

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

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

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: 1,895' FNL 670' FWL SW/NW Unit E Sec28 T29N R04W
Bottom Hole: ± 700' FSL ± 700' FEL SE/SE Unit P Sec 28 T29N R04W

5. Lease Serial No.
NM18327

6. If Indian, Allottee, or Tribe Name
RCVD APR 28 '08

7. If Unit or CA. Agreement Name and/or No.
OIL CONS. DIV.

8. Well Name and No.
DIST. 3
Many Canyons 29-04-28 #121

9. API Well No.
30-039-30231

10. Field and Pool, or Exploratory Area
Gobernador Pictured Cliffs

11. County or Parish, State
Rio Arriba, New Mexico

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

TYPE OF SUBMISSION	TYPE OF ACTION			
☒ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/ Resume)	☐ Water Shut-off
☐ Subsequent Report	☐ Altering Casing	☐ Fracture Treat	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☒ Other Change BH
	☐ Change Plans	☐ Plug and abandon	☐ Temporarily Abandon	and change to a dual
	☐ Convert to Injection	☐ Plug back	☐ Water Disposal	lateral completion

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 5/7/07. The well was given API # 30-039-30231. After evaluation of data from recently drilled wells in the immediate area, it has been determined that the PC formation is best developed, using a dual Horizontal completion. BHGR therefore is submitting an updated drilling plan, directional survey and a new C-102. BHGR requests that if tests of the tertiary and PC formations are favorable that we will complete these formations and submit comingle applications.

The surface location will remain the same but the new bottom hole is SE/SE 700' FSL 700' FEL.

Geological data indicates that the PC formation is thick enough to support a dual PC lateral, therefore BHGR proposes to horizontally drill a dual lateral into the PC fomation. The laterals will have the same bottom hole location but will differ in elevation. One lateral will be drilled in the upper PCCFU (4240' TVD) and the second will be drilled in the lower PCCFL (4425' TVD).

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

CONDITIONS OF APPROVAL
Adhere to previously issued stipulations.

NSL Required

14. I hereby certify that the foregoing is true and correct.
Name (Printed/ Typed)

Lynn H. Benally

Title

Regulatory Specialist

Signature

Date

3/21/2008

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by

Title

Date

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 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)

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

Hold C104 - Start of laterals in coal appears to be NSL.
for Directional Surveys and "As Drilled" plat

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 30-039-30231	² Pool Code 77440	³ Pool Name GOBERNADOR PICTURED CLIFF
⁴ Property Code 301949	⁵ Property Name MANY CANYONS 29-04-28	⁶ Well Number 121
⁷ GRID No. 013925	⁸ Operator Name BLACK HILLS GAS RESOURCES	⁹ Elevation 7472'

¹⁰ Surface Location

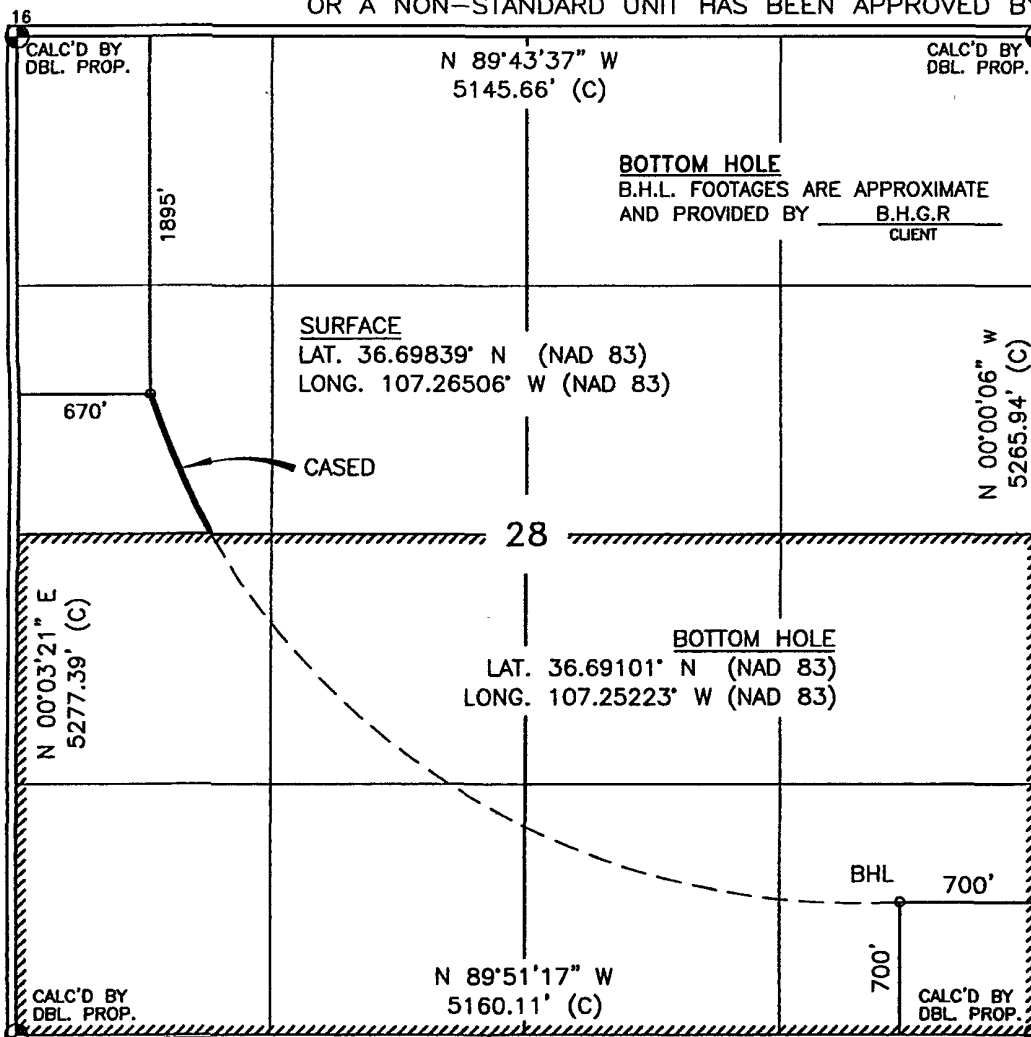
UL or lot no. E	Section 28	Township 29-N	Range 4-W	Lot Idn	Feet from the 1895	North/South line NORTH	Feet from the 670	East/West line WEST	County RIO ARRIBA
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¹¹ Bottom Hole Location If Different From Surface

UL or lot no. P	Section 28	Township 29-N	Range 4-W	Lot Idn	Feet from the 700	North/South line SOUTH	Feet from the 700	East/West line EAST	County RIO ARRIBA
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¹² Dedicated Acres 320 - S/2	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.
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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 Lynn H. Benaig Date 8/21/08
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.

JUNE 6 2008
Date of Survey
Signature and Seal of Professional Surveyor:
8894
Certificate Number



Black Hills Gas Resources

Many Canyons 29-04-28 #121

Surface Location: 1,895' FNL 670' FWL (SW/NW) Unit E

Bottom Hole: $\pm 700'$ FSL $\pm 700'$ FEL (SE/SE) Unit P

Sec. 28 T29N R4W

Rio Arriba County, New Mexico

Lease: NM 18327

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 may include an onsite meeting as determined by the Bureau of Land Management (BLM) at which time the specific concerns of Black Hills Gas Resources (BHGR) and BLM would be discussed.

This un-drilled well was initially approved as a horizontal well to be drilled into the Pictured Cliffs formation. BHGR is proposing to drill this un-drilled well as dual lateral completion into the upper and lower Pictured Cliffs formation. Attached is the updated directional drilling survey.

SURFACE FORMATION – San Jose

GROUND ELEVATION – 7472

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

San Jose	Surface	Sandstone, shales & siltstones	
Nacimiento	2425'M	2425'V	Sandstone, shales & siltstones
Ojo Alamo	3758'M	3712'V	Sandstone, shales & siltstones
Kirtland	3986'M	3873'V	Sandstone, shales & siltstones
Fruitland Coal	4559'M	4168'V	Sandstone, shales & siltstones
Pictured Cliffs	4619'M	4197'V	Sandstone, shales & siltstones
TOTAL DEPTH	8684'	TMD	4425' TVD lower lateral
	8524'	TMD	4280' TVD upper lateral

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

Nacimiento	2425'	Gas, water, sand
Ojo Alamo	3758'	Gas, water, sand
Kirtland	3986'	Gas, water, sand
Fruitland Coal	4559'	Gas, water, sand
Pictured Cliffs	4619'	Gas, water, sand

HORIZONTAL DRILLING PROGRAMKick Off Point is estimated to be $\pm 3122'$ 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' - 3122'	12-1/4"	7" csg +	J-55 23#	TD to surface (Lead ± 730 sxs lite standard cement. Tail ± 800 sxs 50/50 poz containing 1/4#/sx LCM)
250' - 3120'		1.9" tbg	J-55 2.76#	
3122'-5174'	8-3/4"	7" csg	J-55 23#	
5174'-8684'	6-1/8"	Open hole**	Open hole	Lower lateral
4624'-8524'	6-1/8"	Open hole**	Open hole	Upper lateral

* Actual cement volume to be determined by caliper log.

** If hole instability is encountered, a 4 1/2", 10.5#, J-55 un-cemented liner may be run in either or both of the 6 1/8" open hole sections.

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

PARASITE STRING

Due to severe lost circulation below 4200' TVD, a 1.9" 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 $\pm 3500'$ MD. 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. Out from underneath surface casing a 12-1/4" hole will be drilled to KOP ($\pm 3122'$) at that point we will TOH for tools and TIH to begin drilling a 8-3/4" hole directionally at a build rate of 7°/100 to TD @ 5174' MD, setting 7" 23# J-55 csg @ 85°. A 1.5" parasite string will run to KOP, it will be banded to the 7" csg.

Interval	Weight	Grade	Cplng O.D.	Nom. O.D.	I.D.	Drift	Connection
0' to 3122'	2.76 #/ft	J-55	2.115"	1.900"	1.610"	1.516"	10 Rd Integral Joint

API RATING / SAFETY FACTOR

Interval	Description	Collapse (psi)a	Burst (psi)b	Tension Body (M Lbs)c	Tension Cplng (M Lbs)c
0' to 3122'	1-1/2", 2.76 #/ft, J-55, II	7,750. / 6.13	7,350. / 2.66	55 / 1.70	55 / 1.70

- based on full parasite string evacuation with 9.0 ppg formation gradient on backside
- based on 9.0 ppg gradient to surface, with no fluid on backside (backside evacuated) and 1,500 psi applied surface pressure
- 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

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: psi

ANTICIPATED START DATE: April 1, 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#/ft, 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: 81xxx State/Country: NM/USA
 Company: Black Hills Gas Resources Declination:
 Lease/Well: Many Canyons 29-04-28 #121 Grid:
 Location: Rio Arriba County, NM File name: Z:\BLACKH~1\NEWWEL~1\29-04--2\29042821.SVY
 Rig Name: Date/Time: 13-Mar-08 / 15:36
 RKB: 13' Curve Name: MC 29-04-28 #121 upper lat plan 3-12-08
 G.L. or M.S.L.: 7472'

MC 29-04-28 #121 upper lat plan 3-12-08

WINSERVE SURVEY CALCULATIONS

Minimum Curvature Method

Vertical Section Plane 125.39

Vertical Section Referenced to offset from Wellhead: EW =.00 Ft , NS=.00 Ft

Rectangular Coordinates Referenced to Wellhead

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TRUE Vertical Depth	Vertical Section FT	N-S FT	E-W FT	CLOSURE Distance FT	CLOSURE Direction Deg	Dogleg Severity Deg/100
4624.01	60	155	4200	793.09	-826.75	385.52	912.21	155	0
4654.01	66.4	155	4213.52	816.35	-851	396.83	938.98	155	21.32
4684.01	68.45	150.81	4225.04	840.92	-875.65	409.45	966.65	154.94	14.61
4714.01	70.61	146.74	4235.53	866.71	-899.67	424.02	994.59	154.77	14.61
4744.01	72.86	142.77	4244.94	893.58	-922.93	440.46	1022.65	154.49	14.61
4774.01	75.19	138.91	4253.2	921.37	-945.28	458.67	1050.69	154.12	14.61
4804.01	77.57	135.12	4260.26	949.93	-966.6	478.55	1078.58	153.66	14.61
4834.01	80.01	131.41	4266.1	979.07	-986.76	499.98	1106.2	153.13	14.61
4864.01	82.49	127.75	4270.66	1008.63	-1005.65	522.83	1133.43	152.53	14.61
4894.01	85	124.13	4273.93	1038.45	-1023.14	546.97	1160.17	151.87	14.61
4924.01	87.52	120.54	4275.89	1068.33	-1039.15	572.25	1186.3	151.16	14.61
4952.53	89.94	117.14	4276.52	1096.66	-1052.91	597.23	1210.49	150.44	14.61
4952.54	89.94	117.14	4276.52	1096.67	-1052.91	597.24	1210.5	150.44	2.48
5052.54	89.94	117.14	4276.63	1195.63	-1098.53	686.22	1295.25	148.01	0
5152.54	89.94	117.14	4276.74	1294.6	-1144.16	775.21	1382.04	145.88	0
5252.54	89.94	117.14	4276.85	1393.57	-1189.78	864.2	1470.51	144.01	0
5352.54	89.94	117.14	4276.96	1492.53	-1235.4	953.18	1560.38	142.35	0
5452.54	89.94	117.14	4277.07	1591.5	-1281.03	1042.17	1651.41	140.87	0
5552.54	89.94	117.14	4277.18	1690.46	-1326.65	1131.16	1743.42	139.55	0
5652.54	89.94	117.14	4277.29	1789.43	-1372.27	1220.14	1836.27	138.36	0
5752.54	89.94	117.14	4277.4	1888.4	-1417.89	1309.13	1929.83	137.28	0
5852.54	89.94	117.14	4277.5	1987.36	-1463.52	1398.11	2024.01	136.31	0
5952.54	89.94	117.14	4277.61	2086.33	-1509.14	1487.1	2118.72	135.42	0
6052.54	89.94	117.14	4277.72	2185.29	-1554.76	1576.09	2213.9	134.61	0
6152.54	89.94	117.14	4277.83	2284.26	-1600.39	1665.07	2309.48	133.87	0
6252.54	89.94	117.14	4277.94	2383.23	-1646.01	1754.06	2405.42	133.18	0
6352.54	89.94	117.14	4278.05	2482.19	-1691.63	1843.04	2501.69	132.55	0
6452.54	89.94	117.14	4278.16	2581.16	-1737.25	1932.03	2598.23	131.96	0
6552.54	89.94	117.14	4278.27	2680.12	-1782.88	2021.02	2695.03	131.42	0
6652.54	89.94	117.14	4278.38	2779.09	-1828.5	2110	2792.05	130.91	0

6752.54	89.94	117.14	4278.49	2878.06	-1874.12	2198.99	2889.27	130.44	0
6852.54	89.94	117.14	4278.6	2977.02	-1919.75	2287.98	2986.68	130	0
6952.54	89.94	117.14	4278.71	3075.99	-1965.37	2376.96	3084.25	129.59	0
7052.54	89.94	117.14	4278.82	3174.96	-2010.99	2465.95	3181.98	129.2	0
7152.54	89.94	117.14	4278.93	3273.92	-2056.61	2554.93	3279.84	128.83	0
7252.54	89.94	117.14	4279.04	3372.89	-2102.24	2643.92	3377.83	128.49	0
7352.54	89.94	117.14	4279.15	3471.85	-2147.86	2732.91	3475.93	128.16	0
7452.54	89.94	117.14	4279.26	3570.82	-2193.48	2821.89	3574.14	127.86	0
7552.54	89.94	117.14	4279.36	3669.79	-2239.11	2910.88	3672.44	127.57	0
7652.54	89.94	117.14	4279.47	3768.75	-2284.73	2999.87	3770.83	127.29	0
7752.54	89.94	117.14	4279.58	3867.72	-2330.35	3088.85	3869.31	127.03	0
7852.54	89.94	117.14	4279.69	3966.68	-2375.97	3177.84	3967.86	126.78	0
7952.54	89.94	117.14	4279.8	4065.65	-2421.6	3266.82	4066.48	126.55	0
8052.54	89.94	117.14	4279.91	4164.62	-2467.22	3355.81	4165.17	126.32	0
8152.54	89.94	117.14	4280.02	4263.58	-2512.84	3444.8	4263.92	126.11	0
8252.54	89.94	117.14	4280.13	4362.55	-2558.47	3533.78	4362.72	125.9	0
8352.54	89.94	117.14	4280.24	4461.51	-2604.09	3622.77	4461.58	125.71	0
8452.54	89.94	117.14	4280.35	4560.48	-2649.71	3711.75	4560.49	125.52	0
8524.35	89.94	117.14	4280.43	4631.55	-2682.47	3775.66	4631.55	125.39	0

Job Number: 81xxx State/Country: NM/USA
 Company: Black Hills Gas Resources Declination:
 Lease/Well: Many Canyons 29-04-28 #121 Grid:
 Location: Rio Arriba County, NM File name: Z:\BLACKH~1\NEWWEL~1\29-04--2\29042821.SVY
 Rig Name: Date/Time: 12-Mar-08 / 15:00
 RKB: 13' Curve Name: MC 29-04-28 #121 lower lat plan 3-12-08
 G.L. or M.S.L.: 7472'

WINSERVE SURVEY CALCULATIONS

Minimum Curvature Method

Vertical Section Plane 125.39

Vertical Section Referenced to offset from Wellhead: EW =.00 Ft , NS=.00 Ft

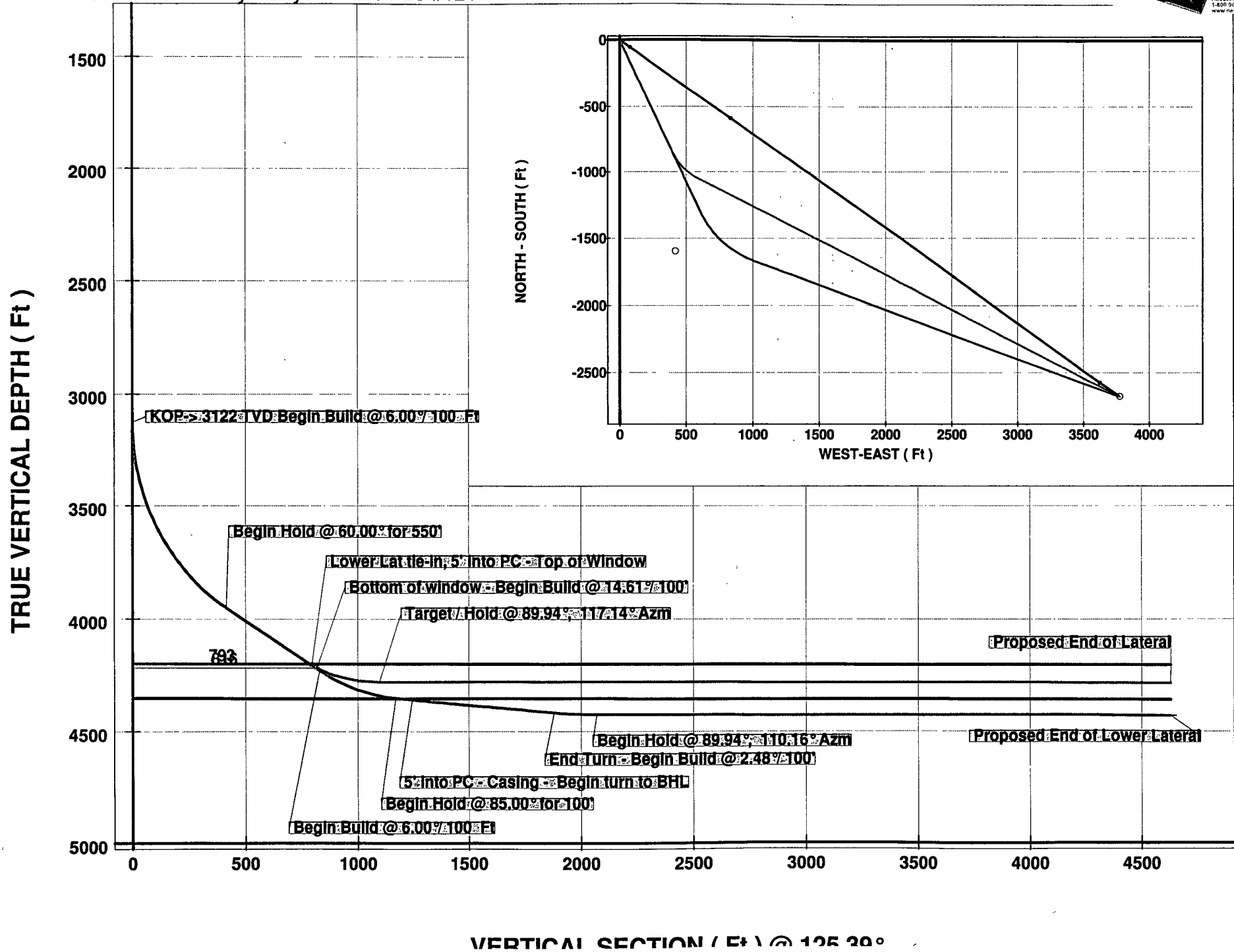
Rectangular Coordinates Referenced to Wellhead

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TRUE Vertical Depth	Vertical Section FT	N-S FT	E-W FT	CLOSURE Distance FT	CLOSURE Direction Deg	Dogleg Severity Deg/100
3122	0	155	3122	0	0	0	0	0	0
3152	1.8	155	3152	0.41	-0.43	0.2	0.47	155	6
3182	3.6	155	3181.96	1.64	-1.71	0.8	1.88	155	6
3212	5.4	155	3211.87	3.68	-3.84	1.79	4.24	155	6
3242	7.2	155	3241.68	6.55	-6.82	3.18	7.53	155	6
3272	9	155	3271.38	10.22	-10.66	4.97	11.76	155	6
3302	10.8	155	3300.94	14.71	-15.33	7.15	16.91	155	6
3332	12.6	155	3330.31	19.99	-20.84	9.72	23	155	6
3362	14.4	155	3359.48	26.08	-27.19	12.68	30	155	6
3392	16.2	155	3388.42	32.96	-34.36	16.02	37.92	155	6
3422	18	155	3417.09	40.63	-42.36	19.75	46.74	155	6
3452	19.8	155	3445.47	49.08	-51.16	23.86	56.45	155	6
3482	21.6	155	3473.53	58.3	-60.78	28.34	67.06	155	6
3512	23.4	155	3501.25	68.28	-71.18	33.19	78.54	155	6
3542	25.2	155	3528.59	79.01	-82.37	38.41	90.88	155	6
3572	27	155	3555.53	90.49	-94.33	43.99	104.08	155	6
3602	28.8	155	3582.04	102.69	-107.05	49.92	118.12	155	6
3632	30.6	155	3608.1	115.61	-120.52	56.2	132.98	155	6
3662	32.4	155	3633.68	129.24	-134.73	62.82	148.65	155	6
3692	34.2	155	3658.75	143.56	-149.65	69.78	165.12	155	6
3722	36	155	3683.29	158.56	-165.29	77.07	182.37	155	6
3752	37.8	155	3707.28	174.22	-181.61	84.69	200.39	155	6
3782	39.6	155	3730.7	190.52	-198.61	92.61	219.14	155	6
3812	41.4	155	3753.51	207.46	-216.27	100.85	238.62	155	6
3842	43.2	155	3775.7	225.02	-234.57	109.38	258.81	155	6
3872	45	155	3797.24	243.17	-253.49	118.2	279.69	155	6
3902	46.8	155	3818.12	261.89	-273.01	127.31	301.23	155	6
3932	48.6	155	3838.3	281.18	-293.12	136.68	323.42	155	6
3962	50.4	155	3857.79	301.02	-313.79	146.32	346.23	155	6
3992	52.2	155	3876.54	321.37	-335.01	156.22	369.64	155	6

4022	54	155	3894.56	342.23	-356.75	166.36	393.63	155	6
4052	55.8	155	3911.81	363.57	-379	176.73	418.18	155	6
4082	57.6	155	3928.28	385.37	-401.72	187.33	443.25	155	6
4112	59.4	155	3943.95	407.6	-424.9	198.14	468.83	155	6
4122.01	60	155	3949	415.12	-432.73	201.79	477.47	155	6
4222.01	60	155	3999	490.41	-511.22	238.39	564.07	155	0
4322.01	60	155	4049	565.7	-589.71	274.99	650.67	155	0
4422.01	60	155	4099	641	-668.2	311.59	737.28	155	0
4522.01	60	155	4149	716.29	-746.69	348.19	823.88	155	0
4622.01	60	155	4199	791.58	-825.18	384.79	910.48	155	0
4624.01	60	155	4200	793.09	-826.75	385.52	912.21	155	0
4672.01	60	155	4224	829.23	-864.42	403.09	953.78	155	0
4702.01	61.8	155	4238.59	852.02	-888.18	414.16	980	155	6
4732.01	63.6	155	4252.35	875.19	-912.34	425.43	1006.65	155	6
4762.01	65.4	155	4265.26	898.73	-936.88	436.87	1033.73	155	6
4792.01	67.2	155	4277.32	922.62	-961.77	448.48	1061.2	155	6
4822.01	69	155	4288.51	946.81	-987	460.25	1089.03	155	6
4852.01	70.8	155	4298.82	971.31	-1012.53	472.15	1117.2	155	6
4882.01	72.6	155	4308.24	996.07	-1038.34	484.19	1145.69	155	6
4912.01	74.4	155	4316.76	1021.08	-1064.41	496.34	1174.45	155	6
4942.01	76.2	155	4324.37	1046.3	-1090.71	508.61	1203.47	155	6
4972.01	78	155	4331.07	1071.73	-1117.21	520.96	1232.71	155	6
5002.01	79.8	155	4336.84	1097.32	-1143.89	533.41	1262.15	155	6
5032.01	81.6	155	4341.69	1123.06	-1170.72	545.92	1291.75	155	6
5062.01	83.4	155	4345.61	1148.92	-1197.68	558.49	1321.49	155	6
5088.67	85	155	4348.3	1171.97	-1221.71	569.69	1348.01	155	6
5173.67	85	155	4355.71	1245.59	-1298.46	605.48	1432.69	155	0
5203.67	85	152.59	4358.32	1271.88	-1325.27	618.68	1462.57	154.98	8
5233.67	85	150.18	4360.94	1298.74	-1351.5	632.99	1492.39	154.9	8
5263.67	85	147.77	4363.55	1326.12	-1377.11	648.39	1522.12	154.79	8
5293.67	85	145.36	4366.17	1353.99	-1402.05	664.85	1551.7	154.63	8
5323.67	85	142.95	4368.78	1382.28	-1426.28	682.35	1581.1	154.43	8
5353.67	85	140.55	4371.4	1410.96	-1449.74	700.85	1610.26	154.2	8
5383.67	85	138.14	4374.01	1439.96	-1472.41	720.32	1639.17	153.93	8
5413.67	85	135.73	4376.63	1469.24	-1494.25	740.73	1667.77	153.63	8
5443.67	85	133.32	4379.24	1498.74	-1515.2	762.03	1696.03	153.3	8
5473.67	85	130.91	4381.86	1528.42	-1535.24	784.2	1723.93	152.94	8
5503.67	85	128.5	4384.47	1558.22	-1554.33	807.19	1751.43	152.56	8
5533.67	85	126.09	4387.09	1588.09	-1572.44	830.96	1778.5	152.15	8
5563.67	85	123.68	4389.7	1617.97	-1589.53	855.48	1805.12	151.71	8
5593.67	85	121.27	4392.32	1647.81	-1605.58	880.69	1831.25	151.25	8
5623.67	85	118.86	4394.93	1677.57	-1620.55	906.55	1856.88	150.78	8
5653.67	85	116.46	4397.55	1707.18	-1634.42	933.02	1881.98	150.28	8
5683.67	85	114.05	4400.16	1736.6	-1647.17	960.05	1906.53	149.76	8
5713.67	85	111.64	4402.78	1765.77	-1658.77	987.59	1930.51	149.23	8
5732.11	85	110.16	4404.39	1783.56	-1665.33	1004.75	1944.95	148.9	8
5832.11	85	110.16	4413.1	1879.68	-1699.66	1098.27	2023.62	147.13	0
5862.11	85.74	110.16	4415.52	1908.53	-1709.96	1126.34	2047.59	146.63	2.48
5892.11	86.49	110.16	4417.56	1937.41	-1720.27	1154.44	2071.73	146.14	2.48
5922.11	87.23	110.16	4419.2	1966.31	-1730.6	1182.56	2096.05	145.65	2.48
5952.11	87.97	110.16	4420.46	1995.23	-1740.92	1210.7	2120.52	145.18	2.48
5982.11	88.72	110.16	4421.32	2024.17	-1751.26	1238.85	2145.14	144.72	2.48
6012.11	89.46	110.16	4421.8	2053.11	-1761.59	1267.01	2169.91	144.27	2.48
6031.39	89.94	110.16	4421.9	2071.71	-1768.24	1285.1	2185.9	143.99	2.48
6031.43	89.94	110.16	4421.9	2071.75	-1768.25	1285.14	2185.93	143.99	0.66
6131.43	89.94	110.16	4422.01	2168.23	-1802.71	1379.02	2269.68	142.59	0
6231.43	89.94	110.16	4422.12	2264.72	-1837.16	1472.89	2354.69	141.28	0
6331.43	89.94	110.16	4422.23	2361.2	-1871.62	1566.77	2440.85	140.07	0
6431.43	89.94	110.16	4422.34	2457.69	-1906.08	1660.64	2528.02	138.94	0

6531.43	89.94	110.16	4422.45	2554.17	-1940.53	1754.52	2616.11	137.88	0
6631.43	89.94	110.16	4422.56	2650.66	-1974.99	1848.4	2705.02	136.9	0
6731.43	89.94	110.16	4422.67	2747.15	-2009.45	1942.27	2794.69	135.97	0
6831.43	89.94	110.16	4422.78	2843.63	-2043.91	2036.15	2885.04	135.11	0
6931.43	89.94	110.16	4422.89	2940.12	-2078.36	2130.02	2976	134.3	0
7031.43	89.94	110.16	4423	3036.6	-2112.82	2223.9	3067.53	133.53	0
7131.43	89.94	110.16	4423.11	3133.09	-2147.28	2317.78	3159.57	132.81	0
7231.43	89.94	110.16	4423.22	3229.58	-2181.73	2411.65	3252.08	132.13	0
7331.43	89.94	110.16	4423.33	3326.06	-2216.19	2505.53	3345.02	131.49	0
7431.43	89.94	110.16	4423.44	3422.55	-2250.65	2599.4	3438.36	130.89	0
7531.43	89.94	110.16	4423.55	3519.03	-2285.1	2693.28	3532.06	130.31	0
7631.43	89.94	110.16	4423.66	3615.52	-2319.56	2787.16	3626.1	129.77	0
7731.43	89.94	110.16	4423.77	3712	-2354.02	2881.03	3720.45	129.25	0
7831.43	89.94	110.16	4423.88	3808.49	-2388.48	2974.91	3815.09	128.76	0
7931.43	89.94	110.16	4423.99	3904.98	-2422.93	3068.78	3909.99	128.29	0
8031.43	89.94	110.16	4424.1	4001.46	-2457.39	3162.66	4005.14	127.85	0
8131.43	89.94	110.16	4424.21	4097.95	-2491.85	3256.54	4100.53	127.42	0
8231.43	89.94	110.16	4424.32	4194.43	-2526.3	3350.41	4196.13	127.02	0
8331.43	89.94	110.16	4424.43	4290.92	-2560.76	3444.29	4291.92	126.63	0
8431.43	89.94	110.16	4424.54	4387.41	-2595.22	3538.16	4387.91	126.26	0
8531.43	89.94	110.16	4424.65	4483.89	-2629.68	3632.04	4484.07	125.91	0
8631.43	89.94	110.16	4424.76	4580.38	-2664.13	3725.92	4580.4	125.57	0
8684.42	89.94	110.16	4424.82	4631.5	-2682.39	3775.66	4631.5	125.39	0

Job Number: 81xxx
 Company: Black Hills Gas Resources
 Lease/Well: Many Canyons 29-04-28 #121



ADDENDUM TO APD SUBMITTAL
MANY CANYONS 29-04-28 #121
API #: 30-039-30231

Per the request of Mr. Jim Lovato of the BLM, outlined below is the general procedure to be utilized by Black Hills Gas Resources (BHGR) 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's experience, that severe lost circulation in the Pictured Cliffs is 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. 13-3/8" casing will be ran and cemented to surface.
2. A 12-1/4" hole will be drilled to kick off point (KOP) at 3,200' MD/TVD.
3. At this point directional tools and MWD-GR will be used to drill an 8-3/4" curve section to $\pm 85^\circ$ inclination at 4,374' MD.
4. The directional tools will be laid down, and 7", 23# ft J-55 LT&C casing will be ran in the hole.
5. At approximately 3,200', an Xtech Industries Air Injection collar (AIC) will be placed in the 7" casing string {See attached Xtech schematic.} This collar will be tack welded on both top and bottom.
6. Once the AIC is made up, a 1.5" 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. {See attached photos of the metal bands and placement on the casing.}

Procedure (cont'd):

7. 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.
8. 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.
9. BOP's are 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.
10. 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).
11. 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.
12. Also, a rotating head and gas buster will be utilized at surface while drilling the lateral section of this wellbore.
13. 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.