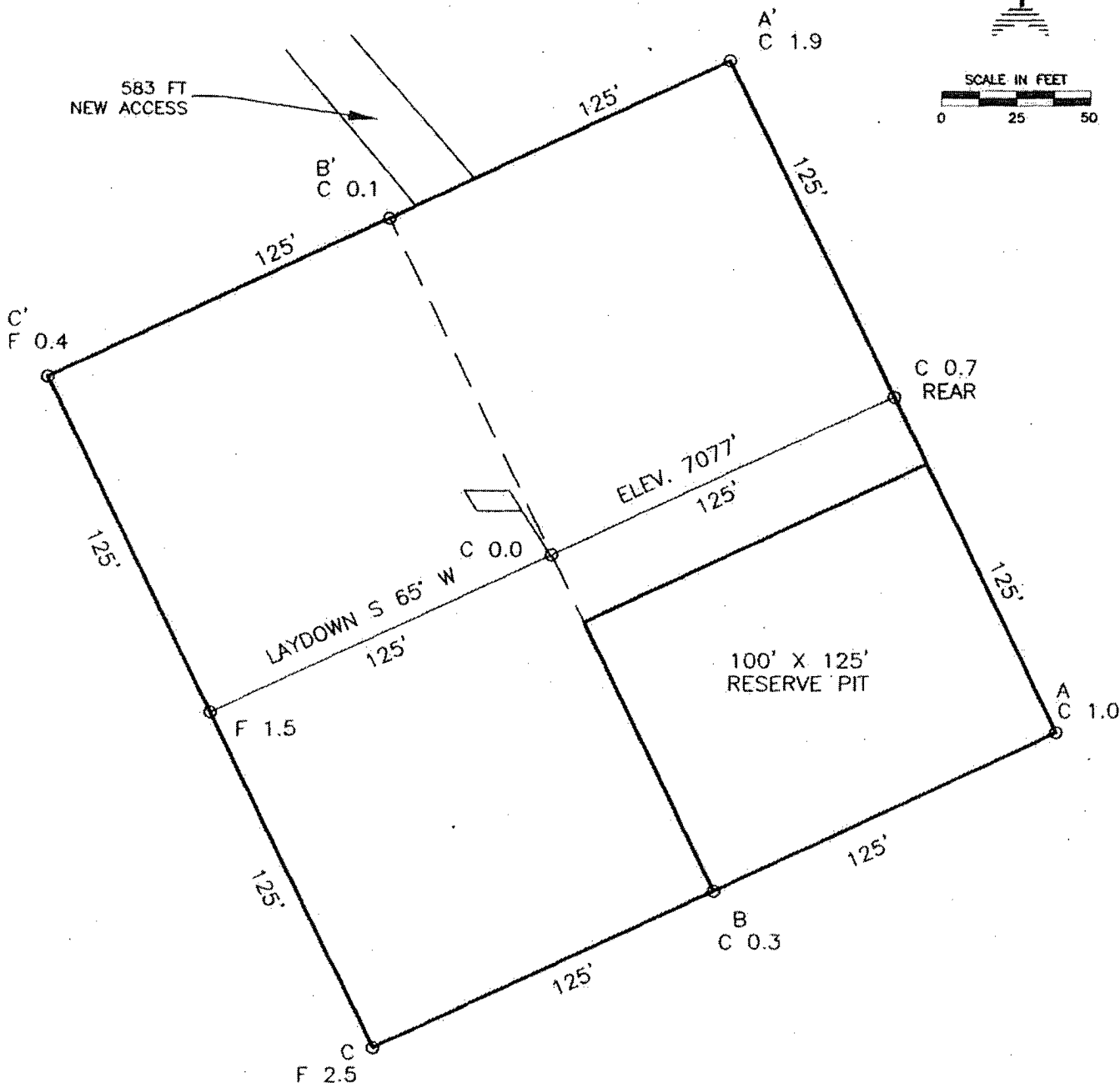
Approval: **DEPUTY OIL & GAS INSPECTOR, DIST. 34** Signature [Signature] Date: SEP 06 2005

# WELL PAD DIAGRAM

COMPANY: BLACK HILLS GAS RESOURCES  
 LEASE: JICARILLA 29-02-21 No. 31  
 FOOTAGE: 1900 FSL, 900 FWL  
 SEC.: 21 TWN: 29-N RNG: 2-W NMPM  
 ELEVATION: 7077'




SCALE IN FEET  
 0 25 50



## NOTE:

DAGGETT ENTERPRISES, INC. IS NOT LIABLE FOR  
 UNDERGROUND UTILITIES OR PIPELINES. NEW MEXICO  
 ONE CALL TO BE NOTIFIED 48 HOURS PRIOR TO  
 EXCAVATION OR CONSTRUCTION.

REVISION:	DATE:	REVISED BY:
REROUTE ACCESS & P/L	12/21/04	B.L.
 <b>Daggett Enterprises, Inc.</b> Surveying and Oil Field Services P. O. Box 15088 • Farmington, NM 87401 Phone (505) 326-1772 • Fax (505) 326-6019 NEW MEXICO L.S. 14831		
DRAWN BY: A.C.	CADD: MN348PL8	
ROW: MN348	DATE: 10/28/04	

# WELL PAD CROSS-SECTIONAL DIAGRAM

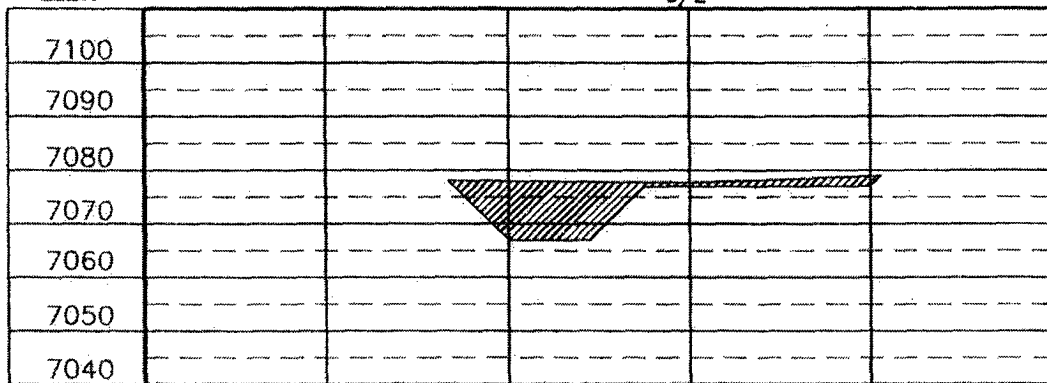
COMPANY: BLACK HILLS GAS RESOURCES  
 LEASE: JICARILLA 29-02-21 No. 31  
 FOOTAGE: 1900' FSL 900' FWL  
 SEC.: 21, TWN: 29-N, RNG: 2-W, NMPM  
 ELEVATION: 7077'

## NOTE:

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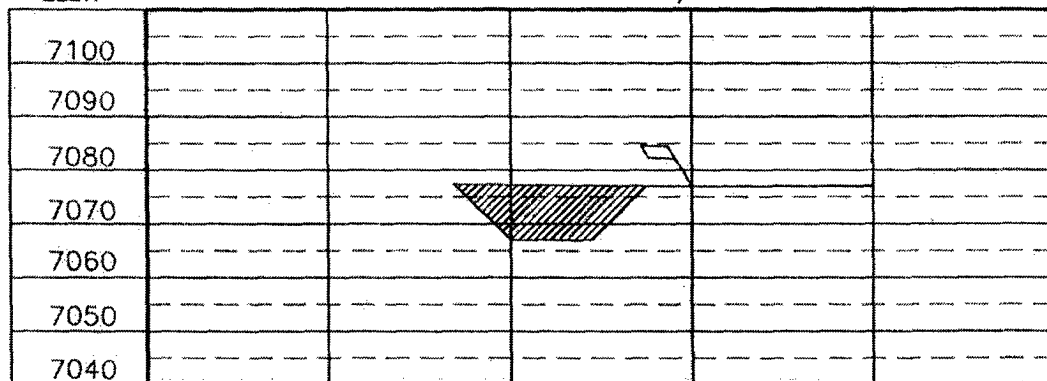
ELEV. A-A'

C/L



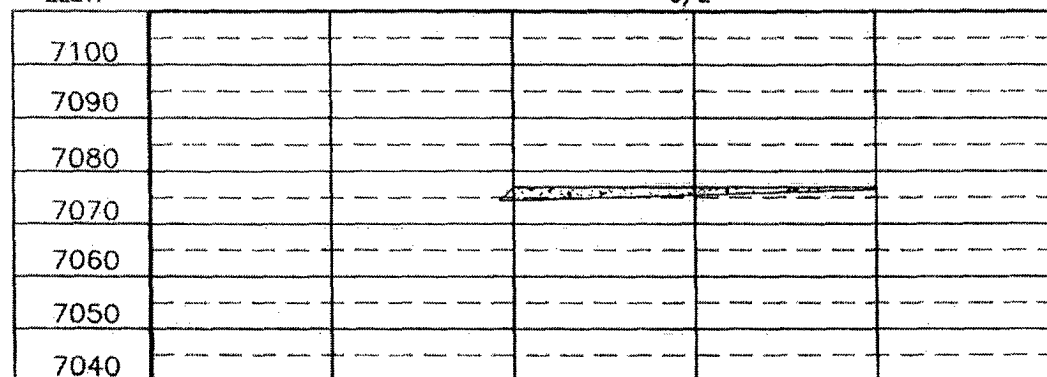
ELEV. B-B'

C/L



ELEV. C-C'

C/L



REF. DWG. MN348PLB WELL PAD DIAGRAM

REVISIONS

DATE

DESIGNED BY

Daggett Enterprises, Inc.  
 Surveying and Oil Field Services  
 P. O. Box 15068 • Farmington, NM 87401  
 Phone (505) 326-1772 • Fax (505) 326-8019  
 NEW MEXICO L.S. 14831



DRAWN BY: A.C.

DATE: 10/28/04

DATE: 10/28/04

DATE: 10/28/04

Black Hills Gas Resources, Inc.  
**Jicarilla 29-02-21 31**  
1,900' FSL 900' FWL (NW/4 SW/4)  
Sec. 21 T29N R2W  
Rio Arriba County, New Mexico  
Lease: MDA 701-98-0013, Tract 4

## DRILLING PROGRAM

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 NOS process included an onsite meeting, which was held on November 4, 2004, as determined by BLM, Bureau of Indian Affairs (BIA) and Jicarilla Oil & Gas Administration (JOGA), and at which time the specific concerns of Black Hills Gas Resources, Inc. (Black Hills), BLM, BIA and JOGA were discussed.

### SURFACE FORMATION – San Jose

### GROUND ELEVATION – 7,077'

### ESTIMATED FORMATION TOPS - (Water, oil, gas and/or other mineral-bearing formations)

San Jose	Surface	Sandstone, shales & siltstones
Nacimiento	2,023'	Sandstone, shales & siltstones
Ojo Alamo	3,085'	Sandstone, shales & siltstones
Kirkland	3,301'	Sandstone, shales & siltstones
Fruitland Coal	3,401'	Sandstone, shales & siltstones
Pictured Cliffs	3,460'	Sandstone, shales & siltstones
Lewis	3,582'	Sandstone, shales & siltstones

TOTAL DEPTH            4,000'

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

#### Tertiary

San Jose	surface	Gas
Nacimiento	2,023'	Gas
Ojo Alamo	3,085'	Gas
Fruitland Coal	3,401'	Gas
Pictured Cliffs	3,460'	Gas

CASING PROGRAM

Depth	Hole Diameter	Casing Diameter	Casing Weight and Grade	Cement
0' – 250'	12-1/4"	8-5/8"	J-55 24# ST&C New	To surface ( $\pm 175$ sxs Class B)
0' – T.D.	7-7/8"	5-1/2"	J-55 15.5# LT&C New	TD to surface ( $\pm 630$ sxs lite or 65:35 poz and $\pm 270$ sxs 50:50 poz)*

\* Actual cement volume to be determined by caliper log.

Yields: Class B yield =  $1.18 \text{ ft}^3/\text{sx}$   
 65:35 Poz yield =  $1.62 \text{ ft}^3/\text{sx}$   
 50:50 Poz yield =  $1.26 \text{ ft}^3/\text{sx}$

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

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	Fresh water - Low solids non-dispersed
		M.W. 8.5 – 9.2 ppg
		Vis – 28 – 50 sec
		W.L. 15cc 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: DIL- CNL-FDC-GR - TD - BSC (GR to surface)  
Sonic (BSC to TD)
- 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) H<sub>2</sub>S: None anticipated
- D) Estimated bottomhole pressure: 1,240 psi

ANTICIPATED START DATE

April 12, 2005

COMPLETION

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



Jicarilla 29-02-21 31  
 1,900' FSL 900' FWL ( NW /4 SW /4 )  
 Sec. 21 T 29N R 2W  
 Rio Arriba County, New Mexico  
 MDA 701-98-0013, Tract 4

### SURFACE CASING AND CENTRALIZER DESIGN

Proposed Total Depth: 4,000 '  
 Proposed Depth of Surface Casing: 250 '  
 Estimated Pressure Gradient: 0.31 psi/ft  
 Bottom Hole Pressure at 4,000 '  
 $0.31 \text{ psi/ft} \times 4,000' = 1,240 \text{ psi}$   
 Hydrostatic Head of gas/oil mud: 0.22 psi/ft  
 $0.22 \text{ psi/ft} \times 4,000' = 880 \text{ psi}$

#### Maximum Design Surface Pressure

Bottom Hole Pressure - Hydrostatic Head =  
 $( 0.31 \text{ psi/ft} \times 4,000' ) - ( 0.22 \text{ psi/ft} \times 4,000' ) =$   
 $1,240 \text{ psi} - 880 \text{ psi} = 360 \text{ psi}$

#### Casing Strengths 8-5/8" J-55 24# ST&C

Wt.	Tension (lbs)	Burst (psi)	Collapse (psi)
24 #	244,000	2,950	1,370
32 #	372,000	3,930	2,530

#### Safety Factors

Tension (Dry): 1.8 Burst: 1.0 Collapse: 1.125

Tension (Dry):  $24 \text{ #/ft} \times 250' = 6,000 \text{ #}$   
 Safety Factor =  $\frac{244,000}{6,000} = 40.67$  ok

Burst: Safety Factor =  $\frac{2,950 \text{ psi}}{360 \text{ psi}} = 8.19$  ok

Collapse: Hydrostatic =  $0.052 \times 9.0 \text{ ppg} \times 250' = 117 \text{ psi}$   
 Safety Factor =  $\frac{1,370 \text{ psi}}{117 \text{ psi}} = 11.71$  ok

Use 250' 8-5/8" J-55 24# ST&C

Use 2,000 psi minimum casinghead and BOP's

#### Centralizers

5 Total

1 near surface at 40'

2 -1 each at middle of bottom joint, second joint

2 -1 each at every other joint  $\pm 40'$  spacing

Total centralized  $\pm 200' ( 50' - 250' )$

Note that field experience indicates that additional centralizers greatly increase the chance of "sticking" the surface casing prior to reaching surface casing total depth.

## 2-M SYSTEM

Black Hills Gas Resources, Inc.

ANNULAR PREVENTOR MAY BE SUBSTITUTED FOR DOUBLE GATE PREVENTORS  
BOP PRESSURE TEST TO 1,000 PSI

